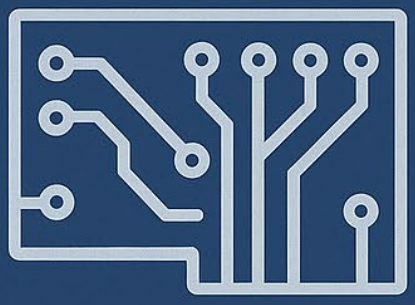
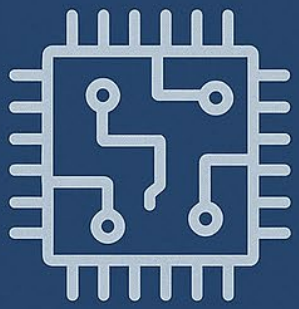
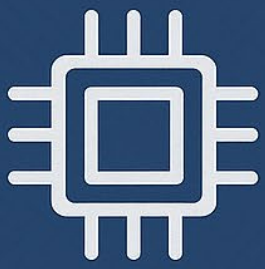
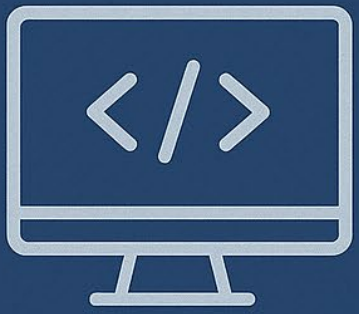


COMPUTER ENGINEERING

Methodological Guide – Part I







МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
Державний університет інтелектуальних технологій і зв'язку
кафедра лінгводидактики та іноземних мов

Дишель Ганна
Булгару Наталія

МЕТОДИЧНІ РЕКОМЕНДАЦІЇ

для аудиторної та самостійної роботи
з іноземної мови (англійська)
Частина 1
для здобувачів 1 курсу,
першого (бакалаврський) рівня вищої освіти
спеціальності F7 «Комп'ютерна інженерія»

Одеса 2025

Укладачі:
Дишель Г.В. старший викладач кафедри лінгводидактики та іноземних мов Державного університету інтелектуальних технологій і зв'язку
Булгару Н.Б. старший викладач кафедри лінгводидактики та іноземних мов Державного університету інтелектуальних технологій і зв'язку

Рецензенти:
Мельниченко Г. В. – доцент кафедри романської філології та методики викладання іноземних мов, кандидат педагогічних наук, доцент, ДЗ «Південноукраїнський національний педагогічний університет імені К.Д.Ушинського»
Авраменко Б.В. – доцент кафедри германських і східних мов та методики їх навчання, кандидат педагогічних наук, доцент, ДЗ «Південноукраїнський національний педагогічний університет імені К.Д.Ушинського»

Рекомендовано до друку рішенням Державного університету інтелектуальних технологій і зв'язку
(Протокол № __ від ___ травня 2025 року)

Дишель Г.В., Булгару Н.Б. Методичні рекомендації для аудиторної та самостійної роботи з іноземної мови (англійська) Частина 1 для здобувачів 1 курсу, першого (бакалаврський) рівня вищої освіти**,** спеціальності F7 «Комп'ютерна інженерія» Одеса. 2025. 141с.

Методичні рекомендації призначені для здобувачів першого (бакалаврський) рівня вищої освіти спеціальності F7 «Комп'ютерна інженерія» з метою допомоги у виконанні аудиторних і самостійних завдань, передбачених змістом дисципліни «Іноземна мова (англійська)». Дані методичні рекомендації мають на меті поглиблення знань з технічної англійської мови, розвиток мовленнєвих умінь, а також формування лінгвістичної компетентності, необхідної для фахового та міжкультурного спілкування у сфері комп'ютерної інженерії.

ПЕРЕДМОВА

Запропоновані методичні рекомендації призначені для здобувачів першого курсу, першого (бакалаврський) рівня вищої освіти спеціальності F7 «Комп'ютерна інженерія» та розроблені відповідно до змісту навчальної дисципліни «Іноземна мова (англійська)». Вони мають на меті забезпечення цілісного підходу до формування фахової іншомовної комунікативної компетентності здобувачів вищої освіти у сфері комп'ютерних наук.

Відповідно до рекомендації Ради Європи та вимог освітньо – професійної програми спеціальності, кінцевим результатом опанування курсу є сформованість англомовної мовленнєвої компетентності, що забезпечує ефективне функціонування студентів у академічному та професійному середовищах. Зокрема, очікується, що здобувачі вищої освіти:

✓ опанують фахову термінологію й граматичні структури, необхідні для розуміння, аналізу, створення та відтворення професійно орієнтованих текстів англійською мовою;

✓ набудуть навичок усного ділового спілкування, зокрема ведення бесід, ділових перемовин, участі в професійних обговореннях;

✓ розвиватимуть здатність до побудови логічно цілісних, зв'язних висловлювань у межах заданої тематики;

✓ володітимуть умінням реалізації усного й писемного дискурсу із застосуванням адекватних мовних засобів.

Методичні рекомендації (частина 1) структуровано у шість тематичних розділів, що відповідають програмі курсу за 1 семестр. Крім навчального матеріалу, рекомендації містять систему тестових завдань та ключі до них, а також добірку актуальних джерел фахової літератури та інформаційних ресурсів, які сприятимуть поглибленню знань студентів й їхньої мовної підготовки для подальшої професійної реалізації.

TABLE OF CONTENTS

UNIT #1

Humanity and Technology

Exercise #1. Read the words with the translation.

1. Technology – технології
2. Discovery – відкриття
3. Innovation – інновація
4. Artificial Intelligence (AI) – штучний інтелект (ШІ)
5. Quantum Computing – квантові обчислення
6. 5G Technology – технологія 5G
7. Biotechnology – біотехнології
8. Genetic Engineering – генетична інженерія
9. Renewable Energy – відновлювана енергія
10. Solar Panels – сонячні панелі
11. Wind Energy – вітрова енергія
12. Space Exploration – дослідження космосу
13. Reusable Rockets – багаторазові ракети
14. Augmented Reality (AR) – доповнена реальність (AR)
15. Virtual Reality (VR) – віртуальна реальність (VR)
16. Automation – автоматизація
17. Advanced Robotics – сучасна робототехніка
18. Metaverse – метавсесвіт
19. Cybersecurity – кібербезпека
20. Space Colonization – колонізація космосу

Exercise #2. Read and translate the text.

Extraordinary Discoveries in Technology and Future Trends

Technology is advancing rapidly, leading to new discoveries and emerging trends that are shaping the future. From artificial intelligence to space exploration,

these innovations have the power to transform many aspects of human life. This article will examine several significant technological discoveries and outline future trends that are expected to influence society in the coming years.

Extraordinary Discoveries in Technology

One of the most notable developments is Artificial Intelligence (AI). AI enables machines to learn from data and make decisions without human intervention. It is widely applied in sectors such as healthcare, finance, and the creative industries. For example, AI-powered robots assist in surgeries, making procedures safer and more accurate.

Another major breakthrough is Quantum Computing. Quantum computers can perform highly complex calculations much faster than traditional computers. This advancement may solve important problems in fields like medicine, chemistry, and physics, which were previously unsolvable with conventional technology.

5G Technology has also emerged, providing faster internet speeds and more reliable connections. This improvement is critical for supporting innovations like smart cities and autonomous vehicles.

In addition, Biotechnology and Genetic Engineering have introduced revolutionary methods for editing genes and treating genetic diseases. CRISPR technology, in particular, allows for precise changes to DNA, offering new possibilities for curing hereditary illnesses and enhancing human health.

Innovations in Renewable Energy are helping reduce the world's dependence on fossil fuels. Scientists have developed more efficient solar panels and wind turbines, making clean energy sources more accessible and affordable.

Progress in Space Exploration is another remarkable area. Companies like SpaceX and agencies such as NASA are actively working on missions to Mars. The discovery of water on Mars and the development of reusable rockets bring humanity closer to interplanetary travel.

Finally, Augmented Reality (AR) and Virtual Reality (VR) are transforming fields like entertainment, education, and professional training. These technologies offer immersive digital experiences that simulate real-world environments.

Future Technology Trends

Looking ahead, several trends are expected to dominate the technological landscape.

Firstly, AI and Automation will continue to develop, making smart assistants, self-driving cars, and automated services increasingly common in daily life.

Secondly, the Internet of Things (IoT) will expand, connecting more devices to the internet and enabling smarter homes, vehicles, and cities.

Advanced Robotics will also become more prominent. Intelligent robots are expected to play vital roles in industries such as healthcare, agriculture, and manufacturing.

The growth of the Metaverse — a collective virtual shared space — will continue, supported by advances in VR and blockchain technologies.

Additionally, the focus on Sustainable Technology will increase, with efforts to create environmentally friendly solutions that minimize waste and pollution.

As technology evolves, Cybersecurity will become even more important. New strategies and technologies will be necessary to protect personal and corporate data from cyber threats.

Finally, Space Colonization will move closer to reality, with serious plans for human settlements on the Moon and Mars already under development.

Technology is continuously reshaping the world, offering both challenges and opportunities. The current discoveries will lead to a future rich in innovation and possibilities. To succeed in this dynamic environment, it will be essential to stay informed and adapt to the ongoing technological changes.

Exercise #3. Read the text Ex.#2. Mark the following statements as true (T) or false (F)

1. Artificial Intelligence (AI) is used only in the entertainment industry.
2. Quantum computers are slower than traditional computers.
3. 5G Technology helps support innovations like smart cities.
4. Genetic Engineering and Biotechnology are not related to human health.

5. Renewable energy developments aim to reduce the use of fossil fuels.
6. Reusable rockets are a part of recent space exploration achievements.
7. Augmented Reality (AR) and Virtual Reality (VR) are used only in video games.
8. The Internet of Things (IoT) connects devices to make environments smarter.
9. The Metaverse is based entirely on quantum computing.
10. Cybersecurity becomes less important as technology evolves.
11. Plans for space colonization include building settlements on the Moon and Mars.
12. The article suggests that staying informed is not necessary for future success.

Exercise #4. Answer the following questions.

1. What are any examples of industries where Artificial Intelligence (AI) is used?
2. How do quantum computers differ from traditional computers?
3. What improvements does 5G technology bring to communication?
4. What is the main purpose of CRISPR technology?
5. How can renewable energy innovations help reduce dependence on fossil fuels?
6. Which companies are mentioned as leaders in space exploration?
7. What are some applications of Augmented Reality (AR) and Virtual Reality (VR)?
8. How is the Internet of Things (IoT) expected to affect daily life?
9. What is the metaverse, and how is it related to VR and blockchain technologies?
10. Why is cybersecurity becoming more important as technology advances?

Exercise #5. Fill in the gaps, using the words.

Technology, discovery, innovation, artificial intelligence (AI), 5G Technology, biotechnology, genetic engineering, solar panels, wind energy, space exploration,

augmented reality (AR), virtual reality (VR), automation, advanced robotics.

1. _____ is changing the way we communicate, work, and live every day.
2. The _____ of electricity-producing bacteria was a breakthrough in energy science.
3. Many modern devices are based on _____ that improve earlier inventions.
4. _____ is used to make computers think and learn like humans.
5. With _____, mobile devices now have faster Internet access and low latency.
6. Thanks to _____, scientists can now create medicines using cells and organisms.
7. _____ allows scientists to modify DNA to treat genetic diseases.
8. _____ are installed on rooftops to collect energy from sunlight.
9. Countries are investing in _____ to reduce fossil fuel consumption and protect the environment.
10. NASA and private companies are working together on _____ projects to explore Mars.
11. Students can now use _____ to view digital objects over real ones during lessons.
12. Gaming has become more immersive with _____, which creates fully digital environments.
13. In factories, _____ helps perform repetitive tasks with minimal human involvement.
14. Surgeons and engineers use _____ to perform complex operations with high precision.

Exercise #6. Match each English word with the correct definition.

1. Cybersecurity 2. Automation	A. The application of scientific knowledge for practical purposes.

3. Solar Panels 4. Biotechnology 5. Artificial Intelligence (AI) 6. Innovation 7. Discovery 8. Technology	B. A new and original idea, method, or device that improves something. C. Protection of computer systems and data from digital attacks. D. Machines or systems doing tasks automatically without human help. E. Tools that convert sunlight into electrical energy. F. The use of living systems and organisms to develop useful products. G. The act of finding something previously unknown or hidden. H. The ability of machines to simulate human intelligence and decision-making.

Exercise #7. Read and translate the text. Put the events in the correct order. Number the following events (A–E) according to the order in which they appear in the text «Effective Use of AI»:

A. AI helps with accessibility through speech recognition technologies.

B. AI is used to identify patterns in large datasets.

C. AI contributes to scientific research and innovation.

D. AI automates repetitive tasks in industries like healthcare.

E. AI enables personalized user experiences online.

Effective and Ethical Use of Artificial Intelligence (AI)

Artificial Intelligence (AI) is changing many industries. It helps companies work faster and make better decisions. But when many people start using AI, it creates ethical problems. We need to use AI responsibly. This article explains how to use AI well and how to use it fairly and safely.

Effective Use of AI.

*Increasing Productivity***.** AI can do simple and repeatable tasks automatically. This saves time and money. It helps companies in manufacturing, healthcare, and finance.

*Data Analysis and Decision-Making***.** AI can look at large amounts of data quickly. It finds patterns that people may not see. This is useful in medicine, banking, and business.

*Personalization and Customer Experience***.** AI gives personal suggestions on websites, streaming services, and social media. It shows people what they like and helps improve their experience.

*Scientific Research and Innovation***.** AI helps in science. It finds new medicines, predicts natural disasters, and helps study the environment and space.

*Helping People with Disabilities***.** AI tools like speech recognition and text-to-speech help people with disabilities. These tools support learning, working, and communication.

Ethical Use of AI.

Bias and Fairness. AI can be unfair if the data it learns from is biased. Developers must use fair and diverse data to avoid discrimination.

*Transparency and Responsibility***.** Sometimes AI works like a "black box." People don't know how it makes decisions. AI should be clear and easy to understand. Companies must take responsibility for what AI does.

*Privacy and Data Protection***.** AI needs a lot of data, which can risk people's privacy. Companies must protect this data and follow laws like GDPR.

*Job Loss and Retraining***.** AI can replace some jobs. Governments and businesses should help people learn new skills to find new jobs.

AI in War and Surveillance. Using AI in the military or for watching people creates serious problems. There should be international rules to protect human rights.

*False Information***.** AI can create fake videos and news. This can trick people. Platforms must create tools to detect and stop fake content.

Environmental Impact. AI uses a lot of energy. Developers should try to make AI systems that use less power to protect the environment.

AI can help society a lot. But we must use it carefully. Governments, companies, and developers must work together to make AI fair, open, and helpful for everyone.

Exercise #8. Discuss and write short answers to the following questions:

1. How is Artificial Intelligence used in your daily life?
2. What benefits do you think AI can bring to society?
3. Are there any risks or ethical concerns related to AI that you know of?

Exercise #9. Read each sentence and choose or write the most logical ending based on the text.

1. AI helps industries save time and money by _____.
2. In healthcare, AI is useful because it can _____.
3. Companies must protect users' information by _____.
4. Job loss due to AI can be reduced if _____.
5. Deepfake videos are dangerous because they _____.
6. To lower environmental harm, developers should _____.
7. Using AI in military settings can be controversial because _____.
8. Personalization by AI improves user experience by _____.
9. Transparency in AI means that _____.

Exercise #10.

a) read the dialogue aloud and practice pronunciation, intonation, fluency;

b) discuss the main points of the conversation. What did you learn about the history and modern trends in the IT industry?

c) create your own short dialogue using at least three key trends in IT today (e.g., AI, cloud computing, cybersecurity).

Past, Present, Pixel: How IT Changed Our World

Anna: Let's start with the history of IT. Can you believe it all began in the 19th century with Charles Babbage's Analytical Engine? That's like the great-great-grandfather of computers!

Tom: Yeah, but real progress came in the 1940s with the ENIAC. Those early computers were gigantic and super expensive! Can you imagine using one just to solve math problems?

Paul: And then in the 50s and 60s, things got better — transistors and microchips made everything smaller and cheaper. That's when businesses finally started getting into tech.

Leon: Exactly! And in the 70s and 80s — boom! Personal computers were born. IBM, Apple, Microsoft... They brought computers to our homes. What a game changer!

Anna: Totally! And when Microsoft launched Windows in 1985, it became so much easier to use a PC. Suddenly everyone could write, calculate, play games — even kids!

Tom: Then came the 90s — what a decade! The Internet completely changed how we live. I mean, who even remembers life before Google?

Paul: Or Facebook! Suddenly we were connected to the world — sharing photos, chatting, making friends in different countries. Isn't that amazing?

Leon: Yeah! And now, technology is everywhere. AI is part of our lives — Siri answers our questions, Alexa plays music, and self-driving cars? That's sci-fi coming true!

Anna: Cloud computing is also huge. Companies can work online, store everything safely, and access it from anywhere in the world.\

Tom: But we can't forget about cybersecurity. With so much data online, we need strong protection — encryption, secure passwords, and smart detection tools.

Paul: And blockchain — it's not just about Bitcoin anymore. It's used in hospitals, banks, and supply chains. So safe and transparent!

Leon: Also, the Internet of Things! Smart homes, fitness watches, even fridges that talk to your phone. What's next?

Anna: Flying robots maybe? With 5G, we have ultra-fast internet, so AR and VR are becoming real. Learning and gaming will never be the same!

Tom: It's incredible how far we've come — from massive machines to tiny smart devices. IT is everywhere now.

Paul: That's why we have to stay updated. Technology moves fast — if we don't keep up, we'll be left behind.

Leon: True! Maybe one of us will invent the next big thing in IT. Who knows?

Exercise #11. Choose one topic **from the list below. Prepare a** ***1–2-minute talk***. **Use connectors:** ***First of all***, ***In my opinion***, ***For example***, ***However***, ***Finally***, ***That's why I think…***

1. How has technology changed your daily life?
2. Is social media good or bad for society? Why?
3. Would you trust a self-driving car? Why or why not?
4. Is online shopping better than going to a real store?
5. Can robots replace teachers in the future?
6. What technology could you not live without?

Exercise #12. Read the sentences below. Pay attention to the time markers used in each sentence. Fill in the blanks with the correct verb form in the Present Simple Tense.

1. Elon Musk _____ (usually/innovate) in the fields of Artificial Intelligence (AI) and Space Exploration.
2. Mark Zuckerberg _____ (regularly/focus) on improving Virtual Reality (VR) and developing the Metaverse.
3. Tim Berners-Lee _____ (sometimes/discover) new ideas for improving Cybersecurity.
4. Jeff Bezos _____ (often/experiment) with new technologies, especially in Automation and Quantum Computing.

5. Bill Gates _____ (always/support) projects related to Renewable Energy, including Solar Panels and Wind Energy.
6. Marie Curie _____ (rarely/work) in Biotechnology but made important discoveries in Genetic Engineering.
7. Steve Jobs _____ (never/appear) publicly at technology conferences after his retirement.
8. Sundar Pichai _____ (every year/introduce) new 5G Technology updates at Google's events.
9. Ada Lovelace _____ (from time to time/contribute) to Advanced Robotics and Quantum Computing discussions.
10. Sergey Brin _____ (three times a week/research) into Augmented Reality (AR) technologies.
11. Larry Page _____ (every day/lead) the efforts of Google to innovate and expand into new areas like Automation.
12. Elon Musk _____ (at weekends/focus) on Space Exploration with SpaceX.
13. Nikola Tesla _____ (seldom/receive) the recognition he deserves for his inventions, but his work on Energy and Innovation is still influential.

Exercise #13. Transform the following sentences into negative and interrogative sentences.

1. Ukrainian scientists develop innovative technologies in various fields.
2. Space exploration involves collaboration between scientists from different countries.
3. Every year Ukrainian universities offer new programs focused on Biotechnology and Genetic Engineering.
4. Young innovator in Ukraine focuses on cybersecurity to protect digital data from online threats.
5. Ukrainian tech startups create new applications for smartphones and computers.

Exercise #14. Read the text and fill in the blanks with the correct verb form.

Modern Technologies in Ukraine

Modern technologies play an important role in the development of Ukraine. The country _____ (1) _____ (always/embrace) new technological innovations. IT professionals in Ukraine _____ (2) _____ (often/work) on creating advanced software and mobile applications. Many Ukrainian startups _____ (3) _____ (usually/focus) on fields like artificial intelligence (AI), automation, and quantum computing. The government _____ (4) _____ (regularly/invest) in renewable energy projects, such as solar panels and wind energy.

Ukrainian universities _____ (5) _____ (sometimes/offer) specialized programs in biotechnology and genetic engineering to support future innovations. The Ukrainian people _____ (6) _____ (never/lag) behind in terms of cybersecurity and digital infrastructure. However, despite the rapid development of technology, the use of virtual reality (VR) and augmented reality (AR) _____ (7) _____ (rarely/appear) in everyday life in Ukraine, although there are some exciting projects in these areas. Tech conferences in Ukraine _____ (8) _____ (from time to time/host) industry leaders and experts from around the world.

Every year, new advancements in technology (9) _____ (shape) the country's economy and make Ukraine an attractive destination for foreign investments. Ukrainian engineers _____ (10) _____ (usually/take) part in global projects that focus on space exploration and advanced robotics.

Exercise #15. Read the text below about the history and current state of Ukraine's IT industry. Fill in the blanks with the correct form of the verb.

Ukraine's IT industry _____ (1) _____ (grow) rapidly. The country _____ (2) _____ (become) an important hub for software development and

technology innovation. Many Ukrainian companies _____ (3) _____ (develop) cutting-edge solutions in areas like Artificial Intelligence (AI), Quantum Computing, and Cybersecurity.

At present, more and more startups _____ (4) _____ (focus) on Automation and Robotics. In fact, a lot of these startups _____ (5) _____ (work) on improving 5G technology and exploring Renewable Energy solutions, such as solar panels and wind energy.

Today, Ukraine _____ (6) _____ (also/make) great strides in the field of Biotechnology and Genetic Engineering. Many companies _____ (7) _____ (invest) in new technologies to help solve global challenges, and they _____ (8) _____ (create) innovations that could shape the future of healthcare.

Right now, Ukrainian universities _____ (9) _____ (offer) programs that specialize in fields like Virtual Reality (VR) and Augmented Reality (AR). Tech professionals _____ (10) _____ (attend) conferences on these emerging technologies and _____ (11) _____ (collaborate) with international experts. The IT industry in Ukraine _____ (12) _____ (not/stop) growing, and it _____ (13) _____ (continue) to attract more global attention.

These days, the IT sector in Ukraine _____ (14) _____ (play) a huge role in the country's economy and development.

Exercise #16. Transform the following sentences into negative and interrogative sentences.

1. Ukrainian scientists are developing new artificial intelligence models to improve healthcare.
2. Researchers in Ukraine are working on innovative solutions in quantum computing right now.
3. The government is investing in renewable energy projects at the moment.
4. More companies are using robotics in manufacturing processes these days.

5. Ukrainian startups are exploring the potential of augmented reality for educational purposes.

Exercise #17. Fill in the blanks with the correct verb form, either in the Present Simple or in the Present Continuous Tense.

Young Ukrainian scientists _____ (1) _____ (make) amazing breakthroughs in the field of technology. Every year, they (2) _____ (create) new innovations in areas like Artificial Intelligence (AI), Quantum Computing, and Biotechnology. Right now, a group of researchers in Kyiv _____ (3) _____ (develop) a new AI model that could revolutionize healthcare by predicting diseases earlier.

Some young scientists (4) _____ (focus) on Quantum Computing, and they _____ (5) _____ (work) hard to make it more accessible for businesses and industries. Solar panels and wind energy solutions _____ (6) _____ (become) increasingly popular, and young innovators in Ukraine _____ (7) _____ (regularly/research) ways to improve renewable energy systems.

At the same time, other teams _____ (8) _____ (develop) cutting-edge Cybersecurity technologies. These technologies (9) _____ (protect) companies from online threats and data breaches. One of the most exciting projects in the field of Space Exploration (10) _____ (involve) Ukrainian scientists who (11) _____ (study) the potential for future missions to the moon and Mars.

In the field of Automation and Robotics, young inventors _____ (12) _____ (create) robots that can help in various industries, from manufacturing to healthcare. They _____ (13) _____ (also/develop) new Augmented Reality (AR) applications, which (14) _____ (offer) new ways for people to interact with technology.

These young scientists _____ (15) _____ (not/stop) pushing the boundaries of innovation and discovery. Their contributions _____ (16) _____ (change) the future of technology in Ukraine and around the world.

Exercise #18. Fill in the blanks with the correct form of the verb in the Present Perfect Tense.

1. I _____ (never/see) such an amazing discovery in the field of artificial intelligence before.
2. She _____ (already/finish) the project on cybersecurity and is now working on a new one.
3. They _____ (just/announce) the new quantum computing breakthrough at the conference.
4. He _____ (not/yet/start) his work on the new solar panel design.
5. I _____ (hear) about the latest space exploration mission today.
6. She _____ (already/read) the report on biotechnology this week.
7. Scientists _____ (discover) several new wind energy technologies this year.
8. Many companies _____ (collaborate) on 5G technology so far, but there is still much more to do.
9. They _____ (not/complete) the project on genetic engineering yet.
10. They _____ (just/complete) their research on artificial intelligence and are preparing to publish their findings.
11. I _____ (never/participate) in a robotics competition before, but I'm thinking about joining this year.
12. The team _____ (already/make) significant progress in developing solar panel technology.
13. We _____ (not/receive) the new data on space exploration yet.
14. Ukrainian scientists _____ (discover) many new biotechnology methods this month.
15. She _____ (work) on the 5G technology project for two weeks now.
16. I _____ (read) several articles about quantum computing recently.
17. The company _____ (collaborate) with international partners on renewable energy solutions for a long time.

18. The government _____ (already/invest) in wind energy projects this year.

Exercise #19. Transform the following sentences into negative and interrogative sentences.

1. A young scientist from Kharkiv has created an innovative AI system.
2. A student from Kyiv has developed flexible solar panels.
3. Ukrainian students have won several international science competitions lately.
4. Young inventors from different regions have attracted attention from global investors.
5. Ukrainian tech innovators have contributed to global progress in biotechnology and AI.

Exercise #20. Fill in the blanks. Pay attention to the context of the sentence to choose the correct verb form and time marker.

Ukraine _____ (1) _____ (make) significant progress in the field of technology in the past few years. Scientists _____ (2) _____ (discover) many new innovations in artificial intelligence, robotics, and quantum computing. These technologies _____ (3) _____ (change) the way people live and work.

So far, several startups _____ (4) _____ (develop) cutting-edge biotechnology solutions, which _____ (5) _____ (have) a positive impact on healthcare. Companies _____ (6) _____ (create) new methods to treat diseases and increase crop yields. Ukraine _____ (7) _____ (become) an important hub for space exploration and renewable energy solutions.

The government _____ (8) _____ (already/invest) in the development of 5G technology and cybersecurity. Many engineers _____ (9)

_____ (collaborate) on creating new solar panel designs, which _____ (10) _____ (help) reduce energy costs.

Young innovators _____ (11) _____ (explore) new technologies for the metaverse and virtual reality. These discoveries _____ (12) _____ (attract) attention from tech companies all over the world.

Exercise #21. Read the text below about real young innovators from Ukraine. Fill in the blanks with the correct form of the verb in brackets.

Ukrainian Young Geniuses

In recent years, Ukrainian youth _____ (1. achieve) global recognition in science and technology.

Valeria Shapovalova, a young researcher from Kharkiv, _____ (2. develop) AI tools to detect emotional states in human speech. She _____ (3. receive) awards from several international competitions already.

These days, she _____ (4. improve) her system by adding machine learning features.

Valeria _____ (5. usually/test) her software with real users to collect more accurate data.

Meanwhile, in Kyiv, Andrii Hlazunov _____ (6. work) on renewable energy solutions. He _____ (7. create) a new type of solar panel that is flexible and more efficient than traditional models.

Right now, he _____ (8. present) his invention at an innovation forum in Europe. Andrii _____ (9. never/stop) experimenting with ways to reduce energy loss. He _____ (10. say) that sustainable technologies must be affordable for all.

Also, Iryna Yakubenko, a student at Taras Shevchenko National University, _____ (11. research) biotechnology applications in agriculture. This month, she _____ (12. publish) an article about genetic engineering to protect crops from disease.

Ukraine _____ (13. gain) a reputation for scientific excellence thanks to these brilliant minds.

The world _____ (14. already/take) notice of their work—and their future looks bright.

Exercise #22.

a) watch the video on YouTube. Take notes on the technologies and trends mentioned.

Link: ***https://www.youtube.com/watch?v=KvN3JXICzdM***

b) list 5 technologies that you believe will have the greatest impact on the future. Explain why you chose them;

c) identify and write down 3 ethical questions related to the use of emerging technologies mentioned in the video.

Exercise #23. Read the list of essay topics below and choose one that interests you the most. Then, follow the steps:

1. Write a short outline for your essay (3–5 points).
2. Identify the main idea (thesis statement) of your essay.
3. List at least 3 arguments or facts you will use to support your opinion.
4. Write a short introduction paragraph for your chosen topic.

Essay Topics:

1. The Role of Modern Information Technologies in Our Daily Lives.
2. How Information Technologies Are Transforming Education and Work.
3. Benefits and Risks of Artificial Intelligence in the Modern World.
4. Young Innovators Changing the World: From Ukraine to Global Impact.
5. Breakthrough Discoveries by Young Scientists and Their Future Potential.
6. The Importance of Supporting Youth Research and Technological Innovation.
7. How Ukrainian Youth Are Contributing to Global Science and Technology.
8. Inventions That Shaped Human History: From the Wheel to the Internet.
9. The Most Important Scientific Discoveries of the 21st Century.

Exercise #24. Read each section of the test carefully and answer the questions.

Test #1

Part I. Match the following terms with their correct definitions. Write the correct letter next to the number.

A. Artificial Intelligence	**C.** Cybersecurity	**E.** Biotechnology	**G.** Automation	**I.** Robotics
B. Renewable Energy	**D.** Quantum Computing	**F.** 5G Technology	**H.** Virtual Reality	**J.** Augmented Reality

1. ___ Machines or systems that perform tasks that usually require human intelligence.
2. ___ A type of energy that comes from natural resources and is constantly replenished, like wind and solar power.
3. ___ The practice of protecting systems and networks from digital attacks.
4. ___ A computing system that uses quantum mechanics principles to process large amounts of data.
5. ___ The use of living organisms or biological systems to create new products or technologies.
6. ___ A communication technology that provides ultra-fast internet speeds.
7. ___ The use of machines or technology to perform tasks with minimal human input.
8. ___ A simulated experience that can be similar or completely different from the real world.
9. ___ The branch of technology focused on creating machines that can carry out tasks autonomously.
10. ___ A system that overlays digital information onto the real world, enhancing the user's perception.

Part II. Choose the correct verb tense for each sentence.

11. Scientists _____ (work) on a new AI project these days.
12. We _____ (test) a new robotic technology at the moment.

13. He _____ (never / use) this quantum computing technology before.
14. They _____ (create) an advanced cybersecurity solution right now.
15. I _____ (always / attend) technology conferences every year.
16. We _____ (discuss) artificial intelligence in our classes every Monday.
17. This company _____ (produce) virtual reality systems for the gaming industry.
18. I _____ (study) biotechnology at the university this semester.
19. He _____ (publish) his research on AI last week.
20. Our students _____ (participate) in an international tech competition this year.

UNIT #2

The Career of a Software Engineer

Exercise #1. Read the words with the translation.

1. The Software Engineer – інженер програмного забезпечення
2. Outcome – результат
3. Focus – зосереджуватися, фокусуватися
4. Software – програмне забезпечення
5. Cover – охоплювати, покривати
6. Develop – розвивати, розробляти
7. Design – проектувати, розробляти
8. Objective – мета, завдання, ціль
9. Programming-in-the-small – програмування невеликих задач/локальне програмування
10. Programming-in-the-large – програмування великих задач/ масштабне програмування
11. Entire – цілий, весь
12. Install – встановити, налаштувати
13. Investigate – досліджувати, вивчати
14. Evaluate – оцінювати, визначити
15. Review – ознайомитися
16. Adjust – регулювати, налаштовувати
17. Initial – початковий, первинний
18. Implementation – реалізація, впровадження, здійснення
19. Assess – оцінювати, визначати
20. Challenging – складний

Exercise #2. Read and translate the text.

Software Engineering Department

This class focuses on computer software. It covers various elements of development and programming. The students will learn to design and develop programs. The objective is to write useful computer software.

Small groups of students will complete several short projects. These focus on programming-in-the-small. The whole class will work together on programming-in-the-large. This project runs throughout the entire semester.

The students will also install and test their own software artifacts. This is an opportunity to investigate any software development problems. Finally, students will evaluate the correctness of each other's software. Student reviews are part of the final grade.

The role of a Software Engineer is very important today. These people design, develop, and take care of software that helps users and companies. Their work can be small, like writing one function, or big, like building a full system.

A Software Engineer must focus on two types of work: programming-in-the-small and programming-in-the-large. Programming-in-the-small means doing small tasks, like writing short code. Programming-in-the-large means working on big systems with many parts. Engineers must understand how the entire system works to get the best outcome.

At the initial stage, the engineer needs to know the objective of the project. They must investigate the problem, review what the user needs, and evaluate different ideas. Then they start the implementation — writing the code. After that, they assess the result and adjust the software to make it better.

Sometimes they also help users install the software and fix problems. The job covers many different tasks and is often challenging. But it is also interesting, because engineers can develop useful solutions that help many people.

Exercise #3. Read the text Ex. #2. Mark the following statements as true (T) or false (F)

1. The class teaches students how to build hardware systems.
2. Students will work on both small and large programming projects.
3. Programming-in-the-small means writing long, complicated code.
4. The big project lasts for one week.
5. Students will install and test the software they create.
6. The students will never review or evaluate each other's work.
7. A Software Engineer can work on one function or a full system.
8. Software Engineers only do programming-in-the-large.
9. At the beginning of a project, the engineer checks the goals and investigates the problem.
10. Software Engineers don’t help with installing the software.
11. The job of a Software Engineer includes many tasks and can be difficult.
12. Software Engineers create useful software that helps people.

Exercise #4. Answer the following questions.

1. What is the main focus of the Software Engineering class?
2. What do students learn to design and develop in this class?
3. What is the objective of the course?
4. What kind of projects do small groups work on?
5. What does «programming-in-the-small» mean?
6. What kind of project does the whole class work on?
7. How long does the large project last?
8. What do students do after writing their software?
9. Why do students investigate software development problems?
10. What do students evaluate at the end of the project?
11. Why are student reviews important in this course?
12. What does a Software Engineer do?
13. What are the first steps a Software Engineer must take in a project?

Exercise #5. Fill in the gaps, using the words.

The Software Engineer, outcome, focus, software, cover, develop, design, objective, programming-in-the-small, programming-in-the-large, entire, install, investigate, evaluate, review, adjust, initial, implementation, assess, challenging.

1. At the _____ stage, it is important to understand the goal of the project.
2. One of the main tasks of _____ is to create and maintain useful programs.
3. Students will learn how to _____ programs for different users.
4. Good software must be tested to get the best _____.
5. Engineers often need to _____ problems before starting the project.
6. After you write the code, you must _____ the software to see if it works well.
7. It is helpful to _____ user feedback before making changes.
8. The final project lasts the _____ semester.
9. Students will also _____ their software on school computers.
10. Building a big system with many parts is an example of _____.
11. A small task, like writing one function, is part of _____.
12. The class projects _____ different parts of the software development process.
13. It is important to _____ your software to make it better after testing.
14. Writing good software can be very _____, but also rewarding.
15. Before coding, every engineer should know the main _____ of the software.

Exercise #6. Match each English word with the correct definition.

1 The Software Engineer 2 Outcome 3 Software 4 Cover 5 Develop 6 Design 7 Objective 8 Install 9 Investigate 10 Evaluate 11 Review 12 Adjust 13 Implementation 14 Assess	A. To look closely at something to learn more about it B. The person who creates and maintains computer programs C. The action of putting something into use, especially a plan or program D. To carefully think about or judge something E. The process of planning how something will work or look F. A program or group of programs used by a computer G. To make small changes to improve something H. To find out the value or level of something I. To plan and create something new J. The result or final product of something K. The aim or goal of an activity L. To put a program onto a computer M. To read or look at something to understand it N. To include or deal with many things

Exercise #7. Create a mind map on the topic «Software Engineering» using the following main branches:

- ***Responsibilities***
- ***Skills***
- ***Specializations***
- ***Tools and Methods***
- ***Career Development***

Each branch should include 3 to 5 subcategories with relevant keywords or short phrases in English.

Software Engineer Job Description: A Detailed Guide

Software engineers design, build, test, and maintain applications for various industries, including healthcare, finance, and government. They use the Software Development Life Cycle (SDLC) to guide their work, which includes planning, designing, coding, testing, deploying, and maintaining software. As technology evolves, the demand for skilled engineers continues to rise.

Core responsibilities go beyond coding. Engineers ensure usability, performance, and reliability of software. They might work on computer games, operating systems, business applications, or network systems. Specializations include front-end (user interface), back-end (server-side logic), full-stack (both), mobile app development, and DevOps (integration and automation).

Key technical skills include programming languages like Java, Python, C++, HTML, and SQL. Engineers should understand object-oriented programming (OOP), databases, debugging techniques, and Agile methodologies. Familiarity with DevOps practices can also be valuable for efficient development and deployment.

Non-technical skills are equally important. These include communication, teamwork, problem-solving, adaptability, and leadership. Software engineers must effectively collaborate with cross-functional teams and clearly present ideas and solutions.

Career paths vary by specialization and experience. Most roles require at least a bachelor's degree in computer science or related fields, though boot camps and self-study can also be effective. With continuous learning and upskilling, engineers can progress into senior roles, team leadership, or specialized technical domains.

Exercise #8. Read the passage Ex.#7 carefully. Then, discuss the following questions with a partner or in a small group. After the discussion, write short answers (1–3 sentences each) in your notebook.

1. What is the main role of a software engineer?
2. Why is the Software Development Life Cycle (SDLC) important?
3. What are any examples of industries where software engineers work?

4. Name at least three specializations in software engineering.
5. What makes the responsibilities of a software engineer broader than just coding?
6. List three technical and two non-technical skills important for software engineers.
7. What is the value of knowing Agile and DevOps practices?
8. How can anyone become a software engineer without a university degree?
9. Why are non-technical skills essential in this profession?
10. What career growth opportunities are available for experienced software engineers?

Exercise #9. Say whether you agree or disagree and explain your opinion using logical arguments and examples from the text. Use the phrases: «I agree/disagree because…», «According to the text…», «For example, it says that…», «In my opinion…»

1. Software engineers only need to know how to code.
2. Non-technical skills are more important than technical ones.
3. A university degree is the only way to become a software engineer.
4. All software engineers should specialize in one area.
5. The demand for software engineers will decrease in the future.

Exercise #10. Read the conversation between Emily, Anna, Mark, and Tom. Pay attention to how each speaker contributes to the discussion about resume writing, interview preparation, and daily responsibilities.

Emily (HR Manager): Good morning, everyone. Today, I'd like to go over some key points for preparing for your upcoming job interviews as software engineers. Let's begin with resumes. Anna, what do you think is the most important part to focus on?

Anna (Junior Developer): I believe the objective section is very important. It shows the employer what your goals are. My objective is to develop and design efficient software that improves user experience.

Mark (Senior Developer): That's a good start. I'd also suggest focusing on specific outcomes. For example, mention how you helped increase system performance or developed a tool that saved time for the entire team.

Tom (Intern): Should we include all the software we've worked with, or just the most relevant ones?

Emily: Great question, Tom. You should cover only the tools and languages that relate to the job you're applying for. If you're applying for a back-end position, highlight Java, SQL, or any large-scale system experience—what we call programming-in-the-large.

Anna: What if we've done more programming-in-the-small, like scripting or writing small apps?

Mark: Then include it, especially if it shows your ability to investigate issues, install updates, or adjust configurations. That kind of initiative matters, even in small tasks.

Emily: During interviews, you'll often be asked to describe the entire software development process. Be ready to explain your role in the initial planning, implementation, and review stages. Employers want to know how you assess and evaluate solutions.

Tom: I've found it challenging to talk about projects I did with a team. How should I approach that?

Anna: Focus on your specific contribution. For instance, you might say, «I helped design the user interface and adjusted it based on feedback after the initial tests».

Emily: Excellent advice. And remember, every experience is valuable. Even administrative activities—like organizing team notes or reviewing code—show your ability to manage details and stay focused. Just present it clearly.

Mark: Also, don't forget to prepare questions for the interviewer. Asking about team structure or how they evaluate software performance shows you're serious.

Emily: Absolutely. Preparation is key. Review your resume, adjust it for each job, and practice explaining your role in both technical and non-technical terms. You'll be great!

Exercise #11. Write short answers (2–3 sentences) to the following questions:

1. What does Anna consider the most important part of the resume? Why?
2. What advice does Mark give about outcomes?
3. How does Emily suggest candidates present their technical experience?
4. What is Tom's concern, and how does Anna help him?
5. What does the dialogue suggest about the value of small tasks?
6. Which part of the dialogue do you relate to most? Why?
7. What would you add to your resume based on this conversation?
8. Have you ever faced a challenging interview question? How did you handle it?

Exercise #12. Role-play a mock interview. One student acts as the interviewer (HR), and the other as a software engineer applying for a job. Practice responding to questions about skills, tools, and project outcomes.

Exercise #13. Use the Past Simple form of the verbs in brackets. Use at least one time expression in each sentence (e.g., yesterday, last week, two years ago).

1. I (develop) _____ a new piece of software _____.
2. She (install) _____ the program on the company's server _____.
3. They (focus) _____ on improving the outcome _____.
4. He (design) _____ an app for small businesses _____.
5. We (evaluate) _____ the results of the project _____.
6. My team (cover) _____ programming-in-the-large _____.
7. I (review) _____ the initial project objectives _____.
8. Our manager (adjust) _____ the schedule _____.
9. I (investigate) _____ a software error _____.
10. We (cover) _____ the basics of programming-in-the-small _____.
11. She (adjust) _____ the design to meet client needs _____.

12. They (implement) _____ the new feature _____.
13. He (assess) _____ the project's success _____.
14. Our team (develop) _____ the entire system _____.
15. I (focus) _____ on UI/UX design _____.
16. We (design) _____ the initial version of the product _____.
17. The engineers (review) _____ the documentation _____.
18. I (evaluate) _____ the final outcome _____.

Exercise #14. Work in pairs or small groups. Ask and answer the following questions using the Past Simple.

- What project did you work on last month?
- Did you install any new software last week?
- What objective did you achieve two months ago?
- Did you meet any software engineers the other day?
- What programming tasks did you complete in 2024?
- What was the most challenging outcome you faced the day before yesterday?

Exercise #15. Transform the following sentences into negative and interrogative sentences.

1. The software engineer designed a new user interface last week.
2. We developed a mobile app two months ago.
3. They focused on the outcome of the project in 2024.
4. She installed the software the other day.
5. Our team covered all aspects of programming-in-the-large yesterday.
6. He evaluated the initial implementation last year.
7. I investigated a technical issue two hours ago.
8. They reviewed the client's objectives the day before yesterday.
9. We adjusted the settings last Friday.
10. The engineers assessed the system's performance in 2024.

Exercise #16. Read the text and fill in the blanks with the correct verb form.

Anna: Hey team! Do you remember what we _____ (do) last week? That etiquette workshop was intense!

Tom: Oh, totally! I _____ (try) to install new software while _____ (handle) a client call. Multitasking at its finest!

Maria *(laughing)*: Tom, I saw you! You _____ (adjust) your headset when the call suddenly dropped!

Tom: Yeah, and I stayed calm — workplace etiquette win, right?

David: For sure! I _____ (focus) on polite phrasing as I _____ (help) a customer fix a tricky bug.

Anna: Nice! I _____ (review) email etiquette all morning, but I got distracted by those ringing phones.

Maria: I actually _____ (talk) to a really difficult client at that moment, but I kept my cool.

Tom: That's the spirit! I think we all _____ (develop) real skills all day long on Friday.

David: Definitely. And remember how we _____ (evaluate) each other's calls during the feedback session?

Anna: Oh yes — you all nailed it! I _____ (cover) phone etiquette basics while you _____ (practice) real-time responses.

Maria: Let's be honest — we _____ (panic) a little, too!

Tom: True, but by the end, we _____ (handle) everything like pros. High five, team!

Exercise #17. Transform the following sentences into negative and interrogative sentences.

1. I was installing the new software.
2. They were discussing the project during the entire lunch break.
3. We were testing the new application yesterday from 3 till 5 p.m.
4. Tom was developing a mobile app as part of his final project.

5. The team was preparing for the client presentation all day long yesterday.

Exercise #18. Fill in the blanks with the correct form of the verb in Past Perfect Tense.

1. Maria _____ (install) the software before the meeting started.
2. Tom _____ (review) the report before the moment the manager entered the room.
3. I _____ (not finish) my tasks before the evening came
4. They _____ (adjust) the settings by two o'clock.
5. Anna _____ (develop) the new feature by that time.
6. David _____ (design) the interface by that morning.
7. She _____ (write) the full documentation by evening.
8. The team _____ (assess) the outcome by afternoon.
9. I _____ (not investigate) the issue thoroughly by that day.
10. We _____ (cover) all topics on workplace etiquette by that year.

Exercise #19. Transform the following sentences into negative and interrogative sentences.

1. The engineers had launched the new app by that time.
2. She had fixed all errors in the code by that morning.
3. Tom had completed his part by evening.
4. I had warned them by afternoon.
5. We had implemented all security protocols by that year

Exercise #20. Read the text «My Path to Becoming a Software Engineer». Fill in the blanks with the correct form of the verb in brackets.

My Path to Becoming a Software Engineer

I (1) _____ (grow up) in a small town where technology was just beginning to spread. By the time I (2) _____ (graduate) from high school, I already (3) _____ (develop) an interest in computers.

In 2010, while I (4) _____ (study) in college, I (5) _____ (start) my first programming course. I (6) _____ (never/use) real software tools before that. During that semester, I (7) _____ (spend) hours learning Java and Python.

One day, while I (8) _____ (work) on a small app, I (9) _____ (realize) I wanted to be a software engineer.

After I (10) _____ (complete) my internship, I (11) _____ (apply) for my first job. The company (12) _____ (interview) me the week after I submitted my application.
At that moment, I (13) _____ (feel) nervous but excited. By the time I (14) _____ (receive) the offer, I already (15) _____ (prepare) all the necessary documents.

Two years ago, I (16) _____ (join) my current team, and since then, I (17) _____ (work) on both small and large-scale projects.

Exercise #21. Read the text below. Fill in the blanks with the correct form of the verb in brackets.

When I _____ (be) a child, I _____ (dream) of becoming a software engineer. By the time I _____ (graduate) high school, I already _____ (learn) the basics of programming from online courses.

In 2019, I _____ (enroll) in a computer science degree. While I _____ (study), I _____ (take) part in various student projects. One day, while I _____ (work) on a mobile app with a team, we _____ (face) a technical issue we couldn't solve. Fortunately, we _____ (find) a mentor who helped us.

By my final year, I _____ (build) a portfolio that _____ (include) several web applications. After I _____ (graduate), I _____ (get) an internship at a software company. During the internship, I _____ (realize) how important communication and teamwork are.

By the time I _____ (join) my first full-time job, I _____ (feel) confident and well-prepared for professional challenges.

Exercise #22. Watch the video «Career Paths for Software Engineers». Following while-listening tasks:

- Take notes on 4 different career paths mentioned.
- Write down 3 key skills needed to grow as a software engineer.
- Identify at least 2 recommendations the speaker gives for career progression.

Link: https://www.youtube.com/watch?v=07IViT_Ezuc

Exercise #23. Write an essay (120–180 words) on the topic:

1. Why I Want to Become a Software Engineer
2. The Most Important Skills for a Successful IT Career
3. How Artificial Intelligence Is Changing the Role of Software Engineers
4. Remote Work in IT: Pros and Cons for Software Developers
5. Is a University Degree Necessary for a Career in Software Engineering?
6. The Role of Soft Skills in a Technical Career
7. How Software Engineers Solve Real-World Problems
8. From Junior to Senior: Building a Career Path in IT
9. The Impact of Open-Source Projects on a Developer's Career
10. How Internships Can Help Young Programmers Succeed
11. The Future of Programming Languages: What Should Engineers Learn?
12. Women in Tech: Breaking Stereotypes in Software Engineering
13. Freelancing vs. Full-time Employment in IT: Which Is Better?
14. The Importance of Ethics in Software Development
15. The Role of Certifications and Bootcamps in Starting an IT Career

Exercise #24. Read each section of the test carefully and answer the questions.

Test #2

Part I. Choose the correct word to complete each sentence. Use the following words: software engineer, outcome, software, cover, develop, design, objective, programming-in-the-small, install, investigate, assess

1. The _____ created a new application to manage customer data efficiently.
2. Our main _____ is to improve system performance by 20%.
3. Before we release the product, we need to thoroughly _____ its functionality.
4. She plans to _____ a mobile app that helps users track their fitness goals.
5. The team will _____ the new software on all company computers this weekend.
6. The final _____ of the project exceeded all expectations.
7. We need to _____ the root cause of the system failure.
8. This course will _____ topics such as data structures and algorithms.
9. He specializes in _____, focusing on small-scale programming tasks.
10. The user interface _____ was both intuitive and visually appealing.
11. To ensure quality, we must _____ the code for potential bugs.

Part II. Complete the sentences with the correct form of the verb in brackets.

1. By the time the meeting started, the team _____ (complete) the project proposal.
2. While I _____ (install) the new software, the system crashed.
3. Maria _____ (attend) the IT conference last week.
4. They _____ (discuss) the new features when the manager entered the room.
5. After he _____ (review) the code, he found several bugs.

Part III. Match the time markers to their correct definitions.

A. yesterday

B. the day before yesterday

C. last week

D. two hours ago

E. by that time

1. _____ – the day before today
2. _____ – seven days before now
3. _____ – at some point before a specific time
4. _____ – the day before yesterday
5. _____ – 120 minutes before now

Part IV. Identify and correct the error in each sentence.

1. She was finish the report when the power went out.
2. They had discuss the issue before the meeting started.
3. I was working on the project since morning.
4. He didn't knew the answer to the question.
5. We was installing the software when the error occurred.

UNIT #3.
Analytical Review of Professionally Oriented Publications

Exercise #1. Read the words with the translation.

A.

1. Annotate – анотувати
2. Technical source – технічне джерело
3. Highlight – виділяти
4. Key term – ключовий термін
5. Definition – визначення
6. Summarize – резюмувати, узагальнювати
7. Margins – поля (написані нотатки збоку)
8. Symbol – символ
9. Understand complex ideas – розуміти складні ідеї
10. Presentation preparation – підготовка до презентації

B.

1. Technical source – технічне джерело
2. Article – стаття
3. Report – звіт
4. Manual – посібник
5. Research paper – наукова робота
6. Main idea – основна ідея
7. Key point – ключовий момент
8. Summary – Резюме, реферат

Exercise #2.

A. Read the text about annotating technical sources. Focus on understanding what annotation is, how it's done, and why it's useful.

What Is Annotating Technical Sources?

Annotating technical sources means adding short notes to help you understand and remember important information from texts like articles, manuals, or research papers. These sources often include complex vocabulary, data, and detailed explanations, so annotation helps break it down.

When you annotate a technical text, you usually:

1. Highlight key terms – mark important words or concepts, such as «algorithm», «interface» or «database».

2. Write short notes in the margins – explain difficult words or summarize ideas in your own words.

3. Underline definitions or examples – these help you understand how something works.

4. Ask questions – if something is unclear, write a question next to it to think about later.

5. Use symbols – like stars (*) for important points or question marks (?) for confusing parts.

Annotation helps students and professionals focus on the most useful information, understand complex ideas better, and prepare for writing or presentations based on the sources.

B. Read the full text carefully. Understand the main idea and key points. Highlight important information.

What Is Summarizing Technical Sources?

Summarizing technical sources means writing a short version of a long technical text. This can be an article, report, manual, or research paper. The goal is to show the main ideas without giving all the details.

When you summarize a technical source, you should:

1. Read the whole text carefully. Try to understand the main topic and key points.

2. Highlight the important information. Focus on what the author is trying to explain or prove.

3. Ignore small details and examples. A summary is short, so you don't need every number or quote.

4. Write the summary in your own words. Don't copy full sentences. Use simpler language if needed.

5. Keep the summary clear and short. Usually, a summary is one paragraph (5–8 sentences).

Summarizing helps you better understand technical texts and remember the most important parts. It's a useful skill for students, researchers, and professionals in technology and science.

Exercise #3. Read the texts Ex. #2. Mark the following statements as true (T) or false (F).

A.

1. Annotating a text means writing long summaries of each paragraph.
2. You should highlight important words or key terms like «algorithm» or «database».
3. Writing questions in the margins is not recommended when annotating.
4. Symbols such as stars (*) or question marks (?) can be used in annotations.
5. Annotation helps improve understanding and memory of technical texts. Definitions and examples should be ignored when annotating.
6. Annotation is useful for students and professionals working with technical content.
7. You must copy full sentences from the text to make good annotations.

B.

1. Summarizing a technical source means writing a long and detailed version of the original text.

2. A summary should focus on the main ideas of the original text.

3. You should highlight important information when reading a technical text.

4. It's important to include every number and quote in your summary.

5. You should write your summary using your own words.

6. A good summary is usually one paragraph long.

7. Summarizing is useful only for professional engineers.

8. The first step in summarizing is to read the whole text carefully.

Exercise #4. Read the list of key technical terms related to your field.

1. Cybersecurity – кібербезпека
2. Digitalization – цифровізація
3. Scientific publication – наукова публікація
4. Search engine – пошукова система
5. Information retrieval (IR) – пошук інформації, інформаційне витягування
6. Transformer architecture – архітектура трансформера
7. Question answering (Q&A) system – система запитання-відповідь
8. Chunk – фрагмент тексту
9. Web crawler – веб-сканер
10. TF-IDF – частота терміна – обернена частота документа
11. Word embedding – векторне представлення слів
12. Sentence boundary – межа речення
13. Confidence score – оцінка впевненості
14. Search parameters – параметри пошуку
15. Metadata – метадані
16. User interface – користувацький інтерфейс
17. Dashboard – панель керування

18. Database summary – підсумок бази даних
19. Scientific repository – наукове сховище
20. Preprocessing – попередня обробка
21. Test environment – тестове середовище
22. Evaluation methods – методи оцінювання
23. Machine learning model – модель машинного навчання

Exercise #5. Fill in the gaps, using the words.

Cybersecurity, digitalization, scientific publication, search engine, information retrieval, natural language processing, deep learning, transformer architecture, question answering system, corpus, chunk, web crawler, TF-IDF, word embedding, sentence boundary, confidence score, search parameters, metadata, user interface, dashboard, database summary, scientific repository, preprocessing, test environment, evaluation methods, machine learning model.

1. A _____ helps users locate content online by ranking and displaying relevant results.
2. In _____, systems analyze and understand human language.
3. A _____ is a structured collection of texts used for training or testing NLP systems.
4. Before using data in a system, it often goes through _____ to clean and format it.
5. A _____ breaks large texts into smaller parts to simplify analysis.
6. Researchers store their work in a _____, where others can access it.
7. The model was evaluated in a controlled _____ using various _____.
8. Modern AI tools often rely on _____ like BERT or RoBERTa.
9. A _____ is assigned to an answer to show how reliable it is.
10. Each document in the system contains _____ like author, title, and date.
11. A _____ scans websites automatically to collect data.
12. The system extracts answers using a _____ trained on QA tasks.

13. A visual _____ shows users summaries and activity in the database.
14. To find relevant text, the system uses _____ to rank its importance.
15. The application has a simple _____ for user interaction.
16. _____ protects digital systems and data from threats.
17. Many tools today use _____ to create vector-based word relationships.
18. The rapid pace of _____ increases data flow across connected systems.
19. A _____ helps extract only the needed parts of information from a large set.
20. A well-trained _____ can predict outcomes or classify data effectively.

Exercise #6. Match the terms with their correct definitions.

1. Web crawler 2. Natural Language Processing (NLP) 3. Machine learning model 4. Metadata 5. Corpus 6. TF-IDF 7. Cybersecurity 8. Scientific repository 9. Deep learning 10. Confidence score	A. A set of texts used for language research or training AI models. B. The protection of digital systems and data from unauthorized access or attacks. C. A system that scans and collects data from websites. D. A numerical measure of how sure a system is about its result. E. A subfield of AI focused on teaching machines to understand and generate human language. F. A place where researchers publish and store academic papers. G. A mathematical method for ranking word importance in a document. H. A form of AI that uses neural networks with many layers to learn from data. I. Descriptive information about a file or document (e.g., author, date).

	J. A trained algorithm that makes predictions or classifications based on data.

Exercise #7. Read the article and try to understand the purpose and context of the study.

A Search Engine for Scientific Publications: a Cybersecurity Case Study

by N.Oliveira, N. Sousa, I. Praça.

Abstract. Cybersecurity is a very challenging topic of research nowadays, as digitalization increases the interaction of people, software and services on the Internet by means of technology devices and networks connected to it. The field is broad and has a lot of unexplored ground under numerous disciplines such as management, psychology, and data science. Its large disciplinary spectrum and many significant research topics generate a considerable amount of information, making it hard for us to find what we are looking for when researching a particular subject. This work proposes a new search engine for scientific publications which combines both information retrieval and reading comprehension algorithms to extract answers from a collection of domain-specific documents. The proposed solution although being applied to the context of cybersecurity exhibited great generalization capabilities and can be easily adapted to perform under other distinct knowledge domains.

Keywords: Natural Language Processing · Deep Learning · Cybersecurity · Question Answering System · Reading Comprehension.

1. Introduction.

Cybersecurity is a neoteric field that emerged out of the latest advances in computer science [1]. Although there is not yet a consensual agreement between the scientific community across the whole scope of cybersecurity research topics, some works have tried to systematize research categories [1,2], being one of them related to data science applications.

The recent developments in software, hardware, and network topologies contributed to more complex systems such as Cyber-Physical Systems (CPS) in which the capabilities of computing, communications, and data storage are used to monitor physical and cyber entities [3].

Furthermore, these advances can also be translated into more sophisticated cyberattacks comprised of multiple attack vectors. Hence, the complex nature of cyber threats and the need to progressively adapt security systems to the most relevant ones makes the application of Artificial Intelligence (AI) a promising technology to use for increased cybersecurity [4].

Being cybersecurity such a hot research topic nowadays, with so many different applications, it is hard to efficiently find answers to specific topics in the wide amount of existing scientific publications. Natural Language Processing (NLP) methods, namely Reading Comprehension (RC) algorithms, can give a substantial contribution to solving the introduced problem. However, the ability to read a text and then answer questions about it is a very difficult task for machines [5].

Over the last few years, the introduction of reliable data collections such as the Stanford question answering dataset (SQuAD) [5] and the development of deep learning methods based on transformer architectures [6] such as BERT [7] and RoBERTa [8] have contributed to major improvements in the field of RC. Nevertheless, it is not feasible to apply these algorithms directly to huge amounts of text due to computational limits and performance issues. To overcome this problem, Information Retrieval (IR) methods [9] can be used to measure the relevance of a given document to a given question providing a filter to find only relevant data and narrowing down the search space.

This work proposes a novel Question Answering (Q&A) system for the cybersecurity research context in which one can place a domain-related question and expect a direct answer retrieved from a set of scientific publications. This system uses a combination of IR and RC methods to perform the task described above and provides the results in a user-friendly web interface. Although the fact that the cybersecurity context is considered for the case study, the proposed method can be easily applied to

many other different domains. This work is organized in multiple sections that can be detailed as follows. Section 2 provides an overview of current information retrieval and reading comprehension algorithms and applications. Section 3 describes the proposed solution, detailing both the software architecture and employed algorithms. In Section 4, our solution is applied to the case study and the obtained results are presented and discussed. Section 5 provides a summary of the main conclusions that can be drawn from this research and appoints further research topics to be addressed in the future.

2.Related Work.

Due to the multiple domains intelligent QA systems are connected to, we will analyze the literature on multiple different subjects. One of such subjects is text mining and document ranking systems, of which the internet and search engines are a great example [10]. Taking into account the scope of our work, we investigated weighing methods such as Term Frequency - Inverse Document Frequency (TF-IDF), Dense Passage Retrievers (DPR), and word embeddings.

In [11], Shahzad Qaiser et al., employs a TF-IDF ranking system to several web pages in order to compare results. TF-IDF is the most utilized weighting scheme for web searches of information retrieval and text mining [12]. The author also points TF-IDF's biggest issue, which is not identifying different tenses of words. In the same manner, Joel L. Neto et al. in [13] employs a modified version of TF-IDF, TF-ISF, applying stemming to reduce the impact of this classification method's weaknesses.

In [14], Karpukhin and O˘gus et al., utilized the standard BERT pre-trained model and a DPR in a dual encoder architecture achieving state of the art results. Their DPR exceeds BM25's capabilities by far, namely a more than 20% increase in top-5 accuracy (65.2%). Their results for end-to-end QA accuracy also improved on ORQA, the first open-retrieval question answering system, introduced in [15] by Lee et al., in the natural questions dataset [16].

Regarding word embedding, in which a document's words are mapped as vectors in a continuous vector space, words with similar meanings will be closer to one another, aiding in dimensionality reduction [17]. In [18], Tomas Mikolov et al. demonstrates

the application of a skip-gram model, a more computational efficient architecture, to mapping words to a vectorial space, and the same model but focusing on phrases.

On the other hand, the Q&A task involves the search for relationships and meaning between entities. Due to the nature of language, this search becomes extremely complex, given that context can change the meaning of any sequence of words. In NLP, the key to solve entity-related tasks is to create a model to learn the optimal way of entity representation.

Ordinarily, each entity in the Knowledge Base (KB) is assigned an embedding vector, capturing information in it. Due to the scope restriction of this method, entities that are outside of the KB are not represented and therefore any model built on top of it performs poorly.

To solve this issue, Contextual Word Representations (CWR) are employed with generalized word representations that serve multiple purposes. These CWRs are based on the transformer architecture, most notably BERT [7] and following improvements such as RoBERTa [8] that perform extremely well in a wide range of NLP tasks such as document classification and entanglement, sentiment analysis, question answering, sentence similarity, etc.

These representations are obtained by training a model on a large-scale corpus and can then be transferred to other network-based models, allowing them to improve search-related tasks such as the relevant question context as shown by Wei Yang et al. in [19] where, in an end-to-end QA system, the integration of BERT outperformed previous implementations by significant margins.

3. Proposed Solution.

To solve the introduced problem we built a prototype using the python programming language on top of the haystack framework [20]. The system was designed as a client-server architecture with two main components, the front-end, a web based graphical interface that can be accessed by the users and the back-end, a RESTful API that exposes the use cases of our solution through several endpoints. Additionally, there is also an SQLite database which is used to store preprocessed scientific articles.

The back-end side of our application can also be further detailed into two distinct modules, a web-crawler, which is integrated with arXiv.org API so that it can fetch scientific articles in real time, and a search engine, which combines two distinct NLP methods, a retriever and a reader, to build a pipeline that is able to find candidate answers in our corpus to user-specified questions.

The proposed system regards three main use cases that can be described as follows:

– UC1 - Download Scientific Articles: The user specifies a given search topic and the maximum number of articles to be downloaded. The crawler tries to find articles related to the specified topic and downloads all articles until the maximum limit is reached. Then, the documents are preprocessed - empty lines are removed, consecutive whitespaces are truncated and pdf headers and footers are discarded. After preprocessing, the text of each document is split into several search chunks of 500 words (respecting sentence boundary) so that the search process can be optimal. Finally, each resulting chunk is indexed, along with the document meta-data, in the document database.

– UC2 - Consult Database Summary: In the main dashboard of the graphical interface a summary of the document database content is displayed so that the user can keep track of the changes to the available corpus. The database summary is comprised of several data points such as the number of downloaded articles, search chunks and document categories.

– UC3 - Find Candidate Answers: The user places a question to the system and specifies several search parameters such as a category filter, the number of candidate answers to be displayed, c, and the maximum number of relevant search chunks to be found by the retriever, k. The system will first execute the retriever, a TF-IDF-based retriever which will return the most relevant k chunks. Then, the reader, a RoBERTa model, will try to find the best c answers in the selected k chunks according to a confidence metric.

The described solution is quite generic since it is easy to enrich the search corpus with the contents of scientific publications of different subjects due to the execution of

UC1. However, for this concrete implementation it would only be possible to find articles stored in the arXiv.org repository. Nonetheless, this feature can be easily expanded by integrating the existing web crawler with other scientific repositories.

Regarding UC3, the proposed NLP pipeline is also quite broad, the retriever, TF-IDF is not context-specific and can easily be used for multiple domains. On the other hand, the reader, RoBERTa, requires training examples comprising different questions and answers. To overcome this limitation, we opted to use a model that was pre-trained on the SQuAD dataset [21]. This data collection comprises over 100,000 examples of questions posed by crowdworkers on a set of Wikipedia articles [5] resembling a good benchmark dataset for training and evaluating general-purpose extractive Q&A machine learning models. The RoBERTa model employed in our solution, [21], achieved an exact match score of approximately 79.97% and an f1-score of 83.00% under this testbed. In our experiments, the search engine performed quite competently being able to find interesting answers to several questions that were placed regarding the cybersecurity domain.

It is possible to further improve the proposed solution by adding new functionalities regarding the database management, namely, to perform listings of downloaded articles accordingly to a combination of search criteria, to manually import a given scientific article and to delete unwanted articles.

3.1 Pipeline Description.

All steps of the search pipeline are described in this section.

Retriever. In order to search through relevant information, a TF-IDF retriever was put in place. It is a numerical statistic that is intended to reflect how important a given word is to a document in a corpus. In the scientific question and answering domain, it is expected that the queries will have lexical overlap with their answers, making this algorithm a good searcher of relevant information.

Reader. Another critical step of our pipeline is the question understanding step. Here we need to be able to properly understand the question at hand. By being able to properly model it in such a way that it can then be passed through the pipeline and improving the chances of getting not only accurate but also relevant answers. For this

step, we use a FARM reader coupled with the RoBERTa [8] language model which works alongside the retriever and parses the candidate documents provided. RoBERTa is an iteration of the BERT [7] language model whose architecture is based on the Transformer architecture. This new architecture disregards recurrence and convolutions from the usual encoderdecoder models and instead focuses on several types of attention mechanisms. It introduces several novelties such as sclaled-dot product attention, multi-head attention and positional encoding. At each time step the output of the decoder stack is fed back to the decoder similarly to how the outputs of previous time steps are used as hidden states in Recurrent Neural Networks (RNN) [6].

RoBERTa is also trained on a much larger corpus than BERT and as a result, achieves significant performance gains.

4. Case Study.

Despite the usefulness and generalization of our solution, which allows it to be applied to numerous topics, for our case study we have decided to focus on a current and challenging research topic - cybersecurity. For this reason we compiled a list of keywords related to that topic that we used to find relevant articles to build our search corpus.

Each one of these articles was downloaded and processed as per the pipeline indicated in the previous section. After processing, the articles were split into chunks of 500 words while taking into account sentence continuity. With the finalization of this step, our corpus was composed of 12827 search chunks from 821 different articles of about 36 categories.

4.1 Results.

The introduced solution has a main dashboard, on the left some search configuration sliders and database related information is located. In the middle there are two buttons to navigate between the database management and search engine functionalities.

With the corpus prepared, it is then possible to start asking questions. By asking: «What are the challenges of AI? », the most interesting candidate answer is presented in Figure 4, due to its high probability (confidence) score. This answer is highlighted

in its surrounding context, accompanied by additional information such as title, authors, publishing date, and a link to the article itself.

As the question is vague in nature, and the prepared corpus is geared more towards cybersecurity instead of AI, the obtained answer «explainability and resilience to adversarial attacks» also tends to the cybersecurity side of AI, due to the nature of the used article

Another example is the question, «What are the main challenges of cybersecurity research?» which yielded interesting results. The first answer correctly quotes [23] and responds with «lack of adequate evaluation/test environments that utilize up-to-date datasets, variety of testbeds while adapting unified evaluation methods», while the second answer builds on the first one with «lack of research methodology standards» [24]. Finally, by asking «Which machine learning models are commonly used?» we obtain «Naive Bayes, SVM, KNN, and decision trees» from [25] and virtually the same answer «Support Vector Machine, Decision Trees, Fuzzy Logic, BayesNet and Naive Bayes» from [26]. The quality of the responses found is directly connected to the contents of the corpus. This can be remedied by populating the corpus with more articles pertaining to a given topic or adding a new topic entirely. For this we can access the database management functionality, and specify a given search topic and the maximum number of documents to be downloaded. These will be directly fetched from arXiv.org, preprocessed and indexed alongside their metadata in the document database.

Our solution for the cybersecurity use case performed admirably, by compiling a corpus of 821 articles on five of the hottest research topics in the field and by finding interesting answers to a set of significant questions regarding applications of AI to cybersecurity and the main challenges of current research. Regarding the extractive Q&A pipeline, the RoBERTa model exhibited a notable adaptation capability since it was not retrained in the scope of the cybersecurity scientific domain.

5. Conclusion.

Given the amount of scientific articles that are published every year it is hard to find exactly what we are looking for when researching a particular topic. In this work,

we have presented a software solution that aims to solve this problem. It comprises several advantageous features such as the continuous update of the search corpus by providing an easy-to-use integration with the arXiv.org API and the ability to find candidate answers extracted from the corpora of downloaded scientific publications by applying a combination of two NLP methods, TF-IDF and RoBERTa.

Furthermore, the introduced solution was showcased in the context of cybersecurity, a neoteric field of science with increasing interest. With a base corpus of 821 articles, the system was able to find proper answers to questions such as «What are the challenges of AI?», «What are the main challenges of cybersecurity research?» and «Which machine learning models are commonly used?» showing a great capability of generalization. As future work, we will implement additional features regarding the document database management, expand the web crawler so that it can work with more scientific repositories and improve the document preprocessing step to make our search engine more efficient.

(Link: https://arxiv.org/abs/2107.00082)

Exercise #8. Read the article Ex. #7.

a) focus on key technical concepts like NLP, TF-IDF, RoBERTa, and cybersecurity. Identify the main problem the study addresses and the proposed solution;

b) take notes on the system architecture, key terms, and use cases (UC1–UC3);

c) summarize, using 5–6 sentences, your own words, focusing only on the essential points: «What the study is about», «What problem it solves», «How it works», «Why it's important».

Exercise #9. Write a Summary of the technical text, using the following instruction.

1. Read the entire text or abstract carefully.
2. Identify the main idea and purpose of the study.
3. Identify key elements:

- The problem the authors are solving (difficulty in finding information in cybersecurity research);

- The proposed solution (a search engine combining IR and NLP algorithms);
- The methods and technologies used (e.g., TF-IDF, RoBERTa, Reading Comprehension);
- The scope of application (cybersecurity, with potential for other domains).
- The main results (system's effectiveness, adaptability, and future improvements).

4. Write a summary in your own words, covering:

- What the article is about?
- Why it's important?
- What methods were used?
- What results were achieved?
- How it can be applied further

5. Keep it concise: your summary should be 1 paragraph (6–8 sentences) and without copying original sentences.

Exercise #10. After writing your summary, discuss the following in small groups:

1. Why is this research important for the field of cybersecurity or information technology?
2. What are the strengths and weaknesses of the proposed solution?
3. Can this solution be applied in your country or field of study? How?
4. What questions would you ask the authors if you could meet them?

Exercise #11. Role Play: «Conference». In pairs or small groups, simulate a tech conference.

Assign roles:

- One student is the author of the article.
- Others are audience members (e.g., cybersecurity researchers, AI experts, policy makers)

Instruction:

- The «author» briefly presents the main idea (2–3 minutes).
- Others ask questions or raise concerns (e.g., cost, data privacy, limitations).
- Practice follow-up questions and respectful argumentation.

Exercise #12. Problem–Solution Discussion. Based on the text, discuss: "What other fields besides cybersecurity could benefit from this type of search engine?"

Instruction:

1. Each student suggests one field (e.g., IT, education).
2. Justify the choice with 1–2 arguments.
3. Compare and evaluate which field might benefit most and why.

Exercise #13. Rewrite each sentence into the Passive Voice.

1. Researchers use TF-IDF to extract relevant chunks of information.
2. The system processed all scientific publications in the repository.
3. The developers will implement new evaluation methods in the next update.
4. A web crawler collects metadata from thousands of pages.
5. The algorithm detected the sentence boundaries incorrectly.
6. Engineers are designing a new user interface for the search engine.
7. The team has updated the dashboard with real-time analytics.
8. Developers store preprocessed data in the scientific repository.
9. The researchers tested the machine learning model in a controlled test environment.
10. The system will generate a confidence score for each suggested answer.

Exercise #14. Choose the correct passive form.

1. The chunk of text ___ by the algorithm.

   a) is extracted

   b) extracts

   c) was extract

2. Metadata ___ from scientific publications.
   a) are collecting
   b) is collected
   c) collects
3. A new evaluation method ___ in the last version.
   a) was implemented
   b) implemented
   c) is implement
4. The system ___ to retrieve relevant documents.
   a) has used
   b) has been used
   c) have been used
5. Sentence boundaries ___ incorrectly.
   a) was detected
   b) are being detected
   c) were detected
6. The web crawler ___ to scan open-access repositories.
   a) is configured
   b) configures
   c) was configure
7. All articles ___ before being added to the corpus.
   a) preprocess
   b) are preprocessed
   c) are preprocessing
8. The final results ___ on the dashboard.
   a) displays
   b) are displayed
   c) is displayed
9. The scientific repository ___ regularly.
   a) is updated

b) updates

c) has update

10. Machine learning models ___ for specific tasks.

a) are trained

b) trains

c) was trained

Exercise #15. Fill in the blanks with the correct passive form of the verbs in brackets.

1. A new cybersecurity policy _____ (develop) by the research team.
2. Scientific data _____ (store) in a secure repository.
3. The user interface _____ (design) to improve accessibility.
4. All documents _____ (preprocess) before indexing.
5. The most relevant chunks _____ (highlight) by the TF-IDF algorithm.
6. Search parameters _____ (define) by the system automatically.
7. The transformer architecture _____ (use) in many NLP applications.
8. A new test environment _____ (set up) for evaluating the model.
9. Metadata _____ (extract) during the crawling process.
10. The Q&A system _____ (train) on a large-scale dataset.

Exercise #16. Change from Active to Passive and vice versa.

Passive → Active

1.The confidence score is generated automatically. →

2.Preprocessing has been completed. →

3.The machine learning model was trained by the team.→

4.Metadata is collected during the crawling process. →

5.A summary has been displayed on the dashboard. →

6.TF-IDF was used to retrieve relevant chunks.→

Active → Passive

1. Experts analyze the test environment.→

2. The algorithm will rank the documents.→

3. Developers design user interfaces for mobile access.→

4. The search engine retrieves the top results.→

5. The system processes the corpus daily.→

6. Researchers will review the evaluation methods. →

Exercise #17. Read the technical description and complete the sentences using the correct Passive Voice tense:

In a modern scientific search system, large volumes of data (1) _____ (process) automatically before any search operation starts. Each document (2) _____ (divide) into smaller chunks to improve retrieval accuracy. These chunks (3) _____ (index) in a specialized database, and their metadata (4) _____ (store) for future filtering.

To identify relevant information, TF-IDF (5) _____ (use) as the initial information retrieval method. Then, a more advanced machine learning model (6) _____ (apply) to the top-ranked chunks. In most systems, the sentence boundaries (7) _____ (detect) to avoid breaking logical units of text.

The final answer to a user's query (8) _____ (generate) by a question answering system, which typically runs on a transformer architecture like RoBERTa. Once an answer (9) _____ (select), a confidence score (10) _____ (assign) to show how reliable the result is.

The results (11) _____ (display) on a clean and accessible user interface. A summary of all indexed documents (12) _____ (present) in the dashboard, where updates (13) _____ (track) regularly. All raw documents (14) _____ (fetch) by a web crawler from a trusted scientific repository and (15) _____ (preprocess) before indexing.

Exercise #18. Complete the dialogue with the correct passive voice form of the verbs in brackets.

Alex: You won't believe this! The whole scientific repository just crashed. None of the articles (1) _____ (can / access) right now.

Nina: What?! But I thought the database (2) _____ (back up) every 6 hours?

Alex: That's what I thought too! But it seems the last backup (3) _____ (not / do). Also, most of the metadata (4) _____ (corrupt) during the process.

Nina: Unbelievable... And what about the TF-IDF module? Was it affected?

Alex: Yes, the documents (5) _____ (not / index) properly. The search engine completely failed during testing. No relevant chunks (6) _____ (retrieve) at all.

Nina: Ugh, this is a disaster. At least tell me the web crawler (7) _____ (stop) before it started downloading broken files?

Alex: Unfortunately, no. Several gigabytes of corrupted data (8) _____ (already / store) in the system. And the worst part? The dashboard (9) _____ (not / update) since last night!

Nina: Wow... I hope the evaluation report (10) _____ (not / send) yet!

Alex: Not yet. But the test environment (11) _____ (schedule) for deployment today, so we need a fix ASAP.

Nina: Okay, let's not panic. First, the corrupted files (12) _____ (isolate), and then a clean set of documents (13) _____ (reprocess). I'll check if our machine learning model (14) _____ (can / retrain) in time.

Alex: Perfect. I'll make sure all sentence boundaries (15) _____ (re-detect) correctly. We've got this!

Exercise #19.

a) watch the video on YouTube «An AI Search Engine Built for Academic Research - Consensus Walkthrough»;

b) pay attention to how the AI search engine works and what features it offers.

Link: https://www.youtube.com/watch?v=MQK0f_IYS8M

c) answer the questions:

1. What is the purpose of the Consensus tool?
2. How does it help in academic research?
3. Which technical features or processes are demonstrated?

d) summarize the main function of the tool in 4–5 sentences using your own words.

Exercise #20. Choose one of the articles and identify:

a) the research problem;

b) the proposed solution;

c) the methodology;

d) the scope and domain;

e) key results.

Underline or highlight each part and write short comments in the margins.

1. Studying Ransomware Attacks Using Web Search Logs
   https://arxiv.org/abs/2005.00517
2. CYCLOSA: Decentralizing Private Web Search Through SGX-Based Browser Extensions
   https://arxiv.org/abs/1805.01548
3. Artificial Intelligence for Cybersecurity: Literature Review and Future Directions
   https://www.sciencedirect.com/science/article/pii/S1566253523001136
4. The Impact of Artificial Intelligence on Organisational Cyber Security
   https://www.sciencedirect.com/science/article/pii/S2543925123000372
5. «A Search Engine for Scientific Publications: A Cybersecurity Case Study»
   https://arxiv.org/abs/2107.00082
6. NLP-Powered Repository and Search Engine for Academic Papers: A Case Study on Cyber Risk Literature with CyLit.
   https://www.themoonlight.io/en/review/nlp-powered-repository-and-search-engine-for-academic-papers-a-case-study-on-cyber-risk-literature-with-cylit?utm_source=chatgpt.com

Exercise #21.

a) select one article from Ex. #19;

b) read the abstract and key sections of the article (introduction, methodology, results, conclusion);

c) write a reference summary (1–1.5 pages) in your own words. Include the following:

- Title and source of the article.
- Purpose of the research.
- Main problem discussed.
- Methodology and tools used.
- Key findings and conclusions.
- Relevance and possible applications.

Exercise #22. Choose the correct answer (a, b, c or d) for each question.

Test #3.

Part I. Choose the correct answer.

1. *_____ is essential for protecting sensitive data from unauthorized access.*
   a) Data analysis
   b) Cybersecurity
   c) Network design
   d) Software development
2. *The process of converting analog information into digital format is called _____.*
   a) Digitalization
   b) Encryption
   c) Compression
   d) Simulation
3. *A _____ is a scholarly article that presents original research findings.*
   a) Blog post
   b) Scientific publication
   c) News report
   d) Editorial
4. *Google is a widely used _____ that helps users find information online.*
   a) Web browser
   b) Search engine
   c) Operating system
   d) Email client
5. *_____ involves the process of obtaining relevant information from large datasets.*

a) Data mining

b) Information retrieval

c) Data entry

d) Information storage

6. *The _____ is a deep learning model architecture that has revolutionized natural language processing.*

a) Convolutional network

b) Recurrent network

c) Transformer architecture

d) Decision tree

7. *A _____ system can automatically respond to user queries with relevant answers.*

a) Chatbot

b) Question answering

c) Recommendation

d) Translation

8. *In text processing, a _____ refers to a segment or piece of text.*

a) Paragraph

b) Sentence

c) Chunk

d) Token

9. *A _____ systematically browses the web to index content for search engines.*

a) Web crawler

b) Browser

c) Firewall

d) Proxy server

10. *The _____ algorithm evaluates the importance of words in documents.*

a) TF-IDF

b) K-means

c) Naive Bayes

d) SVM

11. _____ *represents words in vector space to capture semantic meaning.*

a) Word embedding

b) Tokenization

c) Lemmatization

d) Parsing

12. Detecting the _____ *is crucial for accurate sentence segmentation.*

a) Sentence boundary

b) Paragraph break

c) Clause

d) Phrase

13. A high _____ *indicates strong confidence in the model's prediction.*

a) Confidence score

b) Error rate

c) Loss function

d) Precision

14. Adjusting _____ *can refine search results to better match user intent.*

a) Search parameters

b) Cookies

c) Cache settings

d) Display resolution

15. _____ *provides additional information about data, such as author or date.*

a) Metadata

b) Content

c) Index

d) Summary

Part II. Choose the correct answer.

1. *A new cybersecurity protocol ___ by the research team last month.*
   a) is developed
   b) was developed
   c) has developed
   d) develops
2. *The scientific publication ___ in a leading repository.*
   a) will publish
   b) published
   c) was published
   d) is publishing
3. *A transformer architecture ___ to improve question answering systems.*
   a) uses
   b) is used
   c) used
   d) was use
4. *Metadata and sentence boundaries ___ during preprocessing.*
   a) are detected
   b) is detected
   c) detected
   d) are detecting
5. *The test environment ___ yet.*
   a) has not been set up
   b) has not set up
   c) is not set up
   d) has not been setting up
6. *Word embeddings ___ by many machine learning models to represent meaning.*
   a) were used
   b) are used

c) is used

d) be used

7. *The chunks of text ___ according to sentence boundaries.*

a) have split

b) was split

c) were split

d) are spliting

8. *A user-friendly interface ___ to support digitalization efforts.*

a) was designed

b) is designing

c) has design

d) designs

9. *TF-IDF scores ___ to identify relevant keywords.*

a) calculate

b) are calculated

c) calculated

d) is calculating

10. *The confidence score ___ in the final output.*

a) is included

b) was including

c) includes

d) include

11. *All documents ___ automatically by the web crawler.*

a) are scanned

b) scan

c) was scanned

d) were scanning

12. *The dashboard ___ to provide real-time system feedback.*

a) developed

b) has developed

c) was developed

d) develops

13. *Evaluation methods ___ in the latest study.*

a) was used

b) were used

c) is used

d) using

14. *A detailed database summary ___ on the home screen.*

a) displays

b) is displayed

c) was displaying

d) displayed

15. *Search parameters ___ to retrieve only the most relevant results.*

a) were configured

b) was configured

c) configure

d) are configuring

UNIT #4

Software Engineering as a Branch of Computer Science

Exercise #1. Read the words with the translation.

I. Parts of a Computer – частини комп'ютера

1. Monitor – монітор
2. Keyboard – клавіатура
3. Mouse – миша
4. CPU (Central Processing Unit) – центральний процесор
5. Motherboard – материнська плата
6. RAM (Random Access Memory) – оперативна пам'ять
7. Hard drive / HDD / SSD – жорсткий диск / твердотільний накопичувач
8. Graphics card (GPU) – відеокарта
9. Power supply unit (PSU) – блок живлення
10. Cooling system / fan – система охолодження / вентилятор
11. Ports (USB, HDMI, etc.) – порти
12. Speakers – динаміки
13. Webcam – вебкамера

II. Computer Essentials – основи комп'ютерної грамотності

1. Hardware – апаратне забезпечення
2. Software – програмне забезпечення
3. Operating System (OS) – операційна система
4. Desktop – робочий стіл
5. File – файл
6. Folder – папка
7. Icon – значок
8. Menu bar / Taskbar – панель меню / панель завдань

9. Shortcut – ярлик
10. Browser – браузер
11. Application / App – застосунок
12. Update – оновлення

III. Functions of a PC – функції комп'ютера

1. Input – введення
2. Process – обробка
3. Storage – збереження
4. Output – виведення
5. Connect – підключення
6. Network – мережа
7. Calculate – обчислювати
8. Edit documents – редагувати документи
9. Play media – відтворювати медіа
10. Run software – запускати програмне забезпечення
11. Browse the Internet – переглядати інтернет

IV. Types of Computer Systems – типи комп'ютерних систем

1. Desktop computer – настільний комп'ютер
2. Laptop / Notebook – ноутбук
3. Tablet – планшет
4. Smartphone – смартфон
5. Server – сервер
6. Supercomputer – суперкомп'ютер
7. Embedded system – вбудована система
8. Wearable device – переносний пристрій

Exercise #2. Read and translate the text.

Introduction to Software Engineering

Software engineering is a discipline that focuses on the design, development, and maintenance of software systems. It combines knowledge of programming, computer systems, and user needs to create efficient and reliable applications.

Every software product runs on hardware, which includes components such as the CPU (Central Processing Unit), RAM, motherboard, hard drive (HDD or SSD), graphics card (GPU), and the power supply unit (PSU). These parts are protected and cooled by a cooling system with one or more fans. Devices like the monitor, keyboard, mouse, speakers, and webcam serve as input and output tools for communication between the user and the machine.

Software engineers must understand the operating system (OS), which manages the hardware and allows users to interact with the system through a desktop, icons, a menu bar, and a taskbar. Files are organized in folders, and users often create shortcuts for quick access. Engineers develop applications (apps) that allow users to edit documents, play media, run software, and browse the Internet via a browser.

A software engineer considers how information is input, processed, stored, and output by a computer. The engineer also ensures that systems can connect to a network and perform tasks like calculating large amounts of data.

Different types of computer systems, such as desktop computers, laptops, tablets, smartphones, servers, mainframes, supercomputers, embedded systems, workstations, and wearable devices, all require software tailored to their specific functions. Regular updates help improve performance and security.

In conclusion, software engineering plays a vital role in making technology useful, efficient, and user-friendly by combining deep technical knowledge with problem-solving skills.

Exercise #3. Read the text Ex. #2. Mark the following statements as true (T) or false (F).

1. Software engineering focuses only on writing code.
2. Hardware includes components like CPU, RAM, and hard drives.
3. The cooling system and fans are used to increase sound quality.
4. The mouse, keyboard, and webcam are examples of input/output devices.
5. The operating system helps manage hardware and provides a user interface.
6. Files are always stored on the desktop, not in folders.
7. Applications can be used to browse the Internet or edit documents.
8. Software engineers do not need to understand networks.
9. Supercomputers and smartphones require the same software.
10. Regular updates help maintain and improve software systems.

Exercise #4. Answer the following questions.

1. What is the main focus of software engineering?
2. What components are included in computer hardware?
3. What is the function of a cooling system in a computer?
4. Name three input or output devices mentioned in the text.
5. What does the operating system manage?
6. How do users interact with the operating system?
7. Where can users organize their files?
8. What is the purpose of creating shortcuts?
9. What types of tasks can applications perform?
10. Which device do users need to browse the Internet?
11. What four actions does a computer perform with information?
12. Why is it important for a software engineer to understand networks?
13. List at least four types of computer systems mentioned in the text.
14. Why do different devices need different types of software?
15. How do updates contribute to the software's performance?

Exercise #5. Fill in the gaps, using the words.

monitor, keyboard, mouse, CPU, motherboard, RAM, hard drive, graphics card, Power supply unit, cooling system, ports, speakers, webcam.

1. The _____ displays images and allows users to see what they are working on.
2. To type text, you need a _____.
3. A _____ helps move the cursor and click on icons or links.
4. The _____ is the brain of the computer that processes all instructions.
5. All main components are connected to the _____.
6. _____ is temporary memory that stores data currently in use.
7. Files and applications are permanently stored on the _____.
8. The _____ processes images and videos, especially in games or graphic software.
9. The _____ converts electricity and powers all components.
10. A _____ prevents the computer from overheating.
11. You plug in external devices using _____ such as USB or HDMI.
12. To hear sound from your computer, you need _____.
13. For video calls, a _____ is often used.

hardware, software, Operating System (OS), desktop, file, folder, icon, taskbar, shortcut, browser, application, update.

1. A computer has two main parts: _____ and _____.
2. The _____ controls the computer's hardware and allows other programs to run.
3. The _____ is the main screen that appears after the computer starts.
4. Each document saved on a computer is called a _____.
5. You can organize your files by placing them into a _____.
6. An _____ is a small picture that represents a file, folder, or application.
7. The _____ is usually found at the bottom of the screen and shows running programs.

8. A _____ is a quick way to open a file or program without searching for it.
9. To access websites, you need a _____ such as Chrome or Firefox.
10. A computer _____ is a program that performs a specific function, like editing text.
11. It's important to install an _____ to fix bugs and improve performance.

input, process, storage, output, connect, network, calculate, edit documents, play media, run software, browse the Internet.

1. When you type with a keyboard or click with a mouse, you are providing _____.
2. The CPU is responsible for the _____ of all instructions and data.
3. A hard drive or SSD is used for long-term _____ of files and programs.
4. Information is displayed on the screen as an example of _____.
5. You need to _____ to Wi-Fi to go online.
6. A group of connected computers and devices forms a _____.
7. Computers can quickly _____ complex equations.
8. Word processors allow users to _____ such as reports and letters.
9. With a media player, you can _____ like music and videos.
10. To use any program on your PC, you must first _____ it.
11. You can _____ to find information, watch videos, or check email.

desktop computer, laptop, tablet, smartphone, server, supercomputer, embedded system, wearable device.

1. A _____ is usually used at a desk and is not meant to be portable.
2. A _____ is portable and folds open like a book.
3. A _____ has a touchscreen and is often used for reading, browsing, or drawing.
4. A _____ fits in your pocket and is used for calls, messages, apps, and the Internet.

5. A _____ manages data and services for multiple users in a network.
6. A _____ performs billions of calculations per second and is used for scientific research.
7. An _____ is built into another machine, like a washing machine or car.
8. A smartwatch is an example of a _____ that you can wear on your body.

Exercise #6. Work in pairs or groups. Write down as many words as you can related to «software engineering», «computers» or «technology» in 2 minutes. Then, share your list with the class.

Exercise #7. Read the statements below. Decide whether you think each one is true or false before reading the text. After reading, check your answers.

1. Software engineers usually work alone.
2. Supercomputers are only used in gaming.
3. All software is perfect and never needs updating.
4. Software engineering is important for healthcare and science.

The Evolutionary Role of Software Engineering. Myths and Technologies

Software engineering has transformed the way we live, work, and communicate. In the early days of computing, software consisted of simple instructions to control machines. Today, it powers everything from desktop computers and laptops to smartphones, supercomputers, and even wearable devices like fitness trackers.

As technology evolved, so did the role of software engineers. They are no longer just coders sitting behind a monitor. They are system architects, problem-solvers, and innovators. Their work involves building intelligent systems that combine hardware – such as the CPU, RAM, motherboard, graphics card, and power supply unit (PSU) – with software, which includes the operating system (OS), applications, and user-friendly interfaces with icons, a taskbar, and shortcuts.

One common myth is that software engineers work alone. In reality, most modern software is built in teams using collaborative tools and cloud platforms. For example, developers might work together across continents to create apps that allow users to edit documents, play media, or browse the Internet using a browser.

Another myth is that software never fails. But every system, from a basic tablet to a complex server, depends on regular updates to fix bugs, improve performance, and stay secure. Without updates, software can become outdated or vulnerable to cyberattacks.

Software engineering also plays a key role in science and medicine. Supercomputers simulate climate change models or analyze genetic data. Embedded systems control everything from traffic lights to space probes. And wearable devices help monitor health and fitness in real time.

At the core of all these technologies are four basic operations: input, process, storage, and output. Whether you're entering text with a keyboard, watching a video on a monitor, or calculating large datasets, these steps are essential. Engineers must also ensure reliable connectivity through networks, making sure that users around the world can access services instantly.

In conclusion, software engineering is a constantly evolving field. It shapes how we interact with technology and each other. It combines logic, creativity, and science – and its impact is only growing. As we move toward more intelligent systems, from AI to robotics, the role of software engineers will be more important than ever.

Exercise #8. Choose the correct answer, using the information from the text.

1. What was the main function of early software?

a) To connect computers to the Internet

b) To control machines using simple instructions

c) To simulate human intelligence

d) To store multimedia content

2. According to the text, software engineers today are also

a) Hardware designers only

b) Taskbar developers

c) Architects and innovators

d) Independent freelancers

3. What is a common myth about software engineers?

a) They build hardware systems

b) They only work alone

c) They never use cloud platforms

d) They don’t update systems

4. Why are regular updates necessary for software?

a) To redesign icons and shortcuts

b) To change the appearance of apps

c) To fix bugs and improve security

d) To create more myths

5. What is not mentioned as a role of supercomputers in the text?

a) Climate modeling

b) Genetic analysis

c) Online gaming

d) Scientific research

6. What is the correct sequence of core operations in computing, as mentioned?

a) Storage – Output – Process – Input

b) Process – Input – Storage – Output

c) Input – Process – Storage – Output

d) Output – Input – Storage – Process

7. Which devices are mentioned as being powered by modern software?

a) Typewriters and radios

b) Desktop computers and wearable devices

c) Analog phones and faxes

d) Film projectors and telegraphs

Exercise #9. Put the following words into the correct categories.

Words: CPU, browser, run software, tablet, monitor, application, input, wearable device, edit documents.

Hardware	Software	Activities	Devices

Exercise #10.

a) read the dialogue below between three friends discussing the role of software engineering in our modern world;

b) identify and underline 5 pieces of technical words (e.g., software engineering, AI, wearable devices);

c) discuss in pairs: Has any smart device ever surprised or annoyed you? Why?

Alex: Can we all agree that software engineering is basically the reason the modern world works? Without us, society would still be using paper maps and typewriters.

Mira: Sure, Alex, but not everyone wants to spend their life writing code in a dark room with only a cooling fan for company.

Leo: Exactly. And don't forget the myth that software is perfect. Ever heard of a thing called Windows Update at 2 AM? Yeah, total disaster.

Alex: That's not a bug, that's... an unexpected feature. Anyway, we build systems that run everything – from wearable devices to supercomputers. That's pretty cool, isn't that?

Mira: It is. But you tech people always say «collaboration is key» and then spend hours arguing over indentation in Python. Explain that.

Leo: And let's talk about AI. It started by calculating data, now it's writing poems and stealing our jobs. Next stop: robot professors?

Alex: Hey, come on. AI still needs us. Without engineers, machines are just... boxes with blinking lights.

Mira: So are Christmas trees.

Leo: At least Christmas trees don't collect my data.

Mira: Okay, but software engineering does improve lives. Look at health tech. Wearables help track heart rate, sleep, even stress levels.

Alex: And we made it all happen. From the motherboard to the browser – we built the bridge between human and machine.

Leo: Yeah, and now the machines are marching across it with pitchforks and algorithms...

Mira: Let's just hope the AI in our smart fridge doesn't start judging our food choices.

Alex: Too late. Mine already asked if I «really needed that second slice of cake».

Leo: Okay. New rule: we let software engineers run the world... only if they promise not to let our fridges sass us.

Mira: Deal. But next update, I want my fridge to compliment my snack choices.

Alex: If my fridge ever recommends kale chips again, I'll unplug it.

Leo: I tried that once. The toaster threatened to unionize.

Mira: So… in the end, we software engineers really do run the world. Until the Wi-Fi goes down.

Exercise #11. Work in pairs or small groups. Read the discussion questions below and take turns sharing your thoughts. Use technical vocabulary where possible (e.g., algorithm, debugging, system design, hardware, interface). Be respectful of different opinions and try to support your ideas with examples or experience.

Discussion Questions:

1. Do you think software engineering should be considered a branch of computer science, or is it its own separate field? Why?
2. What are the key differences between a software engineer and a computer scientist?

3. Can someone be a great software engineer without deep knowledge of computer science theory (e.g., algorithms, data structures)?
4. How does software engineering connect theory and real-world application?
5. In what ways does software engineering impact our everyday lives?
6. Should software engineering be taught more like an engineering discipline (with labs, teamwork, and projects), or like a science (with theory and research)?
7. How has the role of software engineering changed in the last 10 years?

Exercise #12. Fill in the blanks with <u>can</u> or <u>could</u> in the correct form.

1. You _____ type fast using the keyboard instead of writing by hand.
2. We _____ save important files on the hard drive, but it filled up quickly.
3. The motherboard on our school computers _____ not support extra RAM.
4. In the past, the mouse _____ only move in two directions.
5. We _____ connect two screens to the computer using the monitor.
6. In 2005, most speakers _____ play sound, but with poor quality.
7. A hard drive _____ store large amounts of data, including videos and documents.
8. Without a motherboard, the computer _____ run any hardware components.
9. My previous setup _____ not power two monitors because the power supply unit was too weak.
10. You _____ move the pointer and click with the mouse.

Exercise #13. Transform the following sentences into negative and interrogative sentences.

1. A cooling system can help prevent the system from overheating.
2. We could connect any USB devices because the ports were broken.
3. You can plug in USB drives and headphones using the computer's ports.
4. My old laptop could barely support a second monitor.
5. Speakers can play sound from videos, games or music files.

Exercise #14. Complete the sentences using <u>can</u>, <u>could</u> or to <u>be able to</u>. Open the brackets.

1. Last week, I _____ the latest version of the (application), but now it's not compatible.
2. In the future, users _____ (update) their devices automatically using AI.
3. The graphics card _____ display high-quality images and videos.
4. Yesterday, the system crashed, and we _____ not (input) any data.
5. Soon, we _____ (store) more information thanks to cloud (storage) upgrades.
6. After the repair, the monitor _____ finally (output) the correct resolution.
7. I _____ type faster when the keyboard wasn't so worn out.
8. Will you _____ (connect) the printer to the (network) tomorrow?
9. The supercomputer _____ easily (calculate) millions of operations last year.
10. If you study more, you _____ (edit documents) more efficiently.
11. Were you _____ (connect) to the (network) during the outage?
12. That PC _____ crash if the cooling system stopped working.
13. The power supply unit _____ provide electricity to all the computer components.
14. Ten years ago, a standard graphics card _____ not run high-end games.

Exercise #15. Fill in the blanks with <u>may</u> or <u>might</u> in the correct form.

1. This computer problem ___ (be) caused by outdated software.
2. You ___ (lose) the file if you don't save it properly.
3. She ___ (use) the webcam during the interview tomorrow.
4. The issue ___ (come) from a damaged piece of hardware.
5. I ___ (put) the document in the wrong folder.
6. He ___ (click) on the wrong icon by mistake.
7. You ___ (find) the shortcut on your desktop.

8. This app ___ (not work) if your operating system isn't updated.
9. I think you ___ (need) to open it with a different browser.
10. Some users ___ (experience) delays when opening large files.

Exercise #16. Complete the sentences using <u>may</u>, <u>might</u> or <u>to be allowed to</u>.

1. Next year, students _____ use AI tools to complete some assignments.
2. He _____ not _____ enter the lab yesterday because he forgot his ID card.
3. We _____ to test the software.
4. They _____ have missed the webinar – the invitation link was broken.
5. She _____ not _____ use the admin panel last week due to security settings.
6. Now employees _____ work entirely remotely.
7. You _____ see the error message next moment.
8. The intern _____ not _____ access sensitive data without permission yesterday.
9. Tomorrow, I _____ to present my project in front of the whole team.
10. He _____ not have finished the coding task – it was too complex.

Exercise #17. Transform the following sentences into negative and interrogative sentences.

1. You might need to restart the browser for the extension to work.
2. Your operating system may require an update.
3. This shortcut may help you access the desktop faster.
4. She may have deleted the icon by mistake.
5. He might not know how to install the software.
6. We might use a different browser to access that website.

Exercise #18. Fill in the blanks with the correct form of <u>have to / has to</u>, <u>to be to</u>, <u>must</u>.

1. You _____ install the antivirus before using the new laptop.

2. All users _____ follow the security guidelines in this office.
3. She _____ submit the project by Friday – it's the deadline.
4. We _____ update the software regularly to avoid bugs.
5. The administrator _____ check all network settings tomorrow.
6. You _____ restart your device for the changes to take effect.
7. According to the manual, you _____ configure the router before use.
8. He _____ not share his password with anyone.
9. Students _____ complete the assignment online.
10. The technician _____ be at the lab by 8 AM for the installation.
11. All users ___ change their passwords every three months for security.
12. The developer ___ deliver the final version of the app by Friday.
13. You ___ not click on suspicious links in unknown emails.
14. This software ___ be tested before the official release.
15. Every team member ___ attend the weekly stand-up meeting.
16. He ___ configure the firewall settings before connecting to the network.
17. We ___ encrypt sensitive data before saving it.
18. This server ___ be restarted only during off-peak hours.
19. Students ___ submit their projects via the online platform.
20. The engineer ___ inspect all hardware components after the power surge.

Exercise #19. Transform the following sentences into negative and interrogative sentences.

1. She has to update the antivirus software every week.
2. We have to back up our files before shutting down the system.
3. They must follow the company's cybersecurity policy.
4. He has to replace the hard drive because it's damaged.
5. Students must submit their coding projects by Friday.
6. The manager is to check the network settings before the meeting.
7. Technicians are to finish the installation by noon.

Exercise #20. Complete the sentences using the correct modal verb form: can, could, will be able to, was able to, were able to, may, might, will be allowed to, was allowed to, has to, must, will have to.

The Invisible Engine: Software Behind the Scenes

A long time ago, people only used big computers in offices. They (1) _____ do simple things like write documents or do calculations. These old computers were called desktop computers.

Later, laptops became popular. People (2) _____ take them to work or school. It was easier to use a laptop than a desktop. People (3) _____ use them on a bus, in a café, or at home.

Today, we use many devices. A smartphone (4) _____ play music, run apps, and connect to the Internet. A tablet is like a big phone. It (5) _____ be good for watching movies or reading.

We also use wearable devices like smartwatches. They (6) _____ show the time, check your heart rate, and send messages. In the future, they (7) _____ help doctors check your health.

Software engineers write the programs for all these machines. They (8) _____ make apps better, fix bugs, and create new things. They work hard, and sometimes they (9) _____ work long hours. They (10) _____ protect our data and make sure systems are safe.

In some companies, workers (11) _____ use their own devices. In the past, they (12) _____ only use the company's computers. Now, rules are changing.

In the future, software engineers (13) _____ solve even bigger problems. They (14) _____ think about how to make technology helpful for everyone.

Exercise #21. Complete the dialogue using the correct modal verb form: Can, could, will be able to, was able to, were able to, may, might, will be allowed to, was allowed to, has to, must, will have to.

Alex: Did you know the first computers were as big as a room and ___ only do simple math? Now our phones ___ run games, maps, and even recognize our faces!

Mira: That's wild. And those early computers ___ do less than what a $10 calculator does today.

Leo: I saw a documentary — «the Apollo 11 mission» ___ land humans on the Moon with a computer less powerful than a smartwatch. NASA engineers ___ be insanely precise.

Alex: Fast forward to now: I ___ control my lights, fridge, and even coffee machine with my phone. I think soon, I ___ just think *«Espresso»* and it'll brew.

Mira: Nice dream. But seriously, developers today ___ keep up. With AI, updates, new languages—our brains ___ constantly shift gears.

Leo: I agree. Some coders ___ write entire apps in hours thanks to tools like Copilot or ChatGPT. But they still ___ understand logic, or AI will write nonsense.

Alex: Exactly. And as systems get smarter, we ___ regulate them. Otherwise, your smart vacuum ___ join a robot uprising.

Mira (laughs): Mine already tried to push the cat off the sofa! Anyway, schools ___ teach digital literacy early. Kids ___ learn not just how to use tech, but how it works.

Leo: In the next decade, even doctors ___ use AI to detect illnesses. But the tech ___ be transparent, or no one will trust it.

Alex: Totally. We ___ innovate, but also stay human. Software helps us evolve — but we ___ guide that evolution wisely.

Exercise #22.

a) watch the video on YouTube «What does a software engineer actually do?

Link: https://www.youtube.com/watch?v=iIxZrYzJJ7I

b) make a list of the software engineer's main duties mentioned in the video. Identify which of them you already knew and which ones were new to you. Discuss how these responsibilities might differ depending on the company or project.

c) write 5–7 sentences about what surprised or interested you the most in the video.

d) share your opinion: Would you like to work as a software engineer? Why?

Exercise #23. Read the list of essay topics below and choose one that interests you the most. Write an essay (200–250 words) expressing your opinion or analyzing the issue.

1. Is Artificial Intelligence a Friend or a Threat to Software Engineers?
2. How Software Engineering is Changing the Future of Education.
3. Smartphones vs. Computers: Which Device Do We Really Need?
4. Can You Imagine a World Without the Internet?
5. The Impact of Software Updates: Useful or Annoying?
6. Why Cybersecurity Should Be Everyone's Responsibility.
7. Do Video Games Help or Hurt Problem-Solving Skills?
8. How Wearable Technology is Changing Healthcare.
9. Remote Work and Cloud Tools: The New Normal for Engineers.
10. Should Everyone Learn Basic Coding at School?

Exercise #24. Choose the correct answer (A, B, C or D) for each question.

Test #4

Part I. Choose the correct answer.

1. What does a wearable device do?

A. It stores backup data only

B. It plays media for smart TVs

C. It can monitor health metrics like heart rate

D. It is a desktop computer used by doctors

2. Which of the following is not an input device?

A. Mouse

B. Keyboard

C. Monitor

D. Webcam

3. A supercomputer is mainly used for:

A. Watching YouTube videos

B. Light text editing

C. Complex calculations and simulations

D. Managing home networks

4. The role of the graphics card is to

A. Translate spoken words

B. Process visual output for the screen

C. Store large files permanently

D. Improve internet speed

5. A server usually:

A. Streams music to phones

B. Connects different computers on a network

C. Outputs signals to a monitor

D. Works only with wearables

6. A browser is used to:

A. Calculate data on servers

B. Open and view web pages

C. Secure wireless routers

D. Edit system files

7. The operating system is responsible for:

A. Connecting USB devices

B. Managing hardware and software

C. Creating music playlists

D. Printing documents

8. Icons on a desktop usually represent:

A. Files, folders, or shortcuts

B. Internet providers

C. Email passwords

D. Antivirus updates

9. A cooling system is necessary because:

A. It updates the CPU

B. It prevents overheating

C. It runs software faster

D. It stores digital files

10. A shortcut on your desktop allows you to:

A. Download viruses quickly

B. Access files and programs faster

C. Close all background tasks

D. Improve screen brightness

Part II. Choose the correct Modal Verb.

11. In the past, early computers _____ only perform basic arithmetic tasks.

A. may

B. must

C. could

D. will be able to

12. Future smartphones _____ analyze emotions based on voice and facial expressions.

A. was allowed to

B. might

C. had to

D. were able to

13. Engineers _____ restart the server manually during yesterday's failure.

A. will have to

B. can

C. was able to

D. were able to

14. I _____ update the software because I didn't have admin rights.

A. might

B. was allowed to

C. couldn't

D. have to

15. In the future, software engineers _____ design entire apps with AI assistance.

A. will be able to

B. might had to

C. was allowed to

D. have to

16. All users _____ accept the license agreement before installing the application.

A. must

B. might

C. were able to

D. may

17. Yesterday, only the IT team _____ access the main server room.

A. will be allowed to

B. might

C. was allowed to

D. has to

18. To prevent data loss, we _____ install the update tonight.

A. must

B. could

C. might

D. was allowed to

19. They _____ connect to the Wi-Fi because the network was down.

A. may

B. might

C. weren't able to

D. have to

20. If AI keeps developing, it _____ even write scientific papers someday.

A. must

B. might

C. had to

D. was allowed to

UNIT #5

Basic Concepts of Management and Time Management in IT

Exercise #1. Read the words with the translation.

1. Time management – управління часом
2. Behavior – поведінка
3. Psychological factor– психологічний чинник
4. Task completion bias – упередженість до завершення завдань
5. Sense of accomplishment – відчуття досягнення
6. Multitasking – багатозадачність
7. Planning fallacy – помилкове планування
8. Distractions – відволікання
9. Interruption – перерви / перебої
10. Break down tasks – розбивати завдання на частини
11. Focus time – час для концентрації
12. Implementation intentions – наміри дій
13. Efficiency – ефективність
14. Estimate – оцінювати (час, ресурси)
15. Ongoing process – безперервний процес
16. Self-awareness – усвідомлення себе / саморефлексія
17. Workflow – робочий процес /документообіг.

Exercise #2. Read and translate the text.

The Psychology of Time Management and 5 Strategies

Do you often feel like there's never enough time? While we all have the same 24 hours, the difference lies in how we manage our behavior during that time. Several psychological factors can make time management harder than it seems.

Task Completion Bias. People tend to start with small, easy tasks for a quick sense of accomplishment. This provides a brief reward but can delay more important tasks that lack immediate urgency. Over time, constantly prioritizing the urgent over the important can lead to stress and a lack of meaningful progress.

The Multitasking Trap. Important work often requires focused attention, known as deep work. However, multitasking – especially when we're overwhelmed – reduces efficiency and increases stress. Regular multitasking trains the brain to avoid deep concentration, making complex work harder.

Planning Fallacy.We usually overestimate how much time we have and underestimate how long tasks take. This is known as the planning fallacy. Distractions, breaks, and unexpected tasks eat away at our schedule, leaving less time for priorities than we assume.

What You Can Do:

1. Identify top priorities: Ask yourself, «If I could only complete one task today, what should it be? »

2. Break down tasks: Define small, achievable steps. Use task completion bias to your advantage by rewarding progress.

3. Protect focus time: Block time for deep work and minimize distractions (e.g., headphones, do-not-disturb signs, auto-replies).

4. Adjust time estimates: Halve your estimated available time and double how long you think a task will take. Track your accuracy.

5. Prepare for interruptions: Use simple «if-then» plans, like «If someone interrupts me, I'll suggest a time to talk later».

Time management isn't about finding one perfect method. It's an ongoing process of understanding your habits and adjusting your approach. Start small and experiment with strategies that fit your needs.

Exercise #3. Read the text Ex. #2. Mark the following statements as true (T) or false (F).

1. Everyone has different amounts of time in a day depending on their lifestyle.
2. Completing small tasks gives a temporary feeling of achievement.
3. Prioritizing urgent tasks all the time can reduce long-term stress.
4. Multitasking improves efficiency and supports deep work.
5. Deep work requires focused attention without interruptions.
6. The planning fallacy means we often underestimate how long tasks will take.
7. Scheduling breaks and distractions helps improve productivity.
8. Protecting time for deep work involves avoiding distractions.
9. Time management is a one-time solution that works the same for everyone.

Exercise #4. Answer the following questions.

1. What is the main idea of the text?
2. Why is time management described as a psychological challenge?
3. What is task completion bias and how does it affect productivity?
4. Why can focusing on small tasks be harmful in the long run?
5. What is «deep work» and why is it important?
6. How does multitasking impact our ability to perform complex tasks?
7. What is the planning fallacy and how does it influence our time estimates?
8. What strategy does the text suggest for identifying daily priorities?
9. How can people use task completion bias in a positive way?
10. Why is there any single perfect method for time management, according to the text?

Exercise #5. Fill in the gaps, using the words or phrases:

time management, behavior, psychological factor, multitasking, planning fallacy, distractions, interruption, focus time, efficiency, estimate, self-awareness.

1. Good _____ is not about doing more tasks, but doing the right ones at the right time.

2. One key _____ that affects productivity is how we react to stress and deadlines.
3. Constant _____ from emails and messages reduce our ability to stay on task.
4. We must schedule regular _____ to work deeply on important tasks.
5. Trying to handle many tasks at once, or _____, lowers both focus and performance.
6. A common mistake is the _____, when we think tasks will take less time than they really do.
7. Developing _____ helps us recognize our habits and improve our work strategies.
8. Interruptions and _____ during meetings make it hard to stay productive.
9. Learning how to _____ time more realistically helps avoid frustration.
10. Our daily work _____ plays a big role in how well we manage our schedule.
11. Improving your _____ often means saying «no» to non-essential tasks.
12. Effective _____ helps reduce stress and increase job satisfaction.

Exercise #6. Read the sentences and choose the correct words or phrases.

1. We should set our daily _____. (priority / distraction / interruption)
2. Multitasking can reduce your _____. (efficiency / planning / urgency)
3. I always fall into the _____ when estimating time. (bias / fallacy / strategy)
4. Working in silence helps me focus on _____. (deep work / self-awareness / behavior)
5. To reduce stress, I make a list and _____ my tasks. (estimate / break down / distract)
6. We all have the same amount of time, but our _____ affects how we use it. (behavior / efficiency / urgency)

7. I use headphones to avoid _____ while working. (interruptions / intentions / planning)
8. One helpful method is to form _____ like «If X happens, then I'll do Y.» (implementation intentions / distractions / priorities)
9. The feeling of finishing small tasks gives a quick _____. (sense of accomplishment / planning fallacy / deep work)
10. We often _____ how long complex tasks actually take. (underestimate / prioritize / break down)

Exercise #7. Match each term from the left column with the correct synonym from the right column.

Term	Synonym
1. Time management	A. Break
2. Behavior	B. Attention blockers
3. Psychological factor	C. Mental element
4. Multitasking	D. Doing many things at once
5. Planning fallacy	E. Time misjudgment
6. Distractions	F. Productivity
7. Interruption	G. Schedule control
8. Efficiency	H. Actions
9. Estimate	I. Calculate roughly
10. Self-awareness	J. Reflection on oneself

Exercise #8. Match each word or phrases with the closest antonym.

Term	Antonym
1. Time management	A. Chaos / Disorganization
2. Behavior	B. Inactivity
3. Psychological factor	C. Physical influence
4. Multitasking	D. Single-tasking

5. Planning fallacy	E. Accurate planning
6. Distractions	F. Focus
7. Interruption	G. Continuity
8. Efficiency	H. Wastefulness / Inefficiency
9. Estimate	I. Exact measurement
10. Self-awareness	J. Ignorance of oneself

Exercise #9. Make up sentences of your own using the words and word combinations given below.

Time management, behavior, psychological factor, *m*ultitasking, planning fallacy, distractions, interruption, efficiency, estimate, self-awareness.

Exercise #10. Talk in pairs or small groups.

1. Have you ever had trouble managing your time at work or at university?
2. What helps you stay focused when working on complex tasks?
3. What do you usually do when your workflow gets interrupted?

Exercise #11. Read the dialogue and answer the questions.

1. What problems are the team facing?
2. What psychological factors are mentioned?
3. What solutions do they come up with?
4. Which vocabulary words related to time management and decision-making are used?

Time Trouble at the Office

Anna: Alright, team! Let's be honest – something's clearly off with our workflow lately. Deadlines are slipping, and everyone seems... well, stressed. What's going on?

Mike: Ugh, totally agree. I've noticed a lot of multitasking going on. People are jumping between emails, meetings, tasks — It's chaos. No wonder our efficiency is down.

Lena: (sighs) Yeah, that's me. I keep getting pulled into side tasks, and with all these distractions and random interruptions, I barely get real focus time.

Anna: Let's not forget the classic trap — the task completion bias. We all love checking off those easy tasks for that sweet little sense of accomplishment.

Mike: (laughs) Guilty! But it's like eating candy instead of a real meal. It feels good but gets us nowhere with the big stuff.

Lena: Totally! And I'm always misjudging how long things will take. Every time! That's the planning fallacy, right?

Anna: Yep. We estimate too optimistically, then scramble at the last minute. It's exhausting. So, here's the plan — let's start breaking down tasks into smaller chunks, set real timelines, and stop pretending we're superheroes.

Mike: Amen to that! And what if we each set one hour a day as protected focus time? Headphones on, phone off, no Slack, no knocks.

Lena: I love that! Also, I read about these «implementation intentions» — like, «If someone interrupts me, I'll politely ask to talk later.» That could really help me stay on track.

Anna: Yes! And let's not forget about self-awareness. We need to actually notice our patterns and adjust — no more autopilot.

Mike: Sounds like a plan. I mean, it's an ongoing process, but at least we're finally doing something about it.

Lena: This actually makes me feel hopeful. Maybe we can turn this around after all!

Anna: We absolutely will. One smart step at a time.

Exercise #12. Mark each statement as True (T) or False (F) based on the dialogue.

1. Anna thinks the team is doing fine.
2. Mike says multitasking helps them finish work faster.
3. Lena admits she is distracted and interrupted a lot.
4. They agree to set time for deep work.
5. Implementation intentions are used to plan coffee breaks.

Exercise #13. Read the sentences below. Pay attention to the time markers used in each sentence. Fill in the blanks with the correct verb form in the Future Simple Tense.

1. I _____ (visit) my colleague tomorrow.
2. She _____ (not/go) to work next week.
3. We _____ (have) a team-building event in a month.
4. My colleagues _____ (complete) the report soon.
5. He _____ (call) you back later.
6. They _____ (start) the new project in two days.
7. I _____ (send) you the details as soon as I get them.
8. Our manager _____ (give) us feedback the day after tomorrow.
9. I think you _____ (like) the changes tonight.
10. We _____ (open) the new office in three years.

Exercise #14. Transform the following sentences into negative and interrogative sentences.

1. We will improve our time management skills next month.
2. Her behavior will change for the better in a week.
3. The coach will explain the psychological factors behind stress tomorrow.
4. He will handle interruptions better the day after tomorrow.

Exercise #15. Read the sentences below and fill in the blanks with the correct verb form in the Future Continuous Tense.

1. At this time tomorrow, we _____ (discuss) ways to improve our time management.
2. This time next week, the team _____ (analyze) the main psychological factors affecting productivity.
3. By 8 o'clock tomorrow, she _____ (deal) with multiple tasks — classic multitasking.

4. In a month, we _____ (revise) our approach to avoid the planning fallacy.
5. Next Monday at noon, I _____ (work) in a quiet space to minimize distractions.
6. By this time next year, our department _____ (increase) overall efficiency.
7. At 10 PM tomorrow, he _____ (reflect) on his behavior to build better self-awareness.
8. By the time you arrive, we _____ (organize) the team's workflow for the new project.
9. During the meeting next week, we _____ (identify) key psychological factors behind delays.

Exercise #16. Transform the following sentences into negative and interrogative sentences.

1. We will be analyzing psychological factors that affect decision-making during the training session.
2. She will be multitasking throughout the day to meet all her deadlines.
3. The manager will be monitoring our efficiency during the next project phase.
4. We will be estimating the total cost of the upgrade by this time tomorrow.
5. He will be developing his self-awareness through coaching and reflection sessions.

Exercise #17. Read the sentences and use either the Future Simple or the Future Continuous form of the verb. Pay attention to the time markers. After completing the sentences, underline the time marker and explain your choice.

1. The team _____ (analyze) key psychological factors that affect motivation at this time next week.
2. I _____ (organize) my tasks more effectively to improve my time management tomorrow.

3. She _____ (struggle) with multitasking again if we don't adjust her workload.
4. We _____ (focus) on avoiding the planning fallacy during next Monday's meeting.
5. He _____ (break down) the project into smaller steps later today.
6. They _____ (monitor) the team's efficiency at 10 AM next Monday.
7. I'm sure you _____ (feel) a real sense of accomplishment once the task is complete.
8. We _____ (have) a meeting on implementation intentions next week.
9. You _____ (work) on improving your self-awareness through coaching sessions in a few days.
10. Our team _____ (face) serious interruptions if we don't fix the schedule soon.
11. They _____ (learn) how to manage the ongoing process of time control next month.
12. We _____ (discuss) the effect of task completion bias on productivity tomorrow morning.

Exercise #18. Fill in the blanks with the correct verb form in the Future Perfect Tense.

1. We _____ (improve) our time management system by next month.
2. She _____ (analyze) the main psychological factors affecting productivity by the time the training starts.
3. The team _____ (complete) all multitasking exercises by tomorrow.
4. I _____ (avoid) the planning fallacy in my next project by then.
5. You _____ (reduce) unnecessary distractions at your workplace by next week.

6. They _____ (increase) their efficiency significantly before the next audit.
7. We _____ (estimate) the cost of development more accurately by the time we meet the client.
8. He _____ (gain) more self-awareness through coaching by next year.
9. Our department _____ (organize) a more efficient workflow system by the end of this quarter.
10. The manager _____ (review) the time reports before the final presentation.

Exercise #19. Fill in the blanks with the correct verb form in the Future Perfect Tense

Emma: Jake, _____ (you / finish) the task list by tomorrow**?**

Jake: Yes, I think I _____ (complete) everything by the afternoon.

Emma: Great. _____ (what / you / do) first?

Jake: I _____ (update) the workflow documents before noon, then I'll focus on final testing.

Emma: Just to clarify, _____ (the team / submit) the bug report by the time the client checks in?

Jake: Hmm, that depends on Alex. He's responsible for it.

Emma: _____ (who / prepare) the final time estimates?

Jake: Lora. She's very precise with calculations.

Emma: Do you think the developers _____ (improve) their time management skills by next week**?**

Jake: I hope so. They've been using new tracking tools.

Emma: And what about distractions? _____ (they / minimize) them?

Jake: Hopefully. We've changed the seating plan to reduce noise.

Emma: One more thing – _____ (you or Lora / finalize) the efficiency report?

Jake: Lora will. I'll double-check it, but she's leading that part.

Emma: Sounds good. Let's meet again on Friday. By then, we _____ (see) if our planning worked.

Exercise #20. Transform the following sentences into negative and interrogative sentences.

1. By next month, we will have improved our overall time management system.
2. I will have eliminated most of the distractions in my workspace by next week.
3. She will have avoided the planning fallacy in her new project by then.
4. Our team will have completed the multitasking simulation exercises by tomorrow.
5. I will have estimated the total time for the project by this time next week.

Exercise #21. Fill in the blanks with the correct form of the verb (Future Simple, Future Continuous, or Future Perfect).

Next Monday morning, just as the coffee machines are finishing their first brew, our office team _____ (gather) in the big glass meeting room — the one with the eternally broken blinds. At the head of the table sits Nina, our team lead who. Across from her is Max, the creative storm with a cluttered desk and a hundred ideas — only ten of which ever get finished. Tom, our efficiency guru and ex-industrial engineer, quietly opens his laptop — he's already prepared three reports. And finally, Lena, the empathetic coder with a talent for burning out from caring too much, scribbles in her notebook.

«We need to fix how we work», Nina says, tapping the whiteboard. «No more 'hope-it-works-out' planning». They _____ (set) clear, measurable goals for the week to finally tackle their time management issues head-on.

By 10 a.m. Tuesday, Max _____ (pitch) a theory about why he starts twenty mini-tasks a day: the infamous task completion bias. «Turns out», he says, «our brains

love finishing things — even if it's just replying «Thanks»! to an email». The team chuckles, but Tom frowns. «That's the trap», he says. «It gives a quick sense of accomplishment but delays what really matters».

While Max defends his creative chaos, Lena _____ (explore) how psychological factors like perfectionism and overcommitment impact her own behavior. «Sometimes, being helpful makes me say yes to too much», she admits.

By Wednesday, the team _____ (design) a new approach to break down tasks and avoid the planning fallacy — no more three-day estimates for ten-day jobs. Nina, armed with sticky notes and timelines, grins. «Realistic is the new optimistic».

Thursday is a different vibe. Everyone _____ (use) their focus time for uninterrupted work. Nina closes her notifications. Max puts on noise-canceling headphones. Tom puts up a sign: «DISTRACTION-FREE ZONE». By then, the team _____ (implement) a rule — no pings, no pongs, no peeking at messages.

By Friday evening, something shifts. Lena smiles as she finally checks off a major task. Max has three drafts done — not ten ideas started. Tom's report is shorter, but smarter. Together, they _____ (share) their reflections on self-awareness and how knowing themselves changed how they work.

Of course, they all know this isn't magic. It's not a one-week miracle. Managing distractions, building flow, maintaining a healthy workflow — it's an ongoing process. But by next month, they're confident they _____ (see) the results not just in deadlines, but in energy, focus, and peace of mind.

Exercise #22

a) watch the video "Time Management. Definition. Importance" on YouTube;

b) complete the tasks below based on the video content.

Link: https://www.youtube.com/watch?v=fsmc-1RUnJA

Task 1: Choose the right answer.

1. What is the main idea of the video?

a) Financial planning

b) Time management

c) Healthy lifestyle

d) Career growth

2. What metaphor is used in the video to explain time management?

a) A race

b) A mountain hike

c) A jar filled with rocks, pebbles, and sand

d) A tree with many branches

Task 2: Complete the sentences with words from the video.

1. «Time management is about _____ your time to achieve your goals».
2. «If you don't prioritize your life, someone else _____».
3. «The key is not to prioritize what's on your schedule, but to schedule your _____».

Task 3: Read the questions below carefully. Take 3–5 minutes to think about your answers. Discuss your responses with a partner or in a small group.

- Do you consider yourself good at managing your time? Why?
- What are any of the biggest time-wasters in your daily life?
- What's one strategy from the video you'd like to apply starting this week?

Exercise #23. Read the list of essay topics below and choose one that interests you the most. Write an essay (200–250 words) expressing your opinion.

1. Is multitasking a myth or a skill in the IT workplace?
2. Deadlines vs. creativity: Can IT teams be both innovative and efficient?
3. Should tech companies ban email and messaging after work hours?
4. Do time-tracking tools increase productivity or stress in IT teams?
5. In a world of AI, should managers still control schedules—or let algorithms do it?
6. Is the 8-hour workday outdated for IT professionals?
7. Can remote IT teams function without traditional project managers?

8. Should IT companies train developers in soft skills like time management and prioritization?
9. Is «deep work» possible in the distraction-heavy digital workplace?
10. Do flexible work hours lead to better performance in tech teams?

Exercise #24. Read each section of the test carefully and answer the questions.

Test #5

Part I. Fill in the blanks with the correct tense.

1. By this time next week, the team _____ (complete) the new workflow system.
2. At 10 AM tomorrow, I _____ (have) my focus time, so please don't interrupt.
3. We _____ (not/start) the planning meeting until everyone arrives.
4. She _____ (review) the report later this afternoon.
5. Max _____ (work) on time estimates while the rest of us are testing the software.
6. The developers _____ (finish) all major tasks by Friday.
7. I'm sure we _____ (learn) from our mistakes in the next sprint.
8. Lena _____ (use) her break to reflect on her self-awareness goals.
9. By next month, the team _____ (avoid) most distractions using new rules.
10. We _____ (discuss) the psychological factors affecting productivity at 3 PM.
11. By Monday, we _____ (complete) our new workflow system.
12. At this time tomorrow, I _____ (work) in a distraction-free zone.
13. She _____ (not / start) her focus time until after the meeting.
14. We _____ (discuss) time-wasters during our training session next Friday.
15. I hope we _____ (develop) more realistic estimates by next month.

Part II. Choose the correct answer.

1. *By this time next year, our team _____ a new project management strategy.*
   a) will start
   b) will have started
   c) will be starting
2. *At 10 a.m. tomorrow, we _____ the weekly planning session.*
   a) will have
   b) will have had
   c) will be having
3. *I'm not sure when we'll meet, but I promise I _____ you as soon as I finish work.*
   a) will call
   b) will have called
   c) will be calling
4. *She _____ better at managing deadlines after attending the time management seminar next week.*
   a) will have become
   b) will become
   c) will be becoming
5. *They _____ the report by the time the manager returns.*
   a) will have finished
   b) will finish
   c) will be finishing
6. *Time-tracking tools are designed to improve team _____.*
   a) distraction
   b) efficiency
   c) estimation
7. *During her focus time, she avoids all _____.*
   a) interruptions

b) implementations

c) estimations

8. *A common _____ in project planning is thinking a task takes less time than it does.*

   a) focus time

   b) task bias

   c) planning fallacy

9. *Good managers help employees _____ their tasks and set realistic priorities.*

   a) break down

   b) break out

   c) break up

10. *The feeling you get after finishing a small task is called a _____.*

    a) task completion bias

    b) psychological factor

    c) sense of accomplishment

11. *Good _____ helps employees complete important tasks on time.*

    a) distraction

    b) time management

    c) multitasking

    d) interruption

12. *One major _____ in planning is underestimating the time needed for a task.*

    a) workflow

    b) efficiency

    c) planning fallacy

    d) estimate

13. _____ *can give a false feeling of productivity when we complete only minor tasks.*

    a) Task completion bias

b) Focus time

c) Implementation intention

d) Self-awareness

14. *To stay focused, it's important to avoid constant _____ like emails and chat notifications.*

a) accomplishments

b) priorities

c) distractions

d) behaviors

15. *People with high _____ tend to recognize their habits and improve them effectively.*

a) multitasking

b) self-awareness

c) time pressure

d) estimation

UNIT #6

Teamwork in the IT Industry

Exercise #1. Read the words and word combinations with the translation.

1. Collaboration – співпраця
2. Teamwork – командна робота
3. Goal –мета
4. Performance – результативність, ефективність
5. Team members – учасники команди
6. Contribution – внесок (до спільної справи)
7. Co-operation – співпраця, взаємодія
8. Skill – навичка
9. Team leader – керівник команди
10. flexible leadership style – гнучкий стиль керівництва
11. Team-building – побудова команди
12. Open communication lines – відкриті канали спілкування
13. Project management tools – інструменти керування проєктами
14. Spirit of community – дух спільноти
15. Bond with colleagues – налагодити зв'язки з колегами
16. Fresh thinking – нове мислення, креативність

Exercise #2. Read and translate the text.

Effective collaboration

What are the benefits of working collaboratively and how can we work together more effectively?

Collaboration means two or more people working together to achieve a goal. Studies have found that working together makes people more motivated and helps

them perform much better. People, who are collaborating on tasks stay interested for longer, feel less tired and get better results than people who are working alone.

Working together as a team allows people to achieve things that could never be done by just one person. What's more, the communication needed in order for team members to share goals and explain ideas is part of a process that improves the quality of everyone's thinking and contributions.

Here are five tips for effective collaboration and strong teamwork that will improve productivity and get better results.

1. Creating a culture of co-operation.

To achieve their goals effectively, team members need to co-operate and be generous with their resources, including their own talents. When people get to know the strengths of their individual team members, they can use the different skills and expertise in the team to their advantage.

Team leaders can create a culture of co-operation by setting an example that includes spending time talking to and supporting individuals, and sharing their knowledge and resources with their team. If we see our team leaders being open and welcoming different ideas, we are more likely to do the same.

2. Having clear goals and clear roles.

Working in a team without clear goals is like running in a race without a finish line. In order for team collaboration to be successful, members need to have clear goals and know their individual responsibilities. This not only helps them to stay focused and motivated, but it also helps them to understand how they can play their part in the team's success.

3. Leaders – focusing on tasks and relationships.

Objectives are important, but we mustn't forget that a team is made up of people and their relationships to each other. The stronger those relationships are, the more likely the team is to be effective.

A report by Harvard Business Review found that the most productive and innovative teams often have leaders with a flexible leadership style. They might start a project being task-focused and deciding the goals and roles in a team. But during

the project, they might switch to a more relationship-oriented style, focusing on team-building and creating an environment of friendliness and trust.

4. Having open communication lines.

If we want our team members to work well together, communication is the key. We need to provide effective channels of communication and encourage people to share what they're doing. Simply meeting once a week for updates is not enough. There are many project management tools like Microsoft Teams or Slack that provide a regular and open channel of communication with everyone. Another option could be creating a group on messaging apps like WhatsApp or LINE to offer team members a chance to informally communicate with others.

5. Encouraging a spirit of community.

Companies often organize social events because they know the importance of creating a sense of community. The activity could be anything from a weekly lunchtime food share to a quiz afternoon. You can start with simple, everyday things like having coffee breaks together or creating a space to share books. Ideas like these all encourage collaboration by bringing people together and helping them bond with their colleagues.

Collaboration is an opportunity to learn from each other and encourage fresh thinking, as well as a source of energy, strength and continued effort. As the saying goes, «If you want to go fast, go alone. If you want to go far, go together».

Exercise #3. Read the text Ex. #2. Mark the following statements as true (T) or false (F).

1. Collaboration usually makes people feel more tired and less interested in their tasks.
2. Working in a team helps people achieve more than working alone.
3. Team members don’t need to share their individual talents with others.
4. Team leaders should show openness and support to encourage cooperation.
5. Having no clear goals can help a team stay more creative and flexible.

6. Strong relationships between team members help improve team effectiveness.
7. Good leaders never change their leadership style during a project.
8. Weekly meetings are enough for effective team communication.
9. Tools like Slack and WhatsApp can support open communication in teams.
10. Social activities at work can help team members build connections and collaborate better.

Exercise #4. Answer the following questions.

1. What does «collaboration» mean according to the text?
2. Why is working in a team more effective than working alone?
3. How does communication improve teamwork?
4. What can team leaders do to create a culture of co-operation?
5. Why are clear goals and roles important in a team?
6. What leadership style is considered most effective in productive teams?
7. How can team leaders balance tasks and relationships in their leadership approach?
8. Why is regular and open communication necessary in teams?
9. What tools or platforms can support communication within a team?
10. How do social activities influence collaboration at work?

Exercise #5. Read the following questions. Be ready to discuss them in pairs or small groups. Try to use vocabulary from the text «Effective collaboration» and express your thoughts clearly.

1. Have you ever worked in a team that communicated well? What made it successful?
2. What challenges can occur if there are no clear roles in a team?
3. How would you describe a good team leader?
4. What kind of social activities do you think are most effective in building a sense of community in a team?

5. Do you agree with the saying: «If you want to go fast, go alone. If you want to go far, go together»? Why?

Exercise #6. Complete the sentences using the correct word or phrase.

Collaboration, teamwork, goal, performance, team members, co-operation, skill, team leader, flexible leadership style, team-building, open communication lines, spirit of community, bond with colleagues, fresh thinking.

1. Good _____ helps people work together effectively and achieve shared goals.
2. A strong sense of _____ can turn a group of workers into a real team.
3. Without a clear _____, teams can become disorganized and unmotivated.
4. A great _____ is someone who supports, motivates, and listens to their team.
5. In successful teams, each member brings a unique _____ to the table.
6. Sharing ideas and giving feedback requires _____ between all participants.
7. A _____ can motivate people to stay creative and develop new solutions.
8. When there are _____, people can exchange information quickly and easily.
9. Regular social activities help team members _____ and feel more connected.
10. Leaders who use a _____ are often more effective in different situations.
11. One benefit of working in a team is improved individual and group _____.
12. _____ events such as retreats or workshops help teams become stronger.
13. Every successful project starts with clear communication between all _____.

14. _____ and shared experiences strengthen team spirit and trust.

15. Effective _____ leads to innovative ideas and better problem-solving.

Exercise #7. Read and translate the Invitation Letter / Memo / Email.
Pay attention to the structure and aditional vocabulary related to teamwork and collaboration.

A. Writing Invitation Letters in an IT Context

Purpose.

An invitation letter is used to formally invite team members, partners, or stakeholders to attend a team-building activity, training session, or collaborative meeting.

Structure:

1. Greeting

Example: Dear [Name]!

2. Purpose of the invitation

Example: I'm writing to invite you to…

3. Details of the event (date, time, location, topic)

Example: This session will focus on improving our teamwork and open communication lines.

4. Value or benefit

Example: Your contribution will help strengthen our collaboration and team spirit.

5. Closing

Example: We hope to see you there! Please confirm your attendance by [date].

6. Sign-off

Example: Best regards, [Your name]!

Additional phrases from IT: team-building event, goal-setting session, project management workshop, collaboration experience, skill-sharing activity.

B. Writing a Memo in an IT Workplace

Purpose.

A memo (short for «memorandum») is used for internal communication within a company, often to inform or remind team members about procedures, meetings, or updates.

Structure:

To: All team members

From: [Your name / Team Leader]

Date: [Insert date]

Subject:

Example: Update on Collaboration Tools

Body:

1. Start with a short introduction to the topic
2. Provide key details in bullet points or short paragraphs
3. End with a call to action or next steps

Example: As part of our effort to improve team performance…; Please review the project management tools listed below; We are introducing a new way to maintain open communication lines.

Additional phrases from IT: flexible leadership style, contributions from team members, using Slack/Microsoft Teams for collaboration, improving team performance and co-operation.

C. Writing Professional Emails in the IT Sector

Purpose.

Emails in IT are commonly used to give updates, ask for collaboration, coordinate tasks, or request information.

Structure:

1. Subject line: Be clear and specific.

Example: Team Meeting: Project Update & New Goals

2. Greeting.

Example: Hi [Name], Dear Team!

3. Opening line: State your reason for writing

Example: I'm writing to discuss our next steps on the current sprint.

4. Main content: Give clear information using paragraphs or bullet points

Example: We need to define individual responsibilities for the new goal, Please suggest ideas for team-building activities.

5. Closing: Thank the reader or encourage a reply.

Example: I appreciate your contributions. Looking forward to your feedback.

6. Sign-off:

Example: Best regards, / Kind regards, [Your name].

***Additional phrases from IT*:** team collaboration, improving communication, enhancing skills, setting project goals, creating a spirit of community.

Exercise #8. Choose one format: Invitation Letter, Memo or Email. Write a message (120–150 words) related to a real or imagined IT project. Use appropriate structure and include the words: collaboration, team leader, performance, goal, team-building.

Exercise #9. In small groups (3–5 people), discuss the following questions. Try to use vocabulary such as collaboration, team-building, team leader, skill, spirit of community, contribution. Take notes of interesting ideas or expressions you hear.

Discussion Questions:

1. Have you ever taken part in a team-building event (online or in-person)? What was it like?

2. Do you think social activities at work help improve teamwork and performance? Why?

3. What kind of corporate leisure activity would you suggest for an IT team?

4. How can a team leader encourage more co-operation and participation in such events?

5. Do you prefer quiet, independent work or group interaction? How do you think it affects your contribution to a project?

Exercise #10. a) read and translate the dialogue "Do We Really Need Team-Building Fridays?"

Characters:

Sophie – the cheerful HR manager, always positive

Liam – the skeptical programmer who prefers solo work

Aisha – the energetic junior developer, loves social events

Marco – the calm and thoughtful team leader

Julia – the creative designer, full of fresh ideas

Sophie: Okay team, before we wrap up—quick reminder! This Friday is our «Pizza & Puzzles» evening. It's part of our new team-building series. Who's in?

Liam: Hmm… another team-building thing? Honestly, I don't really see how eating pizza helps my code run faster.

Aisha: Oh come on, Liam! Last month's escape room was amazing! We actually solved the final riddle thanks to your math skills!

Liam: True… but I still prefer working in peace. These events feel... I don't know, a bit forced?

Marco: I get that, Liam. But from a leadership point of view, it's not just about fun. When team members bond, collaboration gets smoother. Plus, I've seen a boost in our performance since we started these.

Julia: Exactly! It's also about fresh thinking. I got the idea for our homepage redesign during the last quiz night. Just talking to different people sparked it!

Sophie: That's the spirit, Julia! We're not aiming for a party—our goal is better co-operation, more open minds, and yes, better communication too.

Liam: Alright, alright… if it involves pizza and no icebreakers where we say our spirit animals, I'm in.

Aisha: Deal! No spirit animals. But maybe a coding-themed puzzle?

Marco: And we'll keep it relaxed. Remember, part of my flexible leadership style is knowing when to just enjoy each other's company.

Julia: Love that. Also, can we add a creativity corner? Maybe quick sketch battles? It's great for people with design skills—and fun!

Sophie: Perfect! I'll add it to the schedule using our project management tool**.** See? This is exactly what we mean by open communication lines**.**

Liam: Fine, you've won me over. Let's see if socializing can boost my coding superpowers.

All: Deal!

b) discuss as a group:

1. Do you agree with Sophie and Marco's ideas about team-building?
2. Have you ever had a similar experience at university or at work?
3. Which part of the dialogue felt most realistic to you? Why?

Exercise #11. Match each character with their attitude toward team-building activities. Write the name next to the correct description.

1. ___ Thinks team-building is unnecessary but eventually agrees.
2. ___ Loves creative activities and believes in sharing ideas.
3. ___ Always supports positive team energy and organizes events.
4. ___ Sees value in bonding and improved performance.
5. ___ Is excited about puzzles and defends social events.

Exercise #12. Work in pairs. Choose one topic from the list and discuss it for 5–7 minutes. Use at least 3 key words from our teamwork vocabulary (e.g. collaboration, team leader, goal, performance). Try to give examples and explain your opinion clearly. After the discussion, be ready to share your partner's opinion with the group.

1. Is remote work better for productivity or collaboration? What are the pros and cons of working from home vs. working in an office?

2. Should companies make team-building activities mandatory? Do they really help, or do they just waste time?
3. What makes a great team leader? Think of personality, skills, leadership style, and communication.
4. Do you prefer working alone or in a team? How does it affect your motivation and performance?
5. What is the most creative team activity you can imagine? Try to design your own corporate leisure event.
6. Can a game night improve your coding or design skills? Talk about how fun can support professional growth.
7. Is open communication always a good thing at work? Can too much sharing cause problems?
8. How important is the «spirit of community» in a company? Does feeling connected help you do your best?
9. What role should project management tools play in team dynamics? Are they more useful for planning or communication?
10. How do different cultures approach teamwork and leadership? Share what you know or imagine about working in international teams.

Exercise #13. Fill in the gaps with the gerund form of the verb in brackets

Corporate Culture and Work Etiquette in IT

In many IT companies, corporate culture plays a key role in building successful teams. Employees are encouraged to work together respectfully, and to avoid ___ (interrupt) others during meetings. It's also important to consider ___ (listen) to colleagues' ideas, even if you don't fully agree.

Good communication is valued, and team leaders often suggest ___ (create) open communication channels, such as Slack or Microsoft Teams. These tools help people feel comfortable and prevent them from ___ (feel) isolated.

In the IT world, professionals often keep ___ (improve) their skills through online courses or workshops. Many teams continue ___ (develop) their soft skills, not just technical knowledge.

Some companies organize team-building events to support collaboration. While some developers admit ___ (prefer) solo work, they still appreciate ___ (join) fun group activities from time to time.

New employees are trained to follow basic workplace etiquette, like being on time, replying to emails, and not wasting time by ___ (scroll) social media during meetings.

Finally, more and more team leaders are learning the importance of ___ (support) flexible schedules, as well as ___ (respect) different communication styles.

Exercise #14. Each sentence below contains one error with the gerund form. Rewrite the sentence correctly using V + ing where needed.

1. He avoided to answer the question during the meeting.
2. We discussed to change the project timeline.
3. I'm not used to arrive late for work.
4. She suggested to create a shared calendar.
5. They finished to code just before the deadline.
6. Our manager postponed to start the project until Monday.
7. He denied to share confidential files with anyone.
8. We look forward to see you at the next meeting.
9. I can't help to check my phone during breaks.
10. The team gave up to wait for feedback and moved forward.

Exercise #15. Complete each sentence by adding a gerund phrase of your own.

Example: I'm interested in developing my communication skills.

1. I'm interested in...
2. Our company promotes...
3. The hardest part of teamwork is...

4. Good etiquette includes...
5. My manager appreciated...
6. She avoided...
7. We succeeded in...
8. He's responsible for...
9. They complained about...
10. We look forward to...
11. The project requires...
12. I spent the whole afternoon...
13. He apologized for...
14. We had fun...
15. She's really good at...

Exercise #16. Match the beginnings with the correct endings.

Beginnings:	**Endings:**
1. She admitted...	a. ...interrupting others during presentations.
2. We avoided...	b. ...solving complex tech problems.
3. He's good at...	c. ...talking during the online call.
4. They continued...	d. ...feeling left out of discussions.
5. I can't stand...	e. ...working even after office hours.
6. She suggested…	f. ...completing the project ahead of schedule.
7. I spent the weekend...	g. ...creating a shared knowledge base for the team.
8. He denied...	h. ...writing documentation for the new software.
9. We succeeded in...	i. ...sharing any confidential data.
10. They look forward to...	j. ...meeting the new team members next week.

Exercise #17. Fill in the blanks with the correct form of the infinitive (active or passive)

Culture Shock at Work: How to Avoid It and Thrive

In today's global workplace, employees are expected ___1___ (to understand) cultural differences and communicate respectfully. One of the first things professionals need ___2___ (to learn) is how to adapt their communication style to different cultural norms.

Successful companies tend ___3___ (to encourage) open dialogue among team members from different backgrounds. It's important ___4___ (to be aware) of personal biases and avoid stereotypes. Many managers appear ___5___ (to recognize) the value of intercultural training.

Employees are often made ___6___ (to attend) diversity workshops, where they are prepared ___7___ (to deal) with cultural misunderstandings. Such workshops are known ___8___ (to improve) team cooperation and overall harmony.

To be honest, it can be challenging ___9___ (to build) trust in a multicultural team at first. But those who manage ___10___ (to stay) open-minded and respectful usually succeed.

Companies that fail ___11___ (to address) cultural communication issues may experience reduced team performance. On the other hand, organizations that aim ___12___ (to build) inclusive environments are more likely ___13___ (to attract) international talent and innovation.

It's not unusual ___14___ (to see) conflicts that stem from miscommunication. However, the ability ___15___ (to resolve) these issues quickly is what makes a team strong.

To sum up, intercultural communication is a skill that everyone should strive ___16___ (to master) in today's multicultural workplace.

Exercise #18. Complete the sentences with the correct form of the infinitive with* to *using the verbs in brackets. Use active or passive form as needed.

1. The manager decided ___ (organize) a cultural awareness workshop for the new hires.
2. Our international partners expect ___ (treat) with equal respect.
3. She was the first in the group ___ (notice) the communication gap.
4. To be honest, I didn't dare ___ (ask) about their cultural norms.
5. It's important ___ (understand) how humor may differ across cultures.
6. All employees were asked ___ (complete) an intercultural communication quiz.
7. He happened ___ (offend) someone by using informal language.
8. They arranged ___ (meet) with the client to clarify the misunderstanding.
9. I'm happy ___ (be invited) to a multinational project.
10. This guide aims ___ (help) you work more effectively in diverse teams.

Exercise #19. Complete the sentences with a suitable infinitive verb form. You can use your own ideas or choose from the suggested verbs in brackets.

1. Our team agreed ___ during different time zones. *(coordinate)*
2. It's important ___ when speaking with clients from other cultures. *(listen actively)*
3. She was seen ___ with a local interpreter during the meeting. *(talk)*
4. To begin with, I'd like ___ a few cultural differences I noticed. *(mention)*
5. He was proud ___ part of a multinational project. *(be)*
6. They were expected ___ cultural awareness training before the launch. *(complete)*
7. I was surprised ___ how quickly misunderstandings were resolved. *(see)*
8. The team leader encouraged everyone ___ their personal experiences. *(share)*
9. We were the last group ___ the onboarding session. *(finish)*

10. It was challenging ___ when everyone had a different communication style. *(collaborate).*

Exercise #20. **Choose the correct form of the verb in brackets: to +V** or **V+ing**.

1. Our team leader encouraged us ___ (share) ideas freely.
2. We decided ___ (postpone) the team-building workshop.
3. I really enjoy ___ (work) on group projects.
4. They suggested ___ (use) a new project management tool.
5. Don’t forget ___ (lock) your computer when leaving the desk.
6. I can't stand ___ (deal) with miscommunication in emails.
7. She promised ___ (send) the updated schedule by noon.
8. They agreed ___ (organize) a cultural exchange meeting.
9. He avoided ___ (use) slang when speaking with international partners.
10. We hope ___ (create) a more inclusive work environment.
11. I don’t mind ___ (attend) virtual conferences in different time zones.
12. He refused ___ (accept) the proposal without consulting the team.
13. Julia suggested ___ (translate) the presentation into Spanish.
14. The manager plans ___ (introduce) a flexible work model.
15. They enjoyed ___ (learn) about other countries' workplace etiquette.

Exercise #21. Read the dialogue. Fill in the blanks with the correct form of the verb in brackets: either gerund (V+ing) or infinitive (to + V). Pay attention to the structure.

Elena: Hey Tariq, I really appreciate your effort in ___ (help) the new interns with onboarding this week.

Tariq: No problem! I actually enjoy ___ (explain) our project structure—it helps me reflect on it too.

Elena: That’s great. I also wanted to ask: would you mind ___ (join) the next intercultural communication session?

Tariq: Hmm, I'd love ___ (attend), but I promised my manager ___ (complete) the bug fixes by Friday.

Elena:I understand. Just try ___ (balance) both if possible. It's important ___ (develop) those soft skills, especially in global teams.

Tariq: True. I've started ___ (realize) how much cultural context matters when we code for international users.

Elena: Exactly. We aim ___ (make) our team more inclusive and open-minded. That's why we encourage everyone ___ (participate) in activities beyond just technical tasks.

Tariq: Thanks for ___ (remind) me. I'll see if I can rearrange my schedule.

Exercise #22. Complete the text by choosing the correct form of the verb in brackets: either gerund (V+ing) or infinitive (to + V). Then compare your answers in pairs and explain the grammar rule behind each choice.

My Life as a Developer (with Coffee and Deadlines)

You know, I never imagined myself ___1___ (work) in a tech company. I used ___2___ (think) that programming was only for geniuses who spent their nights in dark basements, ___3___ (hack) into government systems.

But then I discovered that I actually enjoy ___4___ (solve) real-life problems with code. It feels great ___5___ (create) something useful, even if it means ___6___ (stay) up until 3 a.m.

At first, I struggled ___7___ (adapt) to team communication. I wasn't used to ___8___ (speak) openly in meetings, and I tended ___9___ (avoid) eye contact. But over time, I learned ___10___ (appreciate) how much collaboration matters.

Now I try ___11___ (encourage) others to share their ideas. I've even started ___12___ (lead) short tech talks during coffee breaks. It's amazing how simply ___13___ (explain) an idea can boost team spirit.

My biggest challenge? I keep forgetting ___14___ (update) the documentation. I really need ___15___ (make) that a habit. But hey—nobody's perfect!

To be honest, I still dread ___16___ (debug) someone else's code. But I know it's part of growing as a developer.

Exercise #23.

a) watch the video "Modern Workplace/ The Art of Teamwork" on YouTube.

Link: https://www.youtube.com/watch?v=79X8LYjsEbY

b) take notes on the key points related to:

1. What makes teamwork successful in the modern workplace?
2. How technology supports collaboration?
3. What leadership styles are most effective?

c) pay attention to examples of real IT teams or companies mentioned.

d) after watching, discuss the following questions in pairs or small groups:

1. What was the most important takeaway from the video for you?
2. Which teamwork practices could you apply in your own work or studies?
3. Do you agree with the idea that diversity strengthens a team? Why or why not?
4. How can digital tools improve communication and team efficiency?

Exercise #24. Choose one of the simulation projects («IT Help Desk Simulation» or «Internal IT Training Session Simulation») and work as a team to prepare and present a realistic workplace scenario using professional IT communication.

I. Project: «IT Help Desk Simulation».

Objective: to simulate real-life IT support communication by practicing technical explanations, active listening, and role-based teamwork.

Skills practiced: listening, problem-solving, professional communication, collaboration.

Instructions:

1. Work in groups of 3–5 people.

2. Assign one team member to act as the IT help desk specialist**.** The rest of the team will play users who approach the help desk with typical technical issues (e.g., «I can't log in», «My screen is frozen»,«Wi-Fi doesn't work»).

3. Each «user» must:

- Describe the problem clearly.
- Ask follow-up questions if needed.

4. The help desk specialist must:

- Respond professionally and politely.
- Ask clarifying questions.
- Offer step-by-step solutions.

5. Switch roles and repeat.

II. Project: «Internal IT Training Session Simulation».

Objective: to simulate a real internal knowledge-sharing session where an experienced team member teaches a tool or app to new employees.

Skills practiced: public speaking, instructional clarity, asking relevant questions, workplace interaction.

Instructions:

1. Choose one group member to be the trainer**.**

2. The trainer prepares 5-minute mini-presentation on a simple tool or app (e.g., *«How to Use Google Drive»*, *«Basic Functions in Microsoft Teams»*).

3. The rest of the group plays the role of new employees who:

- Ask practical questions.
- Take short notes.
- Give feedback.

4. After the presentation:

- Conduct a short Q&A session.
- Group discusses what went well and how to improve the session.

Exercise #25. Read each section of the test carefully and answer the questions.

Test #6

Part I. Complete the sentences with the correct form of the verb in brackets.

1. Our team agreed ___ (use) new project management tools for better efficiency.
2. She avoided ___ (interrupt) others during the brainstorming session.
3. It's important ___ (build) trust when working in a multicultural team.
4. I enjoy ___ (collaborate) with people who have different skills.
5. He was the first ___ (notice) a drop in team performance.
6. The company encourages employees ___ (share) ideas openly.
7. They suggested ___ (organize) a team-building retreat next month.
8. I was happy ___ (be invited) to the new development team.
9. We need ___ (develop) a clear goal before starting the project.
10. I can't stand ___ (work) without a proper plan.

Part II.

1. Match each term (1–5) with the correct definition (A–E).

1. Team leader 2. Contribution 3. Open communication lines 4. Spirit of community 5. Fresh thinking	A. The ability to share ideas and information freely B. The act of offering ideas or effort to a shared project C. Creative or original ideas that bring innovation D. A person who guides and supports a team E. A strong sense of unity and belonging in a group

2. Use these words: collaboration, skill, team-building, project management tools, bond with colleagues.

6. Effective ___ helps reduce conflicts and improve performance.
7. Many companies use ___ to track tasks and deadlines efficiently.
8. Regular ___ activities help strengthen trust and co-operation.
9. Good communication is as important as technical ___.
10. Lunch breaks are a great time to relax and ___.

ANSWER KEYS

Test #1.

Part I

1. A - Artificial Intelligence
2. B - Renewable Energy
3. C - Cybersecurity
4. D - Quantum Computing
5. E - Biotechnology
6. F - 5G Technology
7. G - Automation
8. H - Virtual Reality
9. I - Robotics
10. J - Augmented Reality

Part II.

11. are working
12. are testing
13. have never used
14. are creating
15. always attend
16. discuss
17. produces
18. am studying
19. published
20. have participated

Test #2.

Part I:

1. Software Engineer
2. Objective
3. Assess
4. Develop
5. Install
6. Outcome
7. Investigate
8. Cover
9. Programming-in-the-small
10. Design
11. Assess

Part II.

1. had completed
2. was installing
3. attended
4. were discussing
5. had reviewed

Part III.

1. A. yesterday
2. C. last week
3. E. by that time
4. B. the day before yesterday
5. D. two hours ago

Part IV.

1. was finishing
2. had discussed
3. had been working
4. didn't know
5. were installing

Test #3.

Part I.

1. b) Cybersecurity
2. a) Digitalization
3. b) Scientific publication
4. b) Search engine
5. b) Information retrieval
6. c) Transformer architecture
7. b) Question answering
8. c) Chunk
9. a) Web crawler
10. a) TF-IDF
11. a) Word embedding
12. a) Sentence boundary
13. a) Confidence score
14. a) Search parameters
15. a) Metadata

Part II.

1. b) was developed
2. c) was published
3. b) is used
4. a) are detected
5. a) has not been set up

6. b) are used
7. c) were split
8. a) was designed
9. b) are calculated
10. a) is included
11. a) are scanned
12. c) was developed
13. b) were used
14. b) is displayed
15. a) were configured

Test #4.

Part I.

1. C
2. C
3. C
4. B
5. B
6. B
7. B
8. A
9. B
10. B

Part II.

11. C – could
12. B – might
13. D – were able to
14. C – couldn't
15. A – will be able to
16. A – must
17. C – was allowed to
18. A – must
19. C – weren’t able to
20. B – might

Test #5.

Part I.

1. will have completed *(Future Perfect)*
2. will be having *(Future Continuous)*
3. will not start *(Future Simple)*
4. will review *(Future Simple)*
5. will be working *(Future Continuous)*
6. will have finished *(Future Perfect)*

7. will learn *(Future Simple)*
8. will be using *(Future Continuous)*
9. will have avoided *(Future Perfect)*
10. will be discussing *(Future Continuous)*
11. will have completed *(Future Perfect)*
12. will be working *(Future Continuous)*
13. will not start *(Future Simple)*
14. will be discussing *(Future Continuous)*
15. will have developed *(Future Perfect)*

Part II.

1. b) will have started (Future Perfect)
2. c) will be having (Future Continuous)
3. a) will call (Future Simple)
4. b) will become (Future Simple)
5. a) will have finished (Future Perfect)
6. b) efficiency
7. a) interruptions
8. c) planning fallacy
9. a) break down
10. c) sense of accomplishment
11. b) time management
12. c) planning fallacy
13. a) Task completion bias
14. c) distractions
15. b) self-awareness

Test #6.

Part I.

1. to use
2. interrupting
3. to build
4. collaborating
5. to notice
6. to share
7. organizing
8. to be invited
9. to develop
10. working

Part II.

A.

1. Team leader → **D**
2. Contribution → **B**
3. Open communication lines → **A**
4. Spirit of community → **E**
5. Fresh thinking → **C**

B.

6. Collaboration
7. Project management tools
8. Team-building
9. Skill
10. Bond with colleague

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Навчальне видання

Дишель Ганна Вадимівна

старший викладач кафедри лінгводидактики та іноземних мов ДУІТЗ

Булгару Наталія Борисівна

старший викладач кафедри лінгводидактики та іноземних мов ДУІТЗ

МЕТОДИЧНІ РЕКОМЕНДАЦІЇ

для аудиторної та самостійної роботи

з іноземної мови (англійська)

Частина 1

для здобувачів 1 курсу,

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