Computer & Information and Communication Technology



Second Grade Preparatory
First Term

nezakr.natega4dk.net

Preparation and Review Committee

Eng. Waseem Salah El-Din El-Manzlawy Manager of the Educational Computer Department the General Administration for Curriculum Monitoring and Evaluation	**Mr. Tamer Abdel Mohsen Mansour** Manager of the Educational Computer Department the General Administration for Curriculum Monitoring and Evaluation
Dr. Mohamed Youssef Al-Sadek Manager of the Educational Computer Department the General Administration for Curriculum Monitoring and Evaluation	**Dr. Mohamed Abdul Tawab Abdullah** Expert teacher at STEM schools
Dr. Abeer Hamed Ahmed Computer Education Consultant the General Administration for Curriculum Monitoring and Evaluation	**Dr. Taher Abd El Hamed El Adly** General Consultant &Head of ICT Department The Central Administration for Curriculum Development
Prof. Al-Gharib Zaher Ismail Educational Technology Professor, Faculty of Education Mansoura University	**Prof. Mohamed Fahmy Tolba** Computing and Information Professor, Faculty of Computing Ain Shams University

Supervised by

Dr. Gebril Anwar Hmeida

Head of the Central Administration

for Curriculum Development

nezakr.natega4dk.net

Contents

S	Topics	Page
	Unit One: (Artificial Intelligence and Protecting Our Digital Data)	
1	**Lesson 1: Intelligent Systems and Their Impact on Climate Change**	٦
2	**Lesson 2: Advanced Cyber Threats**	٢٢
3	**Lesson 3: Big Data**	٢٩
4	**Lesson 4: Big Data and Its Relationship to Artificial Intelligence**	٣٥
	Unit Two: Website Design and Creation	
5	**Lesson 1: Principles of Designing Professional and Attractive Website Interfaces**	٤٢
6	**Lesson 2: Web Page Format**	٥٦
7	**Lesson 3: My Digital Project for my school**	٦٤
8	**Lesson 4: Creating Your Website with the Help of Artificial Intelligence**	٧٣

nezakr.natega4dk.net

Unit One

Artificial Intelligence and Protecting Our Digital Data



nezakr.natega4dk.net

Lesson 1

Intelligent Systems and Their Impact on Climate Change



nezaki.natega4dk.net

Lesson 1

Intelligent Systems and Their Impact on Climate Change

Objectives :

By the end of the lesson, I will be able to:	After the lesson, check the correct box: I can...
- Explain the concept of intelligent interconnected systems (the Internet of Things, artificial intelligence, and robotics).	☐ Very good ☐ Ok ☐ Need more work
- Conclude the impact of intelligent interconnected systems on facing environmental problems (air pollution and drought).	☐ Very good ☐ Ok ☐ Need more work
- Suggest as many ideas as possible for employing intelligent systems to help protect the environment and reduce the effects of climate change.	☐ Very good ☐ Ok ☐ Need more work

Engage:

What are intelligent connected systems? How can they contribute to protecting our planet?

Learn

In previous years, we learned about the concept of the Internet of Things (IoT), which connects different devices to the internet to exchange data. We also learned about artificial intelligence (AI), which is the ability of a machine to think and make decisions like a human. We also learned about robotics, which are devices that can perform tasks similar to those performed by humans.

In this lesson, we will review how these intelligent systems work together in an interconnected manner to become more intelligent and useful in our lives.

Dear student... Imagine a smart robot that can clean your house, move around on its own, avoid obstacles, and charge itself when its battery runs out. This robot uses (IoT) to connect to the internet, (AI) to analyze information and make decisions, and (robotics) to move and perform tasks.

When these three technologies work together, we get what are called) smart connected systems).

nezakr.natega4dk.net

First: The Concept of Interconnected Intelligent Systems (Internet of Things with Artificial Intelligence and Robotics)

Nowadays, devices communicate with each other, think, and move! How does this happen? It happens through a new technology that combines three important fields: **The Internet of Things (IoT), Artificial Intelligence (AI), and Robotics.**

When we combine (IoT) with (AI) and (Robotics), we get interconnected smart systems that can communicate with each other, think, and perform tasks without constant human intervention.

Interconnected Intelligent Systems:

Dear student, in smart homes, there is communication between the three interconnected intelligent systems. Through devices connected to the Internet (IoT), lighting and temperature can be controlled. Through artificial intelligence (AI), it can detect when you return from school at 2 p.m. and turn on the air conditioning before you arrive. A (robot) in the house can prepare your food or clean the floor before you enter.

We can now start thinking and designing new and useful ideas using these amazing systems.

Dear student, let's review a simple example of your father's car breaking down on the road. Imagine you're driving with your father on a long road, and suddenly the car stops due to an engine problem. This is when the role of smart systems starts:

1- Internet of Things (IoT)

IoT function:

The car is equipped with sensors connected to the internet. When a breakdown occurs, the car automatically sends a message to a maintenance center or an app on your phone. It determines your precise location using GPS. The car sends a message saying: "Engine failure - Location: Cairo-Suez Road - Kilometer 75."

2- Artificial Intelligence (AI)

AI function:

AI analyzes the breakdown data and suggests the possible cause (such as engine overheating, low oil, etc.). The AI then suggests solutions, such as: "Stop the car immediately - a maintenance robot will be sent to you and on its way."

nezakr.natega4dk.net

3- Robotics

Robot Function:

An intelligent robot is directed to the location of the vehicle. Equipped with tools, it can inspect the vehicle and repair minor faults by opening the hood. It then replaces the damaged part. It then tells you, "You can proceed safely now." If it is unable to repair the damage, it automatically requests a transport vehicle.

Intelligent Component	Function
Internet of Things (IoT)	transmits information and determines location
Artificial Intelligence (AI)	analyzes the problem and makes appropriate decisions
Robotics	performs repairs or field assistance

Second: Practical applications of intelligent systems in our lives.

Devices now rely on artificial intelligence (AI), the Internet of Things (IoT), and robotics to think and operate on their own. We use these smart systems daily without realizing it, whether at home, school, or the hospital.

These systems help us save time and effort and make our lives more comfortable and easier.

Some examples we see and use in our daily lives:

1- Smart Home:

The Internet of Things (IoT): connects lighting, air conditioning, and appliances to a mobile phone or the internet.

Artificial Intelligence (AI): understands the situation; if the weather is hot, it automatically turns on the air conditioning.

Robots: can assist with tasks, such as operating a vacuum cleaner or moving objects.

Example: you tell your phone, "Turn on the air conditioning." The command is sent over the internet, and the device determines the optimal temperature and operates it.

2- School Robot:

The Internet of Things (IoT): connects the robot to online educational resources.

Artificial Intelligence (AI): helps it understand students' questions and respond correctly.

Robot: Speaks, writes, or moves to display the answer.

nezakr.natega4dk.net

Example: A student asks, "What is the capital of Egypt?" The robot understands the question and answers, "Cairo."

3- Smart Farming:

The Internet of Things: Sensors transmit information about the condition of the soil.

Artificial Intelligence: Analyzes this data to determine whether the soil needs water.

Robots: Automatically water plants or spray pesticides.

Example: If the soil is dry, the system decides to water the soil without the farmer's intervention.

4- Voice Assistant:

The Internet of Things: Used to access information online.

Artificial Intelligence: Understands what you say and provides an appropriate response.

Robots: Not here, because the device doesn't move; it just speaks.

Example: You say, "What's the weather today?" The device understands your question and answers in a clear voice.

5- Smart Car:

The Internet of Things: Connects the car to satellites and maps.

Artificial Intelligence: Monitors the road and analyzes hazards.

Robots: Control the vehicle's movement, such as stopping or changing direction.

Example: If a child suddenly crosses the road, the vehicle detects this and stops on its own to protect you.

Third: Intelligent Systems and Their Impact on Climate Change

Today, the planet Earth faces major challenges due to climate change (e.g., rising temperatures, air pollution, melting ice, drought, floods). Through "smart systems," we can monitor the environment, reduce pollution, and protect the planet. We will now review some of these problems and how to reduce and mitigate them using these intelligent systems.

1- Global Warming (Global Warming):

Dear student, have you noticed that the weather in the summer is hotter than before? This is due to what is known as "global warming."

nezakr.natega4dk.net

Cause: Increased harmful gases such as carbon dioxide from factories and cars.

Solution: using smart systems:

IoT: Sensitive devices measure temperature and air pollution levels.

AI: Analyzes this data and suggests solutions to reduce pollution.

Robotics: Can plant trees or automatically purify the air.

Example: When the temperature rises, the smart system sends a warning to the government to reduce factory exhaust and operate air purification filters.

2- Air Pollution:

Dear student, the air we breathe may be polluted by car and factory fumes, and this is harmful to our health.

Cause: Car exhaust, factories, and garbage burning.

Solution: using smart systems:

IoT: Measures the level of harmful gases in the air.

AI: Identifies polluted areas and suggests reducing the number of cars.

Robotics: Grow plants or use air purifiers.

Example: In some cities, notifications are sent to residents asking them to stay home when air pollution increases.

3- Water Shortage and Drought:

Dear student, imagine that plants are not growing because the land isn't receiving enough water. This is a major problem called drought.

Cause: excessive water use, lack of rain, and irregular irrigation.

Solution: using smart systems:

IoT: Devices measure soil moisture and report when the land needs water.

AI: Calculates the appropriate amount of water to be provided.

Robotics: Automatically irrigates the land only when needed.

Example: On some farms, the land is only irrigated when sensors signal that it needs water, saving huge amounts.

4- Floods and Heavy Rain:

Dear student, sometimes a lot of rain falls in a short time, flooding the streets and causing flooding.

nezakr.natega4dk.net

Cause: Climate change leads to sudden and intense rainfall.

Solution: using smart systems:

IoT: Measures the amount of rain and the speed of water in the streets.

AI: Sends warnings before flooding and suggests rescue routes.

Robotics: Helps drain water or rescue people in emergency situations.

Example: When sensors detect that water is starting to rise, the road is automatically closed and cars are directed to safe routes.

5- Melting Ice at the Poles

Dear student, there are mountains of ice at the North and South Poles, but they have begun to melt due to global warming.

Cause: ongoing climate change, which is raising temperatures.

Solution: using smart systems:

IoT: monitors the ice and measures its rate of melting.

AI: predicts when the ice will melt and suggests prevention methods.

Robotics: used to monitor ice or protect it from rapid erosion.

Example: special robots send accurate data to scientists to determine how to reduce pollution and global warming.

Dear student, as you have seen, smart systems are not just advanced inventions; they are effective tools that help protect our planet from dangers. Using the Internet of Things, artificial intelligence, and robotics, we can create a better future and preserve the environment for future generations.

Activity... Dear student, suggest ideas through which intelligent interconnected systems can be used to help face environmental problems.

……

……

nezakr.natega4dk.net

Learn by doing

Choose the correct answer from the following:

1. Which of the following technologies allows devices to connect to the internet and exchange data?

a) AI

b) Robotics

c) IoT

d) VR

2. What is the main function of artificial intelligence (AI)?

a) Data transfer only.

b) Data analysis and decision making.

c) Device manufacturing.

d) Powering the internet.

3. What is the name given to systems that combine IoT, AI, and robotics?

a) Traditional systems.

b) Manual systems.

c) Mechanical systems.

d) Interconnected intelligent systems.

4. How does IoT help in a smart home?

a) By shutting down all devices.

b) By repairing broken devices.

c) By connecting devices to the internet to control them.

d) By manually operating devices.

nezakr.natega4dk.net

5. Why is artificial intelligence important in intelligent systems?

a) Because it analyzes data and makes intelligent decisions.

b) Because it manufactures devices.

c) Because it repairs broken devices.

d) Because it provides free internet.

6. How can robots help in agriculture?

a) By selling crops.

b) By automatically watering plants.

c) By shutting down farms.

d) By storing water only.

7. What is the main role of sensors in IoT?

a) Sending text messages.

b) Manually operating devices.

c) Collecting and transferring data.

d) Repairing networks.

8. How can smart systems help reduce pollution?

a) By increasing vehicle exhaust.

b) By ignoring the problem.

c) By shutting down all factories.

d) By monitoring air quality and suggesting solutions.

9. If a car is equipped with IoT and AI, what can it do when a malfunction occurs?

a) Send a message to the maintenance center with the location.

b) Turn off without informing the driver.

c) Wait until the driver detects the fault.

nezakr.natega4dk.net

d) Shut down all systems.

10. How can AI help manage energy in a smart home?

a) By turning on appliances randomly.

b) By analyzing usage patterns and saving energy.

c) By turning off electricity completely.

d) By increasing energy consumption.

11. If the soil is dry, how can smart systems in agriculture react?

a) Ignore the problem.

b) Reduce the amount of water more.

c) Send a message to the farmer without taking any action.

d) Irrigate the soil automatically.

12. How can robots help in floods?

a) By increasing the water level.

b) By closing all roads for no reason.

c) By draining water or rescuing people.

d) By ignoring warnings.

13. What action can AI take when it detects increased air pollution?

a) Ignore the data.

b) Send warnings to residents and reduce factory emissions.

c) Increase pollution intentionally.

d) Turn off all devices.

nezakr.natega4dk.net

14. What is the main difference between IoT and AI?

a) AI connects to the internet, while IoT analyzes data.

b) IoT builds robots, while AI repairs them.

c) IoT connects to the internet, while AI analyzes data.

d) There is no difference between them.

15. Why are robots considered an important part of intelligent systems?

a) Because they completely replace humans.

b) Because they perform mechanical or motor tasks based on AI decisions.

c) Because they operate without an internet connection.

d) Because they only analyze data.

16. How can intelligent systems help fight melting ice?

a) By increasing temperature.

b) By melting the ice more quickly.

c) By ignoring the problem.

d) By monitoring the melting rate and proposing solutions.

17. What is the potential drawback of fully relying on IoT for smart systems?

a) Reducing the efficiency of devices.

b) Increasing internet speed.

c) Inability to make decisions without AI.

d) No need for robots.

18. How can AI improve the efficiency of self-driving cars?

a) By increasing fuel consumption.

b) By analyzing traffic and making safe decisions.

c) By stopping the car suddenly.

nezakr.natega4dk.net

d) By ignoring traffic signals.

19. If you wanted to design a smart system to reduce water consumption in a school, what components would you need?

a) IoT to monitor water consumption, AI to analyze data, and robots to automatically turn off taps

b) Air conditioners only

c) Smartphones without an internet connection

d) Standard lighting systems

20. How can robots be integrated into education using smart systems?

a) By completely replacing teachers

b) By ignoring students' needs

c) By stopping all educational activities

d) By helping students solve questions and providing interactive explanations

21. What is the suggested smart solution to address the problem of drought in agriculture?

a) Using IoT to measure soil moisture, AI to calculate the required amount of water, and robots for automatic irrigation.

b) Increasing water irrigation without analysis.

c) Stopping agriculture completely.

d) Relying only on rainfall.

22. How can a regular hospital be transformed into a smart hospital using smart systems?

a) By removing all medical devices.

b) By stopping all medical services.

c) By linking medical devices to IoT, using AI to diagnose patients, and robots to assist in operations.

d) By relying only on staff.

nezakr.natega4dk.net

23. What is the smart solution to reduce traffic congestion in major cities?

a) Increasing the number of cars.

b) Using IoT to monitor traffic, AI to analyze data and direct cars, and robots to manage traffic lights.

c) Closing all roads.

d) Ignoring the problem.

24. What is the main drawback of using robots in elderly care?

a) Inability to provide emotional support like humans

b) Increased efficiency

c) Time saving

d) Cost reduction

25. How can the impact of intelligent systems on the environment be evaluated?

a) They are not useful

b) They help monitor pollution and suggest sustainable solutions

c) They increase pollution

d) They are simply expensive

26. What is one potential downside of self-driving cars?

a) Their complete reliance on artificial intelligence may lead to errors in the event of a system failure

b) They save energy

c) They improve road safety

d) They reduce accidents

nezakr.natega4dk.net

27. How can the role of artificial intelligence in education be evaluated?

a) They completely replace teachers

b) They are not useful

c) They reduce students' interaction

d) They are a tool to enhance the learning experience and provide personalized explanation.

28. If you were asked to design a robot to assist the elderly, what features would you add?

a) The ability to remind them of their medication times and call for help in emergencies

b) The ability to clean only

c) The ability to play only

d) Not communicating with them

29. How can an early warning system for natural disasters be developed using smart systems?

a) By ignoring data

b) By waiting until the disaster occurs

c) By shutting down all systems

d) By connecting sensors to the IoT, using AI to predict disasters, and sending warnings via robots

30. What is an innovative function for using robots in public parks?

a) Planting and trimming trees, and cleaning parks automatically

b) Neglecting plants

c) Increasing litter

d) Not caring for visitors

nezakr.natega4dk.net

31. How can energy efficiency in cities be improved using smart systems?

a) By increasing consumption

b) By turning off electricity completely

c) By using IoT to monitor consumption, AI to analyze data, and robots to automatically adjust appliances

d) By ignoring the problem

32. What are some innovative solutions to reduce waste in homes?

a) Increased waste

b) Using robots to automatically sort waste, IoT to monitor quantities, and AI to suggest recycling routes

c) Dumping waste on the streets

d) Inattention

33. What do IoT, AI, and robotics have in common in smart systems?

a) They all operate independently without connectivity

b) There is no commonality

c) They are limited to large industries only

d) They integrate to create smart systems capable of communication, analysis, and implementation

34. What is the biggest challenge in implementing smart systems on a large scale?

a) High cost and maintenance requirements

b) Increased speed

c) Decreased efficiency

d) Unnecessary

35. How can smart systems improve the quality of life in cities?

a) By increasing pollution

nezakr.natega4dk.net

b) By shutting down all services

c) By improving services such as transportation, health, and energy management

d) By ignoring the needs of the inhabitants

36. What is the evidence that smart systems are successful in agriculture?

a) Improving crops and reducing waste through smart irrigation and precise monitoring

b) Increasing water waste

c) Neglecting farms

d) No results found

37. What is the most balanced view about the future of smart systems?

a) They will completely replace humans in all areas

b) They will be life-enhancing tools with ethical controls

c) They will be completely useless

d) They will only increase problems

Self-Assessment

Self-assess

Go to the objectives at the beginning of the lesson.

Check the correct, I can..... box.

nezakr.natega4dk.net

Lesson 2

Advanced Cyber Threats



nezakmatega4dk.net

Lesson 2

Advanced Cyber Threats

Objectives:

By the end of the lesson, I will be able to:	After the lesson, check the correct box: I can...		
- Explain advanced fraudulent threats.	☐ Very good	☐ Ok	☐ Need more work
- Mention several ideas for countering advanced cyber threats.	☐ Very good	☐ Ok	☐ Need more work
- Propose a plan to counter distributed denial-of-service attacks.	☐ Very good	☐ Ok	☐ Need more work

Engage:

What do you know about the concept of social engineering in the online world?

Learn:

Dear student... In recent years, we've studied how to protect personal data. We've talked about how to choose your passwords and the need to update your antivirus software to prevent hackers from stealing your personal data. In this lesson, we'll discuss one of the advanced methods hackers use to steal your data.

Advanced Cyber Threats:

Imagine that there are highly skilled thieves, known as hackers, who use sophisticated methods to harm us or steal our information. These methods are called advanced cyber threats, just like these professional thieves. These advanced cyber threats are not limited to simple viruses; they are carefully planned attacks that exploit specific vulnerabilities, whether in the systems or devices used, or even in our behavior as users.

Example: A thief trying to break into your home will not only try to break down the front door, but will also monitor your home to determine when you leave, try to enter through the back window, or even pretend to be a repairman. This is what hackers attempt in the digital world. In previous years, various hacking methods, such as ransom ware, have been discussed.

Types of Ransom ware and How It Works:

Imagine someone has broken into your home, locked you out, and told you that you can't unlock it unless you pay them a sum of money. That's what ransom ware does!

nezakr.natega4dk.net

Ransom ware is a type of malware that encrypts your files (making them unreadable) or locks your devices, demanding a sum of money (a ransom) to regain access.

How does it work? These programs are often spread via suspicious emails, malicious websites, malicious links, or even by downloading software from an untrusted site. Once they infiltrate your device, they quickly encrypt your files, and a ransom message appears.



Activity:

Dear student, in cooperation with your classmates, discuss why ransom ware is a serious threat and how we can protect ourselves and our devices from it.

The concept and methods of advanced social engineering:

Social engineering is not a hack of hardware or software, but rather a hack of minds! It is the art of tricking people into revealing confidential information or performing actions that threaten their security.

Advanced social engineering methods:

• **Spear phishing:** This is an advanced type of phishing that targets specific individuals or organizations with highly personal and convincing emails or text messages. The attacker relies on gathering detailed information about you, such as your name and other information about you, through social media and company websites to convince you to trust them.

• **Pretexting:** The attacker creates a fake story or scenario to trick the victim into obtaining information or performing a specific action. They may pretend to be a technical support employee or a bank official.

• **Baiting:** The attacker offers the victim something attractive (such as a free USB drive containing malware) to entice them to click on or use it.

nezakr.natega4dk.net

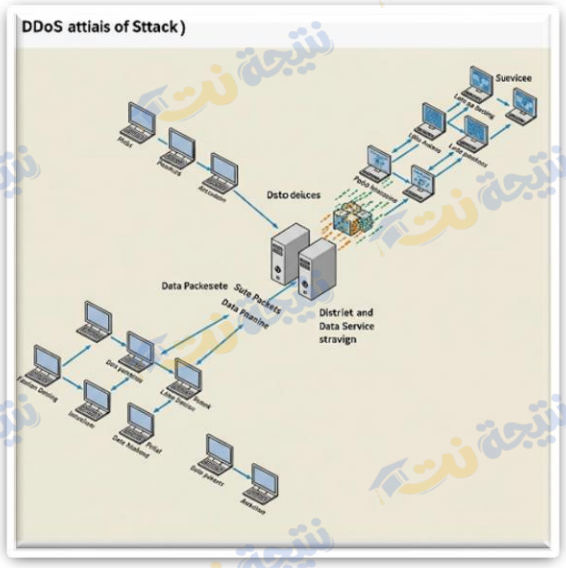
Activity:

Dear student, in cooperation with your classmates, think of examples of fraudulent messages or calls you or a classmate might have received. How can you distinguish between a real message and a fake one?

Distributed Denial of Service (DDoS) Attacks:

Imagine a popular website that many people love to use. Suddenly, a huge number of people (under orders from an attacker to take the site down) start trying to access it at the same time. The site becomes so congested that it cannot receive or provide services to visitors, and consequently, it stops working. This is similar to completely blocking traffic on a street, making it so crowded with cars that it becomes impossible for anyone to pass.

This is what happens in a Distributed Denial of Service (DDoS) attack. The attacker uses multiple compromised devices (called "Botnets") to send massive amounts of requests to a website server or online service, slowing it down or disabling it and preventing legitimate users from accessing it.



Activity:

Dear student, in cooperation with your classmates, draw a simple diagram that illustrates how a DDoS attack occurs.

nezakr.natega4dk.net

Activity:

Dear student, in cooperation with your classmates, discuss the negative effects that DDoS attacks can have on businesses and users.

Dear student... Always remember to be careful and smart while interacting online. You are the first line of defense in protecting your digital world!

nezakr.natega4dk.net

Learn by doing

First: Choose the correct answer from the following:

1. Which of the following is an example of ransom ware?

A) A program that displays annoying ads.

B) A program that encrypts your files and demands a ransom to decrypt them.

C) A program that cleans temporary files from your device.

d) A program that helps you organize your files.

2. What is the primary goal of a distributed denial of service (DDoS) attack?

a) Stealing user data.

b) Disabling a website or online service.

c) Spreading false information.

d) Spying on user communications.

3. Which of the following is considered a social engineering technique?

a) Using programs to crack passwords.

b) Tricking people into revealing their information.

c) Sending viruses via email.

d) Exploiting software vulnerabilities.

4. What does the term "security updates" mean?

a) Changing the appearance of the operating system.

b) Adding new features to software.

c) Fixing security vulnerabilities in software and hardware.

d) Speeding up application performance.

5. What are the botnets used in DDoS attacks?

a) Advanced artificial intelligence programs.

b) A network of compromised devices that are remotely controlled.

c) Superfast computers.

nezakr.natega4dk.net

d) A group of secure servers.

Second: Put a check mark (✓) in front of the correct sentence and a check mark (✖) in front of the incorrect sentence.

1. Ransomware permanently damages your device. ( )

2. Distributed denial of service (DDoS) attacks target only one device. ( )

3. Social engineering relies on exploiting vulnerabilities in technical systems. ( )

4. Sharing your personal information with anyone you trust online is always safe. ()

Third: Fill in the gaps:

1. A _____ program helps detect and remove malware from your device.

2. Attempts to steal your personal information via fake emails are called _____.

3. A _____ program encrypts your files and demands a ransom to recover them.

4. A _____ attack aims to disable a website or online service by sending massive amounts of requests.

5. The art of tricking people into giving up confidential information is called _____.

6. In DDoS attacks, a network of compromised devices is called _____.

7. A targeted _____ is an advanced type of phishing that targets specific individuals.

Self-assess

Go to the objectives at the beginning of the lesson.

Check the correct, I can..... box.

nezakr.natega4dk.net

Lesson3

Big Data



nezakr.natega4dk.net

Lesson 3

Big Data

Objectives:

By the end of the lesson, I will be able to:	After the lesson, check the correct box: I can...		
- Explain the characteristics of big data.	☐ Very good	☐ Ok	☐ Need more work
- Discuss secure big data sources.	☐ Very good	☐ Ok	☐ Need more work
- Infer the types of big data.	☐ Very good	☐ Ok	☐ Need more work

Engage:

What is big data? How can we securely obtain data that helps us make proper decisions?

Learn:

The concept of big data:

A collection of large, complex data that cannot be efficiently processed using traditional technology (such as Excel) to make meaningful use of it. Analyzing big data allows analysts, researchers, and entrepreneurs to make better, faster decisions.

Sources of big data:

1- Internet-connected devices (IoT):

Internet-connected devices such as smart refrigerators, smart watches, or connected cars continuously generate data by collecting information about their location, temperature, behavioral patterns, and energy usage.

Example: A smart watch measures heart rate, physical activity level, and temperature and collects this data to send it to the relevant application.

2- Social Media:

Social media generates data from users' daily activities, such as posts, comments, photos, videos, and likes (and these sources may be unreliable).

Example: when someone posts a photo on Instagram or shares an opinion on Facebook, data is generated about the time, location, reactions, and hashtags.

nezakr.natega4dk.net

3- Financial Data:

Electronic payments, banking transactions, and stock trading contribute to the generation of massive amounts of data by collecting information about amounts paid, users, locations, and times.

Example: when someone makes an online purchase using a credit card, data is recorded about the amount, store, and geographic location.

4- Data from Smart Devices:

Devices such as mobile phones, cameras, and smart home devices generate data about usage, location, and interactions.

Example: A mobile phone constantly tracks your geographic location and collects data about the places you've visited and the apps you've used.

5- Digital Content:

Videos, images, and audio content uploaded or viewed online generate big data such as the number of views, interactions, comments, and shares.

Example: When someone watches a YouTube video, data is collected about the viewing time, video interactions, and comments.

6- Government Data:

Governments generate data through population registers, statistics, tax data, and censuses.

Example: Data about the population of a particular area or information about income and expenditures is collected through government surveys.

7- Geographic and Spatial Data:

Satellites and GPS devices collect data about geographic locations, roads, and the environment.

Example: a mapping application like Google Maps collects data about traffic, vehicle speed, and congested roads to improve routing.

The 5Vs of Big Data

1- Volume

Refers to the massive amount of data collected and stored. As technology advances, we have greater capacity to collect data from multiple sources such as smart devices, social media, and others.

nezakr.natega4dk.net

2- Velocity

Refers to the speed at which data is generated and processed. In the internet age, data is generated very quickly, such as electronic payments, social media updates, and data streams from connected devices.

3- Variety

Refers to the variety of data types collected. This includes structured data (such as databases) and unstructured data (such as text, images, and videos).

4- Veracity

Refers to the reliability and quality of the data. Sometimes, data may be inaccurate or contain errors, making it difficult to extract accurate information from it.

5- Value

Refers to the usefulness that can be derived from the data. It is essential to extract and analyze data in a way that delivers actual value to the organization or individual.

Types of Big Data

1- Structured Data:

Data that is organized and arranged in tables with rows and columns, similar to traditional databases.

Examples: Customer data, financial data, transaction records.

2- Unstructured Data

This is data that does not come in a structured form, such as tables or databases. This type of data is difficult to analyze using traditional tools.

Sources: Text, images, videos, and social media posts.

Example: A Facebook post containing text, images, and videos.

3- Semi-Structured Data

Semi-structured data is a hybrid of structured and unstructured data. Emails are a good example because they include unstructured data in the message body, as well as additional structural features such as sender, recipient, subject, and date.

Dear student, always make sure to record data accurately and cite the sources of the information you have relied on, as this enhances the reliability of the information and helps verify its accuracy.

nezakr.natega4dk.net

Learn by doing

Put a check mark (✓) in front of the correct sentence and a check mark (×) in front of the incorrect sentence.

1. Big data can be easily processed using Excel. ( )
2. Big data analysis allows analysts, researchers, and entrepreneurs to make better and faster decisions. ( )
3. Internet-connected devices are a source of big data. ( )
4. All data collected through social media is documented. ( )
5. Financial data is not considered big data. ( )
6. When you make an online purchase using a credit card, data about the amount, the store, and the geographic location is recorded. ( )
7. Smartphones do not generate big data. ( )
8. Your mobile phone constantly tracks your geographic location and collects data about the places you visit and the apps you use. ( )
9. Digital content such as videos generates big data. ( )
10. Videos, images, and audio content uploaded or viewed online do not generate big data. ( )
11. Governments generate data through population registers, statistics, tax data, and censuses. ( )
12. Satellites and GPS devices collect data about geographic locations, roads, and the environment. ( )
13. The characteristics of big data include "volume" and "value." ( )
14. The speed of data generation is not a characteristic of big data. ( )
15. The variety of data types includes structured data (such as databases) and unstructured data (such as text, images, and videos). ( )
16. Veracity refers to the reliability and quality of data. ( )

nezakr.natega4dk.net

17. Structured data is data that comes in an unstructured form, such as customer data and financial data. ( )
18. Unstructured data is data that does not come in a structured form, such as tables or databases. ( )
19. Semi-structured data is a hybrid of structured and unstructured data. ( )
20. Emails are a good example of structured data. ( )

Self-assess

Go to the objectives at the beginning of the lesson.

Check the correct, I can..... box.

nezakr.natega4dk.net

Lesson4

Big Data and Its Relationship to Artificial Intelligence



nezakr.nateja4u.com

Lesson 4:

Big Data and Its Relationship to Artificial Intelligence

Objectives:

By the end of the lesson, I will be able to:	After the lesson, check the correct box: I can...		
- Discuss the stages of big data processing. - Explain the uses of big data.	☐ Very good	☐ Ok	☐ Need more work
- Cite as many examples as possible of how artificial intelligence relies on big data.	☐ Very good	☐ Ok	☐ Need more work
	☐ Very good	☐ Ok	☐ Need more work

Engage:

How does artificial intelligence rely on big data?

Learn:

Big data play a vital and fundamental role in the development and effectiveness of artificial intelligence. AI requires big data to operate and learn, while AI technologies help process and analyze this massive amount of data and extract value from it.

First: The stages of big data processing:

1- Big data collection:

This is the process of collecting massive amounts of data from the sources mentioned above.

2- Data storage:

Once the data is collected, it is stored in large databases, which can be located on servers or cloud systems.

3- Data cleaning:

The collected data may contain errors, duplication, or incorrect data. Therefore, it must be cleaned and verified.

nezakr.natega4dk.net

4- Data analysis:

After storing and cleaning the data, it is time to analyze the data using advanced tools and techniques such as artificial intelligence and machine learning.

5- Information extraction:

After analyzing the data, valuable information is extracted that can be used to improve operations or make strategic decisions.

Second: Uses of Big Data

1- Artificial Intelligence (AI)

It is a branch of information systems science that creates and designs algorithms that mimic human intelligence methods, enabling computers to perform certain tasks instead of humans, such as pattern recognition, speech, hearing, movement, and logical reasoning.

2- Machine Learning and Deep Learning:

Big data is used to train models that can improve their performance over time. The greater the quality, volume, and variety of data available, the greater the ability of these models to learn and make accurate predictions and decisions. For example, machine learning is used to predict future events such as weather.

3- Network Monitoring and Cybersecurity

Big data is used to monitor network traffic and analyze patterns to detect security threats and protect systems from attacks.

4- E-commerce

E-commerce platforms rely on big data to understand customer behavior, improve recommendations, adjust prices, and achieve higher sales using advanced analytics.

Third: The Role of Big Data in Artificial Intelligence:

A- Improving Accuracy and Performance:

Big data enables models to be trained on a wide range of scenarios and conditions, improving their generalization ability and reducing the overfitting problem, thus increasing their accuracy and effectiveness in the real world.

B- Enabling Advanced AI Applications:

1-Natural Language Processing (NLP):

nezakr.natega4dk.net

NLP models, such as large language models like GPT, require processing very large text datasets to learn to understand and accurately generate human language.

2-Computer Vision

Computer vision applications, such as face recognition and object detection, rely on massive datasets of images and videos to train their models.

3- Predictive Analytics:

Big Data enables AI to analyze massive amounts of historical data to identify patterns and trends, allowing for accurate predictions about future events, such as customer behavior or market trends.

4- Discovering Hidden Insights and Patterns:

Thanks to AI's ability to process and analyze big data, businesses and organizations can discover valuable insights and hidden patterns that traditional tools struggle to identify. These insights can lead to innovative strategic decisions.

Example: in healthcare, big data from medical records can be analyzed to identify patterns that help diagnose diseases and develop personalized treatment plans.

5- Continuous Learning and Adaptation:

Real-time massive data streams allow AI models to continuously learn and adapt to new data, improving their performance over time based on incoming information.

6- Improving User Experience and Automating Tasks:

AI uses big data to understand customer interactions with products and services, enabling it to provide personalized recommendations and content tailored to their interests.

Big data also helps machine learning algorithms recognize patterns and make decisions without human intervention, automating tasks in areas such as customer service, logistics, and finance.

Dear student... Big data is the raw material that feeds artificial intelligence. Without it, AI would be nothing more than a set of theoretical algorithms incapable of learning or delivering real value. In contrast, AI helps transform this raw data into strategic information that helps inform decisions and gain a competitive advantage.

nezakr.natega4dk.net

Learn by doing

Put a check mark (✓) in front of the correct sentence and a check mark (✗) in front of the incorrect sentence.

1. Big data has no role in the development and effectiveness of artificial intelligence. ( )
2. AI technologies help in processing and analyzing big data. ( )
3. One of the stages of big data processing is data cleaning. ( )
4. The data collection stage is the process of collecting large amounts of data from various sources. ( )
5. The process of processing big data does not require storing that data. ( )
6. Data cleaning means dealing with errors, duplication, or incorrect data. ( )
7. Data analysis using advanced tools and techniques such as artificial intelligence.

( )

8. Information extraction takes place before data analysis. ( )
9. Machine learning and deep learning do not require big data. ( )
10. Big data is used to monitor networks and cybersecurity. ( )
11. E-commerce platforms rely on big data to understand customer behavior. ( )
12. Big data does not allow models to be trained on a wide range of scenarios and conditions. ( )
13. Computer vision applications, such as face recognition and object detection, do not require massive datasets of images and videos to train their models. ( )
14. The role of big data in AI is to improve accuracy and performance and enable AI applications. ( )
15. Advanced AI applications include predictive analytics and computer vision. ( )
16. AI does not use big data to understand customer interactions with products and services. ( )

nezakr.natega4dk.net

17. Big data helps machine learning algorithms recognize patterns and make decisions without human interference. ( )
18. Big data improves task automation in areas such as customer service, logistics, and finance. ( )
19. Big data is not the raw material that feeds artificial intelligence. ( )
20. AI is just a set of theoretical algorithms that are incapable of learning or delivering real value without big data. ( )

Self-assess

Go to the objectives at the beginning of the lesson.

Check the correct, I can..... box.

nezakr.natega4dk.net

Unit Two

Website Design and Creation



nezakr.nateqa4all.net

Lesson 1

Principles of Designing Professional and Attractive Website Interfaces



nezakr.natega4dk.net

Lesson 1:

Principles of Designing Attractive, Professional Website Interfaces

Objectives :

By the end of the lesson, I will be able to:	After the lesson, check the correct box: I can...		
- Explain some concepts related to website design (user interface design - user experience). -List as many ideas as possible for websites with good UX/UI design. - Employ some basic UX/UI principles in simple classroom activities.	☐ Very good	☐ Ok	☐ Need more work
	☐ Very good	☐ Ok	☐ Need more work
	☐ Very good	☐ Ok	☐ Need more work

Engage:

By browsing websites, what are the most important things that make it easier for you to use this website?

Learn:

Dear student, in this lesson, we will discuss the interface design of the websites and applications you use daily, the quality of the services they provide, and why you feel comfortable using them, while you may feel uncomfortable or uncomfortable using other websites.

First: The Concept of User Experience (UX) Design

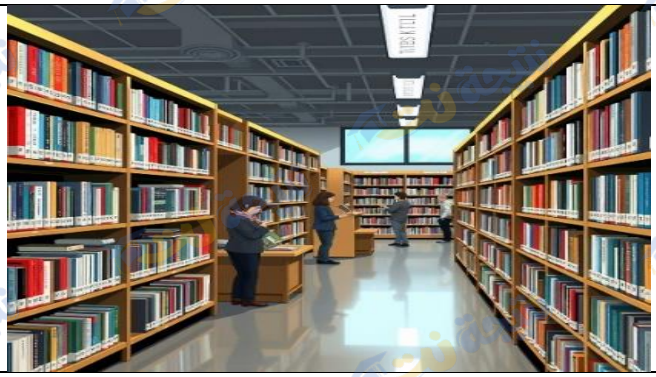
Imagine you're designing a new educational website or game. You must consider every step the player will take and how they will feel while playing. Is the game easy to understand? Are the commands clear? Will the player enjoy their time? This is what we call User Experience (UX) Design.

1. User Experience (UX) Design:

It's considering how people use the application or website. Can they easily find what they need? Do they feel happy while using it?

Example: Imagine you want to search for a book in a large library. If the books are arranged in an organized manner, it will be easy and convenient, but if the books are scattered randomly, you will feel frustrated.

nezakr.natega4dk.net

	
• The books are thrown randomly	• The books are arranged in an organized manner

2. The Importance of User Experience (UX) Design:

• "If an app or website is easy to use, the user will feel satisfied and will return. If it's difficult, they may abandon it forever."

Activity: Dear student, with the help of your teacher and in cooperation with your classmates, name one of the websites or apps you use. Describe what makes the website or app easy or difficult to use.

Reasons for the ease of the site or application	Reasons for the difficulty of the site or application
.....	.....
.....	.....
.....	.....

Activity: Dear student, with the help of your teacher and in cooperation with your classmates, discuss the basic principles that must be present and observed to facilitate user interaction with a website or application.

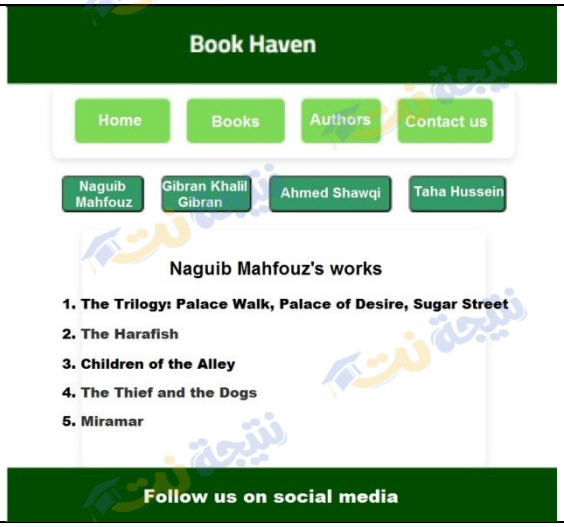
- Basic principles to consider in UX design:

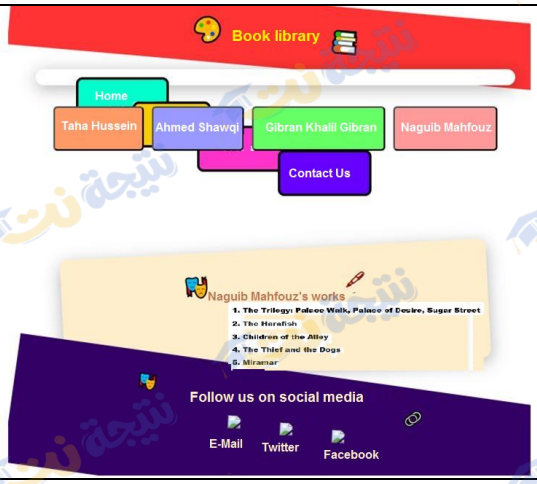
1. Ease of navigation:

• Ease of navigation means that the user can quickly and effortlessly find what they are looking for.

• Illustrated examples:

nezakr.natega4dk.net

<table>
<tr>
<td>
</td>
<td>• A main menu with clear buttons such as "Home," "Books," and "Contacts".

• This menu is easy to navigate because the options are clear and organized.</td>
</tr>
<tr>
<td>• A nested menu with many sub-items. This menu is disorganized and "confusing" because the options are too many and unclear.</td>
<td>
</td>
</tr>
</table>

• Activity:

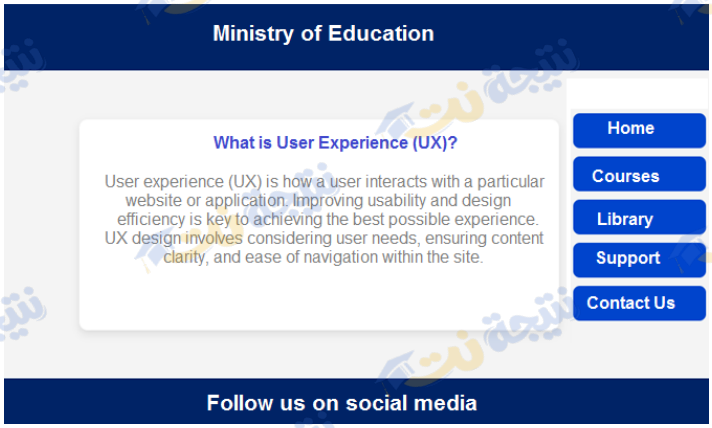
Dear student, with the help of your teacher and in cooperation with your classmates, draw a simple navigation menu for an imaginary app or website.

2. Clarity:

• "Interface clarity is the presentation of information in a way that is easy to understand."

• Illustrated examples:

nezakr.natega4dk.net



Large, clear, and easy-to-read text.

Small, ornate font text. Difficult to read and may be frustrating.



Activity:

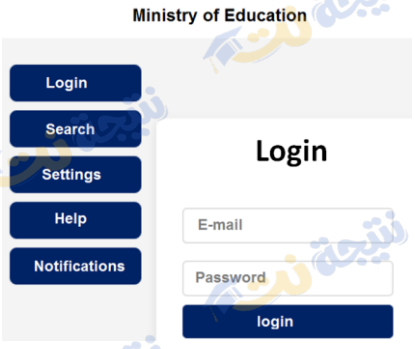
• Write a short sentence, "Water is the secret of life," using clear and complex writing, and compare the two.

……

3. Consistency:

• Interface consistency means maintaining the same style throughout the application or website.

• Illustrated examples:



The buttons feel familiar to the user, with the same shape and color everywhere

nezakr.natega4dk.net

The buttons confuse the user because they are inconsistent, with different shapes and colors.



Activity:

• Using drawing tools, design two buttons with the same shape and color to illustrate the importance of symmetry.

Activity:

Dear student, with the help of your teacher and in cooperation with your classmates, name an app or website you like best for its beautiful and eye-catching design.

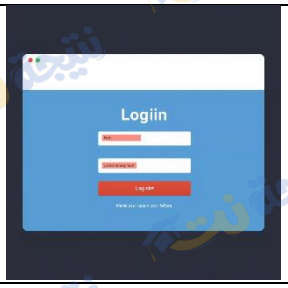
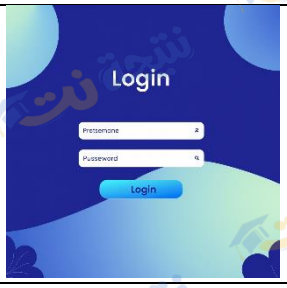
• **Example:** Imagine if the app buttons were too small to be easily pressed. This indicates a UI design problem.

1. What is User Interface (UI) Design?

"User Interface (UI) design is the way a website, app, or game appears, such as:

• Are the colors attractive? Are the buttons clear? Are the fonts easy to read? All of these elements form an interface that the user sees and interacts with in an attractive, organized, and easy-to-understand manner.

Example: Imagine if the app buttons were too small to be easily pressed. This indicates a UI design problem

		
Design problem		

nezakr.natega4dk.net

2. The Importance of UI:

• Visual Appeal: A beautiful interface creates a good first impression by displaying a simplified image of one eye looking with admiration at a beautiful design, and another eye looking with displeasure at a disorganized and ugly design. If the interface isn't visually appealing, users won't like it.

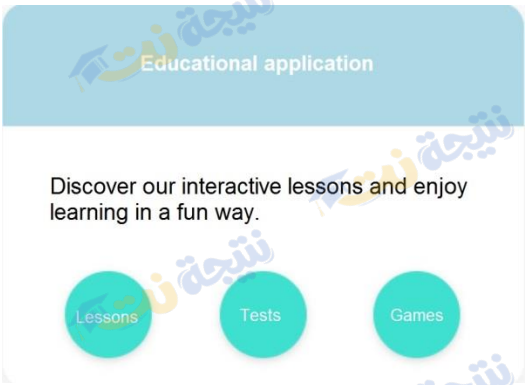
Activity: Dear student, with the help of your teacher and in cooperation with your classmates, discuss the basic principles that must be present and taken into account in designing the user interface of a website or application.

- Basic Principles of User Interface (UI) Design

1. Colors:

• "Choosing the right colors affects the user's mood."

• Illustrated Examples:



A harmonious color scheme such as blue and gray. The colors look calm and relaxing.

Bright colors like red, yellow, and purple are annoying and distracting.



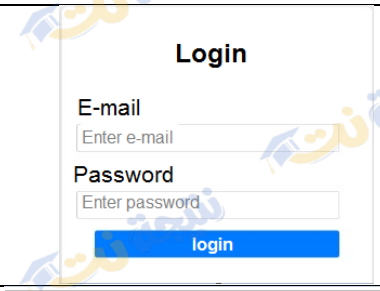
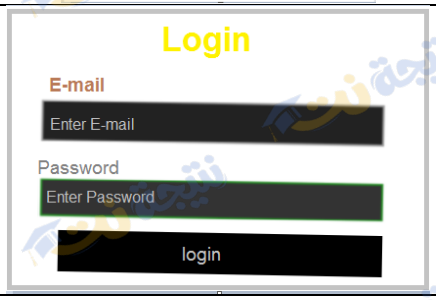
nezakr.natega4dk.net

Activity: Dear student, with the help of your teacher and in cooperation with your classmates, choose three harmonious colors to design an imaginary interface.

2. Fonts:

• "Interface fonts should be legible and appropriate to the context."

• Illustrated examples:

	**Simple, clear font. Description: "This font is easy to read and looks formal".**
	**A complex and decorative font. Description: "This font is difficult to read and not suitable for practical applications."**

Activity: Dear student, with the help of your teacher and in cooperation with your classmates, choose three appropriate font names for an educational application.

3. Layout:

• "Organizing interface elements in a logical manner makes the website or the application are easy-to-use.

• Illustrated examples:

	• A page divided into clear sections such as "Home," "News," and "Articles." Description: "This page is organized and easy to navigate." • A page full of tightly packed elements. It's cluttered and causes headaches.

nezakr.natega4dk.net

• A page full of cluttered elements. It's crowded and causes headaches.	

Activity: •

• Dear student, with the help of your teacher and in cooperation with your classmates, draw on a piece of paper a page design divided into three main sections in an organized manner.

.....

• From the above, you can define the following terms:

o User Experience (UX): The design that makes using the website or application easy and convenient.

o User Interface (UI) of a website or application: The design that makes the application beautiful and attractive.

o Example: When you enter a restaurant for lunch, the restaurant's décor, colors, and interface that attract your attention is the UI, while the quality of the food and service provided is the UX.

4- Practical Examples

1. Examples of Good Websites:

• **Google**'s website is simple and easy to use; you can find what you need quickly.

• **YouTube**'s website has an attractive and easy-to-navigate design.

• Notice how interfaces have become more intuitive and beautiful over time.

Practical Activity:

• Form small groups of students and discuss a website or app they use daily. Ask them:

- What makes the website or app easy and enjoyable to use?
- What could be improved in terms of design?

nezakr.natega4dk.net

Learn by doing

Choose the correct answer from the following:

1- What is the primary focus of User Experience (UX) design?

a) The visual appeal of the design.

b) The usability and effectiveness of the product.

c) The colors and fonts used in the design.

d) The website's loading speed.

2- What is the primary focus of User Interface (UI) design?

a) Ease of navigation within the application.

b) User satisfaction with the product.

c) The visual appeal of the product.

d) The logical organization of information.

3- Which of the following is a fundamental principle of User Experience (UX) design?

a) Using decorative fonts to attract attention.

b) Providing clear and easy navigation for the user.

c) Using as many colors as possible.

d) Placing as much information on a single page as possible.

4- Which of the following is a fundamental principle of User Interface (UI) design?

a) Making all buttons the same size and shape.

b) Choosing colors that are consistent and pleasing to the eye.

c) Providing multiple ways to accomplish the same task.

d) Ensure that all text is unreadable.

5- What does the principle of "consistency" mean in UX/UI design?

a) Use different elements on each page to make it stand out.

nezakr.natega4dk.net

b) Maintain a consistent style for elements throughout the product.

c) Change the website design frequently to keep users interested.

d) Use random fonts and colors.

6- Why is usability important in UX design?

a) To make the design look more professional.

b) To increase user satisfaction and interaction with the product.

c) To reduce the cost of product development.

d) To make the product run faster.

7- Why is visual appeal important in UI design?

a) To make the product easy to use.

b) To leave a good first impression with the user.

c) To better organize information.

d) To make the product compatible with all devices.

8- Which of the following examples illustrates a confusing navigation design?

a) A main menu with clear buttons.

b) A search bar in a prominent location.

c) A list of overlapping, unorganized items.

d) Clear links at the end of the page.

9- Which of the following examples illustrates the use of inconsistent colors in UI design?

a) Using simple color gradients.

b) Using complementary colors from the color wheel.

c) Using many bright, different colors randomly.

d) Using white as the primary color with a muted secondary color.

Put a check mark (✓) in front of the correct sentence and a check mark (×) in front of the incorrect sentence.

1. User Experience (UX) design focuses primarily on the appearance of the product, not how it is used. ( )

nezakr.natega4dk.net

2. User Interface (UI) design is concerned with making the product easy to use and effective. ( )
3. One of the principles of UX design is to provide clear and easy navigation for the user. ( )
4. Using decorative fonts extensively improves the legibility of text in UI design.

( )

5. Consistency in design means using the same style for elements throughout the product. ( )
6. Ease of use does not affect user satisfaction with the digital product. ( )
7. The visual appeal of the UI can affect the user's first impression. ( )
8. A main menu with clear buttons is an example of good navigation design. ( )
9. Using many different colors in an organized manner improves the aesthetics of the design. ( )

Complete the following sentences:

1-User Experience (UX) design primarily focuses on making a product _____ easy to use

2-User Interface (UI) design primarily focuses on making a product _____ attractive.

3-A fundamental principle of UX design is providing a clear _____ for the user to navigate between pages.

4-When choosing a _____ for a user interface, it should be pleasing to the eye and easy to read.

5-Maintaining _____ in the design of elements such as buttons and icons creates a sense of professionalism and consistency.

Terminology:

1. A design process aimed at making a digital product easy, useful, and enjoyable to use for the user. _____

nezakr.natega4dk.net

2. The process of designing the visual elements of an application or website in an attractive, organized, and easy-to-understand manner. _____
3. A principle in UX design that refers to the importance of helping the user easily find what they are looking for within a product. _____
4. A principle in UI design that refers to the importance of choosing harmonious and pleasing colors. _____

Self-assess

Go to the objectives at the beginning of the lesson.

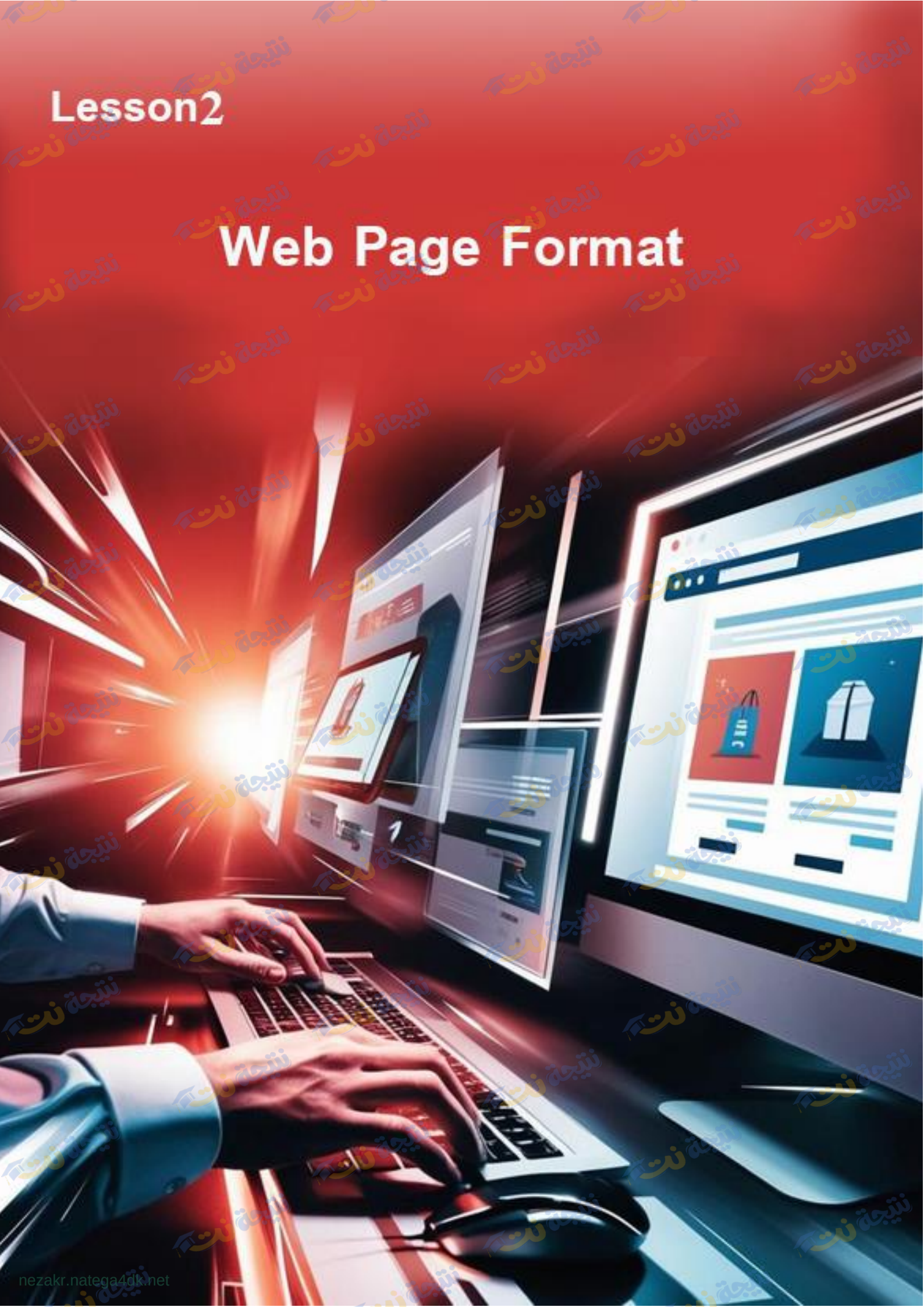
Check the correct, I can..... box.

nezakr.natega4dk.net

nezakr.natega4dk.net

Lesson2

Web Page Format



nezakr.natega4dk.net

Lesson 2:

Web page Format

Objectives:

By the end of the lesson, I will be able to:	After the lesson, check the correct box: I can...		
- Discuss web page layout (CSS).	☐ Very good	☐ Ok	☐ Need more work
- Write the basic structure of CSS correctly.	☐ Very good	☐ Ok	☐ Need more work
- List the benefits of the CSS language:	☐ Very good	☐ Ok	☐ Need more work

Engage:

What is CSS? Explain.

Learn:

In previous years, we studied HTML, a coding language used to create static website pages that are displayed using internet browsers.

HTML was designed to describe the content of a web page. To format a web page, tags such as <font> and color attributes were added to HTML. Developing large websites became cumbersome and tedious, as font and color formatting had to be added to each page, and formatting each web page became a lengthy and expensive process.

To solve this problem, the World Wide Web Consortium (W3C) created CSS, eliminating the need to add tags within an HTML page!

Cascading Style Sheets (CSS):

We use CSS to format the appearance of web pages (such as font color, font size, web page color, etc.). It saves a lot of effort, as it can control the formatting of multiple web pages simultaneously.

Benefits of CSS:

- **Time-saving:** You can place the required formatting code in a separate CSS file and include it in any number of HTML pages you want to use.

nezakr.natega4dk.net

- **Loading speed:** When you place the formatting code in a CSS file and include it in website pages, the browser only downloads the file once and stores it. Then, when accessing any page linked to this file, the browser uses the previously stored version instead of downloading the file each time.

- **Ease of modification:** Once you modify the formatting code placed in the CSS file, all web pages linked to it will automatically have their formatting adjusted.

- **Improved aesthetic appearance:** The page becomes more attractive and visually organized.

- **Improved readability:** Choosing appropriate fonts and colors makes the content easier to read.

- **Separating design and formatting from web page content**: The appearance and formatting of a web page and all other web pages can be changed from the original file. A way to modify a separate CSS file without having to change the HTML structure of each page. When we want to change colors or fonts again, the CSS file is modified.

- **Building responsive and adaptive pages:** Using CSS, you can make the screen design responsive to different screen sizes (computer, mobile, tablet, etc.) on which pages are viewed, so that they appear appropriately relative to the size of the page on which they are opened.

The basic structure of CSS

The general syntax of CSS code is as follows:

Selector {Property: Value};

Selector: Represents an HTML element or group of elements to which formatting will be applied, such as "body."

Property: Specifies what you want to change (e.g., color, size, spacing, etc.)

Value: Specifies how you want to change the property.

How to add CSS to HTML code?

There are three ways to insert CSS:

1. Inline CSS: Used to apply formatting directly to page elements.

2. Internal CSS: Used to format individual pages.

3. External CSS: Preferably used in large websites to unify the design and layout of their pages.

nezakr.natega4dk.net

In this lesson, we will discuss External CSS and how to write code for External CSS.

- CSS code is written in a separate file with the ".CSS" extension.

- The CSS file is linked to the HTML page using the <link> tag within the head area.

- The external CSS file allows you to change the appearance of all of your website's web pages by making changes to just one file!

- The external CSS file should not contain any HTML tags.

The <link> tag is written inside the HTML file as follows:

<link href="fileName.css" rel="stylesheet">

Where:

The href attribute: is the name of the CSS file and the file path.

The rel attribute: is used inside the <link> tag in HTML files to specify the relationship between the HTML file and another external file—often a CSS file.

rel="stylesheet": tells the browser that the file referenced in the href attribute is a CSS file that should be loaded and applied to the page.

Example: Creating an HTML file calls a CSS file named my style, which is stored in the same folder.

First: HTML File Code

<html>

<head>

<link rel="stylesheet" href="mystyle.css">

</head>

<body>

<h1>Here is the page title</h1>

 Here the content appears

</body>

</html>

Second: CSS File Code

body {background-color: light blue;}

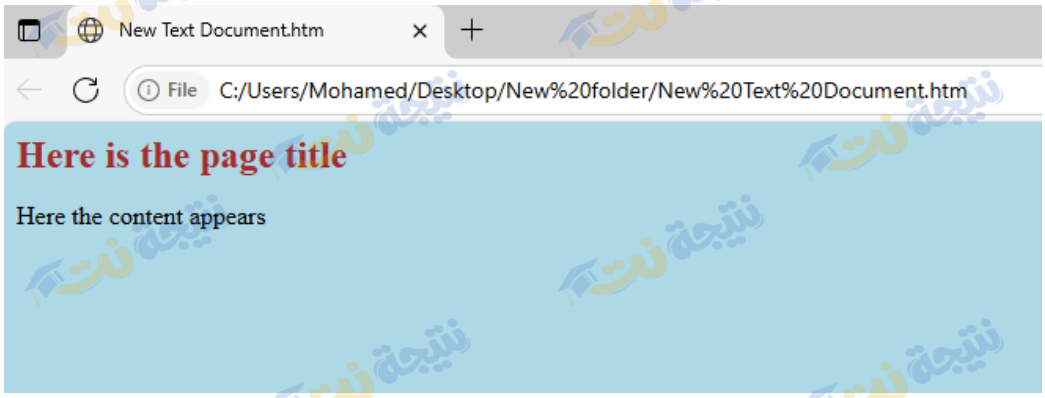
nezakr.natega4dk.net

h1 {color: brown; font-size: 24px;}

Dear student... Note the following:

• The body element in the CSS file affects the body area of the HTML file and makes it appear light blue.

• The h1 element in the CSS file affects the main web page headings and makes them brown and 24px in size.



Activity:

Dear student, based on your study of HTML in previous years, create

- **The two web pages shown below.**
- **Use external CSS code to create a uniform format for the web pages.**

A web page containing school data.

A web page containing student data.

nezakr.natega4dk.net





Note:

Notice the uniform formatting of both pages – how can this be achieved with minimal coding?

As we'll see, we'll write the code responsible for formatting both pages once in the CSS file, rather than duplicating it within each HTML page.

nezakr.natega4dk.net

Learn by doing

First: Put a check mark (✓) in front of the correct sentence and a check mark (✗) in front of the incorrect sentence.

1. The HTML language is used only to describe the appearance of web pages. ( )
2. The CSS language was created to facilitate the formatting of web pages and to separate the formatting from the content. ( )
3. One of the benefits of CSS is that it is used to design the structure and content of a page. ( )
4. An external CSS file can be used to format a large number of HTML pages at once. ( )
5. The <font> tag is still the preferred method for formatting text in modern HTML pages. ( )
6. An external CSS file is embedded in HTML using the <link> tag. ( )
7. The browser loads the external CSS file only once and then uses the saved copy. ( )
8. The rel="stylesheet" attribute is used when linking a CSS file to an HTML file. ( )
9. An external CSS file can contain HTML tags. ( )
10. CSS can be used to change the font size and color. ( )
11. Inline CSS is used to apply styles to all pages on a website. ( )
12. Internal CSS is best used on large websites to standardize formatting. ( )
13. CSS makes it easy to modify the appearance of all linked pages at once. ( )
14. Formatting HTML elements with CSS makes a page more organized and attractive. ( )
15. In CSS code, the Selector defines properties such as "color" and "size." ( )
16. The body element in CSS can change the background of the entire page. ( )

nezakr.natega4dk.net

17. CSS makes it impossible to make a design responsive to different screen sizes. ( )

18. Writing formatting code within each HTML page is more efficient than using external CSS. ( )

19. Separating formatting from content helps speed up editing and updating processes. ( )

20. When you change formatting in an external CSS file, the appearance of the linked pages is not affected. ( )

Self-assess

Go to the objectives at the beginning of the lesson.

Check the correct, I can..... box.

nezakr.natega4dk.net

Lesson3

My Digital Project for my school



nezakr.natega4dk.net

Lesson 3:

My Digital Project for My School

Objectives:

By the end of the lesson, I will be able to:	After the lesson, check the correct box: I can...		
- Explain the concept of my digital project using HTML.	☐ Very good	☐ Ok	☐ Need more work
- Write my project code correctly.	☐ Very good	☐ Ok	☐ Need more work
- Design my school's page in an attractive way.	☐ Very good	☐ Ok	☐ Need more work

Engage:

How can you design an attractive website?

Learn:

Write the HTML code needed to design two web pages

And write the CSS code needed to format them

Steps

First: Prepare a folder containing the files needed to create the pages

Activity:

Dear student, with the help of your teacher and in cooperation with your classmates,

- Create a folder named "project"

- Within the "project" folder, using a text editor, create the files needed to implement the project:

File	Type	Function
School.htm	HTML	It stores the HTML code for the school data page.
Student.htm	HTML	It stores the HTML code for the student data page.
Style.css	CSS	It stores the CSS code used to format the two pages.

nezakr.natega4dk.net

Activity:

Dear student, with the help of your teacher and in cooperation with your classmates, write the HTML code for the school data page design in the school.htm file and save it.

HTML Code for the School Data Page

```
<html>
<head>
<title>School Data</title>
<link rel="stylesheet" href="style.css">
</head>
<body>
<div class="container">
<header>
<h1> [School Name] Middle School</h1>
</header>

<section>
<h2>Basic Information</h2>
<img src="sc.jpg" width="300" height="200"> <br><br>
School Name: [Full School Name] <br><br>
Address: [Detailed School Address] <br><br>
Phone Number: [School Phone Number] <br><br>
Email: [School Email]
</section>

<section>
<h2>School Activities</h2>
[List one or two activities offered at the school] <br><br>
[List another activity, if applicable]
</section>

<footer>
```


nezakr.natega4dk.net

```
<p> School Information &copy; 2025 </p>
</footer>
```

</body>
</html>

Explanation of the HTML code for a school data page

<html>

This tag is the main element that contains the entire content of the page.

<head>

This part contains important information for the browser but does not appear within the content of the page itself. For example:

<title>

Defines the title that appears in the browser bar (in this case: "School Data").

<link rel="stylesheet" href="style.css">

Links the HTML file to an external CSS file called style.css so that it can be used to style the page.

<body>

This is where the content that appears to the user is written.

** **

The div element is used as a container or section of the page to organize the page content and can be used to group elements for purposes such as styling.

class="container" refers to code within a CSS file used to style the container and its content.

<header>

It is used to define the top of the page or container, which contains important information and typically contains the main heading. Its use enhances the organization of the page.

<h1>[School Name] Middle School</h1>:

Provides a main title for the page.

<section>

nezakr.natega4dk.net

The container is divided into two sections.

The first: represents a section within the container related to basic school information.

The second: represents a section within the container for school activities.

<h2>Basic Information</h2>

A subtitle for the first section.

<h2>School Activities</h2>

A subtitle for the second section.

<footer>

Represents the bottom of the page or container and often contains copyright or contact information.

** &copy**; 2025 School Information

A paragraph of text displaying the copyright. The © symbol represents the copyright symbol.

** **

Close the div container

</body>

Close the body element

</html>

Close the html element

Activity:

Dear student, with the help of your teacher and in cooperation with your classmates, write the HTML code for the student information page design in the student.htm file and save it.

Student Data Page HTML Code

<html>

<head>

<title>Student Data</title>

<link rel="stylesheet" href="style.css">

</head>
<body>

nezakr.natega4dk.net

```
<div class="container">
<header>
<h1>Student Information</h1>
</header>

<section>
<h2>Personal Information</h2>
<img src="st.jpg" width="300" height="200"><br><br>
Student Name: [Student's Full Name]<br><br>
Date of Birth: [Student's Date of Birth]<br><br>
Grade: [Student's Grade]<br><br>
Residence: [Student's Residence]
</section>

<section>
<h2>Contact Information</h2>
Parent Phone Number: [Parent Phone Number] <br><br>
Student Email (if applicable): [Student's Email]
</section>

<footer>
<p> Student Information &copy; 2025</p>
</footer>

</div>
</body>
</html>
```

Explaining the HTML code for the student data page

Activity:

Dear student, with the help of your teacher and in cooperation with your classmates, complete the explanation of the following HTML code for designing the student data page.

<html>

....

<head>

nezakr.natega4dk.net

This section contains important information for the browser but does not appear within the page content itself. For example:

<title>

....

<link rel="stylesheet" href="style.css">

Links the HTML file to an external CSS file named style.css so that it can be used to style pages.

<body>

Here is written the content that appears to the user.

** **

....

class="container" refers to code within the CSS file used to style the container and its contents.

<header>

Used to identify the top of a page or container, containing important information and typically containing the main heading. Its use enhances the organization of the page.

<h1>Student Information</h1>

....

<section>

The container is divided into two sections.

The first represents a section within the container related to basic school information.

The second represents a section within the container for school activities.

<h2>Personal Information</h2>

....

<h2>Contact Information</h2>

A subheading for the second section.

<footer>

Represents the bottom of the page or container and often contains copyright or contact information.

** © 2025 Student Information **

nezakr.natega4dk.net

....

** **

Close the container div

</body>

....

</html>

Close the HTML element

Activity: Dear student, with the help of your teacher and in cooperation with your classmates, the CSS code for formatting my two web pages

```
body {
text-align: center;
font-weight: bold;
}
```

```
.container {
width: 80%;
margin: auto;
background-color: lightcyan;
}
```

```
header {
padding: 10px;
color: white;
background-color: darkblue;
}
```

```
section {
padding: 15px;
}
```

```
h2 {
padding-bottom: 10px;
color: blue;
border-bottom: 5px solid blue;
}
```


nezakr.natega4dk.net

```
footer {
padding: 5px 0;
color: white;
background-color: black;
}
```

Explanation of the CSS code for formatting my web pages

body

This part controls the appearance of the entire page.

text-align: center; Centers text in the center of the page.

font-weight: bold

To make the text bold

container

This part of the formatting code controls the div container's layout

width: 80%

Container width represents 80% of the page's width

margin: auto

Horizontally centers the container within the page

background-color: lightcyan

Makes the container's color light cyan

header

Contains the layout for the top bar containing the container's title

padding: 10px

Adds 10 pixels of internal space around the content to make the bar taller. color: white

Make the font color white for the top bar

background-color: darkblue

Make the top bar color dark blue

section

Is the main content box (for example, "School Information")

nezakr.natega4dk.net

padding: 15px

Adds a 15px margin between the content of the element (the content box) and its border

h2

Controls the subheading format (for example, "Basic Information")

padding-bottom: 10px

Specifies the spacing after the subheading.

border-bottom: 5px solid blue

Make a 5px thick line under the subheading and color blue

footer

Contains the formatting for the bar below the container

.... (Almost identical to the header formatting)

Self-assess

Go to the objectives at the beginning of the lesson.

Check the correct, I can..... box.

nezakr.natega4dk.net

Lesson4

Create your website with the help of Artificial Intelligence



nezakr.natega4dk.net

Lesson 4:

Create your website with the help of Artificial Intelligence

Objectives:

By the end of the lesson, I will be able to:	After the lesson, check the correct box: I can...		
- Design my website.	☐ Very good	☐ Ok	☐ Need more work
- Practice the steps of creating simple websites using a free artificial intelligence tool.	☐ Very good	☐ Ok	☐ Need more work
- Develop my website.	☐ Very good	☐ Ok	☐ Need more work

Engage:

How can you create a website? What is the role of artificial intelligence in this?

Learn:

Dear student, have you ever imagined that you could create your own website in the shortest possible time? Yes, it is now possible thanks to amazing artificial intelligence technologies. This website will be your own digital window on the internet, through which you can showcase your ideas, hobbies, or even your school project to the world! This is what your website offers you. There are many students around the world your age who use the internet to publish their own creative content.

Activity: Dear student, in cooperation with your classmates, discuss: Is creating a website complicated and does it require advanced programming skills?

Activity: Dear student, in cooperation with your classmates, discuss why we need a website.

In today's digital world, websites have become an essential part of our lives. Here are some reasons why having a website is important:

nezakr.natega4dk.net

A platform for self-expression

A place to showcase your hobbies, talents, and achievements in a creative way that reflects your personality.

A way to connect with the world

A way to share your thoughts and interests with like-minded people.

Developing Future Skills

An opportunity to learn important digital skills that will benefit you in your studies and future career.

Showcase School Projects

An ideal platform to showcase your school projects and research in a professional and attractive manner.

Activity: Dear student, with the help of your teacher and in cooperation with your classmates, discuss whether artificial intelligence can be used to design your website. How can you do this?

We learned in previous years that artificial intelligence is a technology that enables computers to learn and think like humans. It can help us design and build websites based on what we ask of them. Before the advent of artificial intelligence tools, creating a website required learning programming languages like HTML, CSS, and JavaScript. Today, we can create professional websites in minutes without writing a single line of code!

Artificial intelligence can understand what you want and implement it quickly. All you have to do is tell it what you want your website to look like, and it will design and build it. Artificial intelligence can:

- Understand simple commands and transform them into a professional design
- Save time and effort learning complex programming languages
- Suggest creative ideas and designs that fit your website's theme
- Can quickly modify the design based on your feedback

Activity: Dear student, with the help of your teacher and in cooperation with your classmates, search online for artificial intelligence tools for website creation.

Artificial Intelligence Tools for Website Creation

Today, we'll use smart tools powered by advanced AI technologies to help us create a beautiful and functional website. These smart tools understand what we want and translate it into a real design.

nezakr.natega4dk.net

Wegic	Jimdo Dolphin
A tool that uses artificial intelligence to generate websites based on the commands and preferences you provide. **Features:** • Easy-to-use interface • Diverse design options suitable for students • **Link**: wegic.ai	An easy-to-use platform that uses artificial intelligence to generate websites based on simple information you provide. **Features:** • Mobile-friendly • Modern design suitable for small businesses • No technical skills required • **Link**: jimdo.com

In this lesson, we will use **wegic.ai** for its ease of use and availability of a free plan suitable for students. The steps for using it apply to all similar smart tools.

Remember: You don't need to write any code! Artificial intelligence will do all the hard work for you.

Activity: Dear student, with the help of your teacher and in cooperation with your classmates, discuss the type of website you would like to create today. Write down your ideas:

• The type of website you want to create (personal, blog, hobby site, school project, etc.)

• Select 2-3 colors for the web pages that reflect your personality

• Select the theme of the website

• The pages you will need to create on the website, such as (home page, about us, contact, etc.)

Steps to create a website using the artificial intelligence tool Wegic.ai

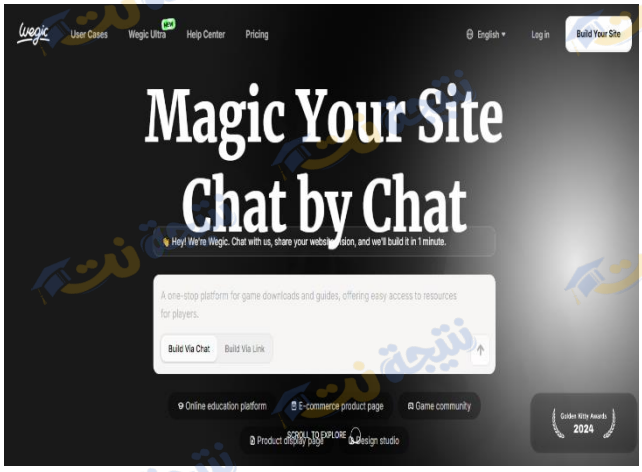
We will create a website step by step using text commands that we will direct to the artificial intelligence through the **wegic.ai** tool.

Steps to get started:

1. Log in to https://wegic.ai/app

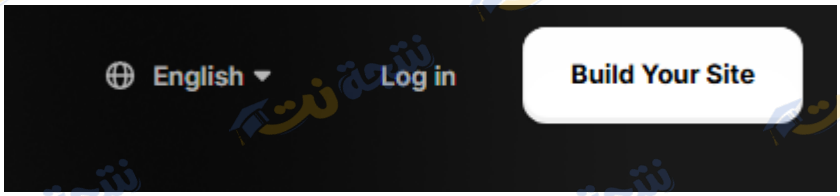
2. Create a simple account using your email.

3. Click “Start Now” and follow the steps.



nezakr.natega4dk.net

Click on the option (Build your site)



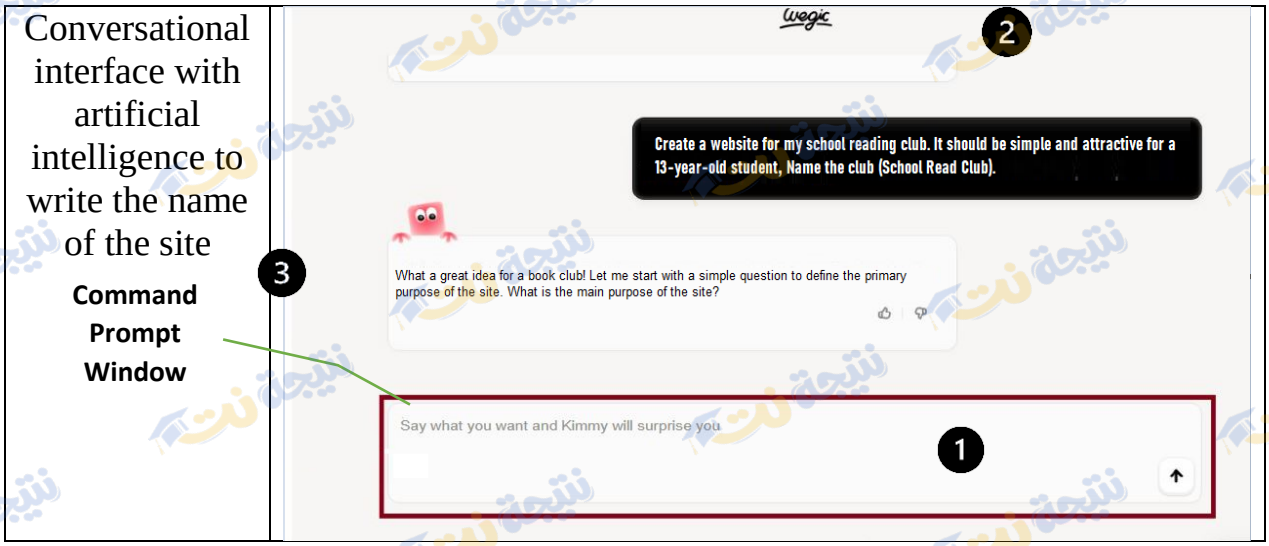
First: Determine the type of website

The first step is to tell the AI what type of website you want to create. Be clear and specific to get the best results for your site.

In the designated writing space, type a command for the AI:

"Create a website for my school reading club. It should be simple and attractive for a 13-year-old student. Name the club (School Read Club)."

Note: The text commands written by the artificial intelligence tool to build v



A. **You will be asked:** For the website name: Enter a new name that represents the unused website. It is preferable to write the website name in English.

B. **You will be asked** what type of content you would like to display on your website (e.g., educational articles, book reviews, reading recommendations, etc.).

C. **Follow the remaining steps below while directing commands to the website until completion.**

You can modify this command to suit your website's theme. For example:

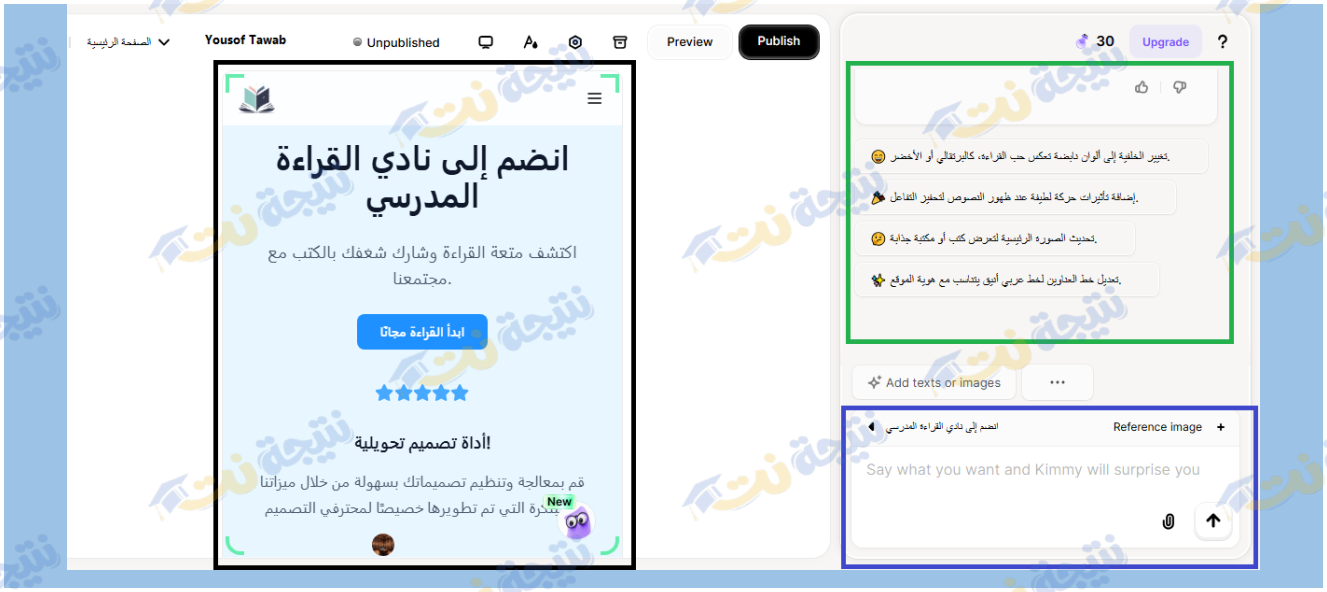
• "Create a website to display my graphics"

Important note: Be as specific as possible when describing your website. For example, instead of "Create a website for football," you could say "Create a website

nezakr.natega4dk.net

for my school football club, which displays the team's matches, photos, and competition schedule."

You can preview the website while you type commands to the AI, as in the following image:



1- A window for writing commands to the AI

2- A window for viewing the chat between you and the AI

3- A window for previewing the execution of commands to the AI

Second: Choosing the design and colors

After selecting the type and name of the site, you can direct the AI to choose the design and colors you prefer that match the theme of your site and reflect your personality.

In the designated writing space, type a command for the AI:

"Make the design modern and colorful, using blue and white as the main colors. I want the design to be suitable for a 13-year-old student."

nezakr.natega4dk.net

Common design patterns:		Color coordination ideas:
• **Modern:** Simple and elegant • **Playful:** Bright colors and animated elements • **Professional:** Elegant and calm • **Creative:** Untraditional and distinctive		• Blue, green, and white • Purple, pink, and light white • Black, gold, and white

Important Note: Choose colors that harmonize with each other (2-3 colors maximum). Clashing colors can make your site difficult to read and visually distracting!

Third: Adding Basic Pages

Every website needs a structure of different pages to organize the content. Let's ask the AI to create these pages.

In the designated writing area, type a command for the AI:

Add a home page, an 'About Us' page, a 'Our Activities' page, and a 'Contact Us' page.

Suggested home pages:

• Home: Overview and welcome

• About us: Information about you or your project

• Blog/articles: A place to share your ideas

• Image gallery: Images that express your interests

• Contact us: Ways to contact you

Fourth: Add content to each page, for example:

In the designated writing space, type a command for the AI:

Add an 'About Us' page explaining that this site is for my school's book club. We are a group of students who are interested in reading and meet weekly to discuss the books we are reading.

Don't worry if the text suggested by the AI isn't perfect; you can modify it later to highlight your personality.

nezakr.natega4dk.net

Fifth: Add an Image Gallery

Images add vibrancy and appeal to your website. Let's request a dedicated section to display images.

In the designated text box, enter a command for the AI:

I'm adding a photo section where I can display photos of club events and book covers we've read. I want to display the photos in a nice grid format that allows visitors to click on the image to view it larger.

Available gallery types:

• **Grid Gallery:** Equal-sized images arranged in a grid

• **Slideshow:** Animated images appear one after the other

• **Masonry Gallery:** Images of different sizes arranged in a grid

• **Lightbox Gallery:** Opens in a large format on click

Important note: The AI adds default images, which you can later replace with your own.

Sixth: Add a contact form and contact information

It's important for your website visitors to be able to contact you. Let's add a way for them to contact you.

In the provided text box, type a command for the AI:

Add a contact form on a separate page called 'Contact Us' so that those interested in joining the club can submit their applications. Also include contact information such as the club's email address and meeting times.

What you can add in the contact section:

• Contact form: For visitors to send you direct messages

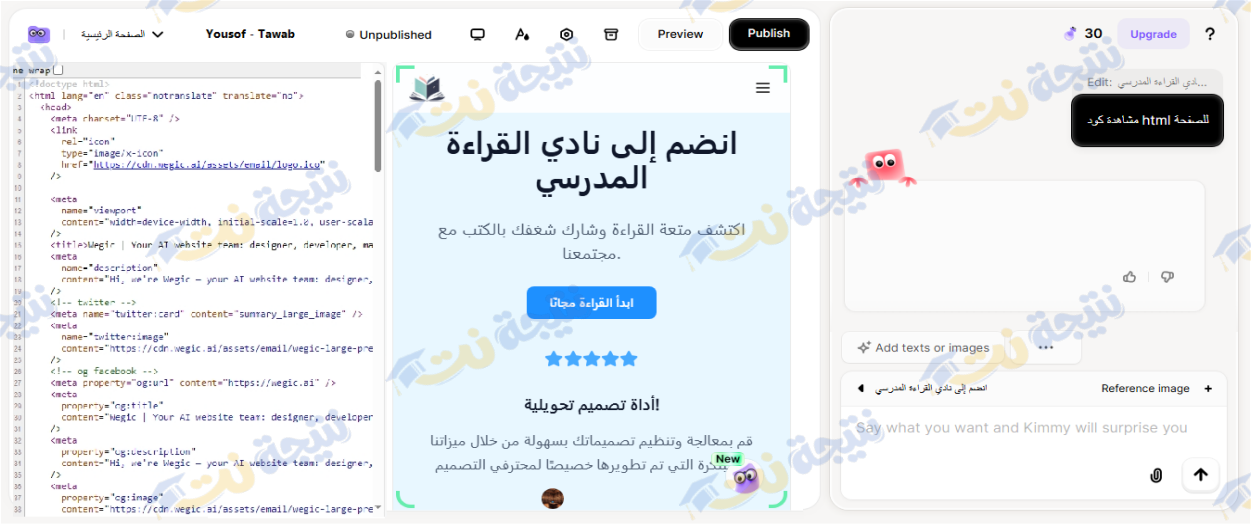
• Email (with your teacher or parent's permission)

• Social media links (if you have them)

• QR code leading to your website or contact information

Important safety alert: Remember to use secure contact information with the permission of your teacher or administrator and your parents. Be careful when sharing personal information online and consult your parents or teacher before adding real contact information.

nezakr.natega4dk.net



Customize and Edit Your Website

After the AI has created the basic structure of your website, it's time to add your own personal touch and make it unique!

Edit Text

Click on any text on the website to edit and add personalized content that expresses you.

In the designated text area, type a command for the AI:

> **"This text has been modified to be more engaging and suitable for middle school students."**

Change colors and fonts

Try different color combinations to find what best expresses your personality and the theme of your website.

In the designated text box, type the command for the AI:

> **Change the title color to light green and the background color to beige.**

Adding personal photos

Replace the default photos with your own (after obtaining teacher permission).

In the designated text box, type the command for the AI:

> **"Replace this image with another image showing a group of students reading."**

nezakr.natega4dk.net



The final appearance of the website is ready to be published online.

Important Tips for a Successful Website

Additional Ideas for Improving Your Website

- Add a custom logo to your website
- Add a schedule if your website is for a club or team
- Include short videos (if available)
- Add links to other useful pages

Tips for Choosing Colors:

- Use only 2-3 primary colors
- Ensure good contrast between the text and the background
- Choose clear, easy-to-read fonts

Your website should be characterized by:

Simplicity: Don't overcomplicate your website with too many elements; a simple, organized design is more attractive and easier to use.

Mobile-Friendly Website: Most people browse the internet on their smartphones, so make sure your website looks good on small screens.

Privacy and Security: Don't share personal information like your address or phone number on your public website. Use a contact form instead.

nezakr.natega4dk.net

Constant Updates: A website is like a garden; it needs constant care. Update its content regularly to keep it fresh and useful.

Activity with the help of your teacher and in cooperation with your classmates:

Plan your website

Use paper or a notebook and write your answers to the following questions:

1. What is the topic of the website you want to create?

2. What pages would you like your website to have?

3. What colors would you prefer to use?

4. What type of content would you add to the website? (Text, images, videos, etc.)

5. Who do you expect to visit your website?

Create your website using artificial intelligence tools

Follow these steps:

1. Open the **wegic.ai** website and register a new account (or use another tool recommended by your teacher)

2. Choose the option to create a website using artificial intelligence (**wegic.ai**)

3. Write down the commands you planned in the first activity

4. Review the results and make any necessary adjustments

Presenting and Evaluating Your Website

After you've finished creating your website:

1. Show your website to your classmates

2. Ask them for positive feedback and suggestions for improvement

3. Record your feedback and use it to improve your website later

Important Notes:

Get approval from your teacher and parents before posting any personal information online. Safety and privacy come first!

Future Project Ideas:

• Website for an online school magazine

• Platform for sharing class projects

• Digital art gallery for the school

nezakr.natega4dk.net

nezakr.natega4dk.net

Learn by doing

First: Choose the correct answer from the following:

1. What is the primary purpose of creating a website?

a) Playing games only

b) Communicating and displaying information to the world

c) Storing personal files

d) Sending text messages only

2. What has made creating websites much easier now?

a) The increase in the number of programmers

b) The use of artificial intelligence technologies

c) The decrease in the price of computers

d) The disappearance of programming languages

3. An example of an AI tool that helps in building websites is…… .

a) Paint

b) Word

c) Wegic.ai

d) Calculator

4. When using AI tools to build a website, do you need to be a programming expert?

a) Yes, you must be a professional

b) Yes, you need some experience

c) No, you don't need advanced programming experience

d) Only if you want a complex website

5. What are the scripts we write to an AI tool to create a website called?

a) Code

b) Descriptive Images

c) Prompt

nezakr.natega4dk.net

d) URL

6. If you want to make your website about a sports club, which prompt is the most appropriate first step?

a) "Choose a blue design"

b) "Add a contact page"

c) "Create a website for a sports club"

d) "Add pictures of books"

7. To add information about yourself or the topic of your website, which page do you most often create?

a) Contact page

b) Photo page

c) "About us" page

d) Home page

8. Why is it important to determine the colors and overall design of the website at the beginning of work?

a) So that icons appear better

b) To customize the basic appearance of the website

c) To increase website speed

d) To attract more programmers

9. What does an "image page" add to your website?

a) Introductory text

b) Contact information

c) Attractive visual elements

d) Audio clips

10. Which of the following is NOT considered contact information that might be added to a website?

a) Email

b) Social media link

c) Phone number

d) Designer's name

nezakr.natega4dk.net

11. After AI creates the basic structure of the website, what can you do?

a) Nothing, it can't be modified

b) Make minor changes to the design and text

c) Recreate the website from scratch

d) Delete the entire website

12. Why is it important for prompts to be simple and clear?

a) To reduce the size of the website

b) To help AI better understand your request

c) To increase the number of visitors

d) To save time when publishing

13. The main goal of using AI in website building in our lesson is to…… .

a) Transform you into professional web developers

b) Introduce you to the capabilities of AI in website building

c) Save money on programmers

d) Create gaming websites only

Second: Put a check mark (✓) in front of the correct sentence and a check mark (✗) in front of the incorrect sentence.

1. Creating a website using artificial intelligence requires you to write complex code. ( )

2. The importance of websites is limited to large companies only. ( )

3. You can use wegic.ai to create a simple website using text commands. ( )

4. The "About Us" page is used to display images of your activities. ( )

5. The prompt is the text command you give to the artificial intelligence to understand your request. ( )

6. After the website is created by artificial intelligence, you cannot make any modifications to it. ( )

7. Choosing colors and design at the beginning of work is not very important. ( )

Third: Complete the following sentences with the appropriate words or phrases:

1. To create a website that showcases your ideas to the world, you need _____.

nezakr.natega4dk.net

2. Artificial intelligence technologies help facilitate the process of _____ websites.

3. A tool like wegic.ai works based on the text you write.

4. The prompt is the _____ we enter into the AI tool.

5. The first step in creating a website with AI is to define the _____ of the website.

6. To add a place to display your images on the website, you can ask the AI to add a section for _____.

7. The "About Us" page is used to provide an introductory _____ about the website's topic.

8. Text commands should be simple and _____ for the AI to understand.

9. After creating the website, you can perform simple _____ on the text and design.

10. One of the most important aspects of websites in the current era is that they are a means of _____ and displaying information.

Fourth: Answer the following question:

1. If you had the opportunity to create your own website, what would its topic be, what would be the two most important pages you would want to add, and why?

.....
.....

Self-assess

Go to the objectives at the beginning of the lesson.

Check the correct, I can..... box.

nezakr.natega4dk.net

Translation Committee

Dr. Ghada Elsayed Mohamed

English Language Curriculum Expert

Dr. Amira Fawzy Ahmed

Head of English Language Department

nezakr.natega4dk.net