Introduction to Computing Systems



Objectives

01

Read and comprehend the meaning of the terms related to computer components;

02

discuss the principles, challenges, and applications of computing systems looking at some case studies.

03

Differentiate present simple in the active and passive voice;

Lead-in:





1. What is the relevance and importance of computing systems in modern society? (for communication, education, business, healthcare, etc.)

2. How do computing systems impact various aspects of our lives, from personal use to business applications?

Workstation



a very fast computer that runs powerful work programs.

Tablet

a computer that is smaller than a laptop with a touch screen and used to browse the Internet and check email.



Mainframe

a very powerful computer that can process large amounts of data.



PDA

A PDA (Personal Digital Assistant) is a small computer that is used to organize a person's schedules and information.



Handheld PC

A handheld PC is a computer that is smaller, slower and less powerful than a laptop and used to browse the Internet and check email.



Server

A server is a computer that connects many computers to hardware.



Supercomputer

A supercomputer is a large computer that is built to process large amounts of information at a higher speed than other computers can handle.



Read the sentences and choose the correct word

1. My (tablet/mainframe) notifies me when I have a meeting.
2. I have a (laptop/ supercomputer) to do work on the plane.
3. John has a (server/ desktop computer) because he only uses simple programs.
4. This (computer/server) runs programs but doesn't have Internet access.
5. A (workstation/ tablet) is smaller than a laptop but still has a keyboard.
6. Connect to the (server /laptop) to use that printer.
7. A (supercomputer/tablet) is the most powerful machine in the world.

Match the words with the definitions (A-C)

smartphone	mainframe	workstation

A. large and powerful computer that supports many other computers working at once mainframe

B. fast computer that is used by one person and has more memory than an ordinary personal computer workstation

C. a device that makes and receives calls and can connect to the Internet smartphone

Grammar

In passive voice, the present simple tense is used to describe actions that are performed on the subject by an unspecified or unknown agent (person). This can be helpful when discussing general processes or actions without specifying who is performing them.

Example:

Active Voice: *The program compiles the code every hour.*

Passive Voice: The code is compiled every hour.

In this example, the focus is on the action of compiling, and the subject "the code" becomes the object in the passive construction. This helps computer science students understand how tasks are completed within a system without needing to specify the person (actor) carrying out the action.

Structure: to be (am, is, are) + Past Participle

Present Simple in Active Voice:

Affirmative sentence	Negative sentence	Interrogative sentence
I (you, we, they) load the computer every day. She (he, it) loads the computer every day.	I don't load the computer every day. She doesn't load the computer every day.	Do you load the computer every day? Does she load the computer every day?

Structure: to be (am, is, are) + Past Participle

Present Simple in Passive Voice:

Affirmative sentence	Negative sentence	Interrogative sentence
I am asked to load the computer every day. You (we, they) are asked to load the computer every day. She (he, it) is asked to load the computer every day.	I am not asked to load the computer every day. You (we, they) are not asked to load the computer every day. She (he, it) is not asked to load the computer every day.	Am I asked to load the computer every day? Are you (we, they) asked to load the computer every day? Is she (he, it) asked to load the computer every day?

Convert the sentences from Active to Passive or Passive to Active

Active: The developer writes the code.
Passive: The code **is written** by the developer.

Active: The IT team maintains the server.
Passive: The server **is maintained** by the IT team.

Passive: The emails are sent automatically.
Active: The system **sends** the emails automatically.

Active: The software engineer tests the program.
Passive: The program **is tested** by the software engineer.

Activity

Write the correct form of the verbs and complete the sentences

RAM ……. (store) temporary data in the computer, while expansion cards ……. (enhance) its capabilities. 2. Mainframes …… (utilize) by large organizations for their powerful computing needs. 3. Workstations ……. (use) by professionals for their high-performance capabilities. 4. Tasks ……. (execute) quickly by the processor, and data ……. (store) on the hard drive, while all components …… (connect) by the motherboard.

- **Answers: 1. stores/ enhance. 2. are utilized. 3. are used. 4. are executed/ is stored/ are connected**

Watch a video & answer the questions



Mark the following statements as *True* or *False*

1. Relative to their cost, desktops have the most amount of power, speed, storage and upgradeability.

_____
True
False

2. Laptops are the easiest to upgrade and repair.

True
False

3. Desktops have a lot of cables and are not as portable as laptops.

True
False

4. The most common Mac people purchase is the iMac.

True
False

5. Laptops called ‘desktop replacements’ are not as powerful as their desktop counterparts.

True
False

6. Tablets are designed to be network-based devices.

True

Listen to a conversation between an IT professional and a new employee. Choose the correct answers.

1. Which of the following computers are NOT shared by employees at TEI Inc.?

A. the server
B. workstations
C. laptops
→ D. desktop computers

2. According to the dialogue, employees use the server to ... .

→ A. open programs
B. reserve workstations
C. log onto desktop computers
D. borrow laptops



Case Study on Smart Home Security

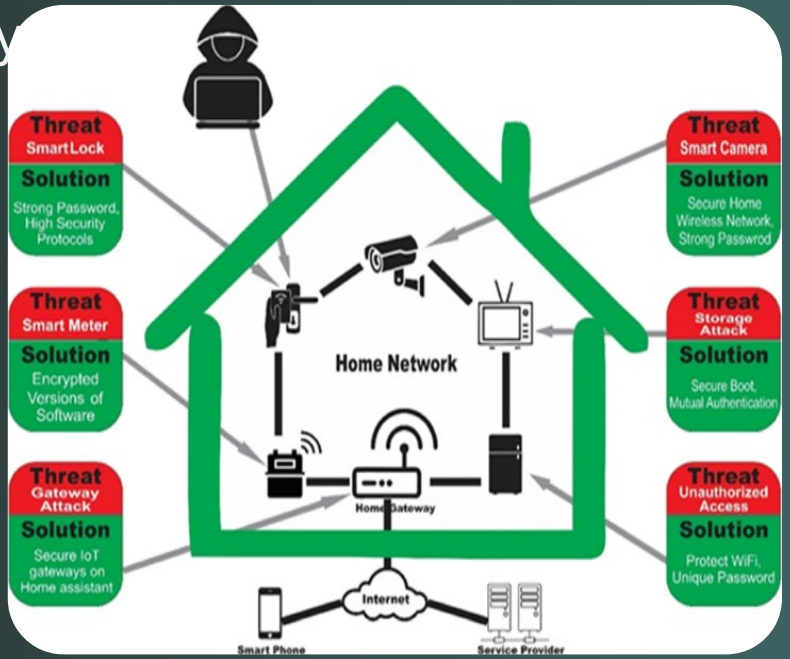
Smart Home Systems leverage computing technology to provide homeowners with advanced control over various aspects of their living environment, such as lighting, temperature, security, and appliances. These systems typically incorporate a combination of sensors, actuators, communication devices, and centralized control units to automate and manage home functions.

Principles:

1. Interconnectivity
2. Monitoring and Control
3. Data Analysis
4. User Interface
5. Integration

Challenges:

1. Interoperability
2. Data Security
3. Reliability
4. Complexity



Applications:

1. Energy Efficiency and Comfort
2. Home Security
3. Convenience
4. Health
5. Home



Group Activity:

Discuss and describe some case study examples covering various aspects of computing systems. Provide the principles, challenges, and applications of chosen technologies’ computing systems.

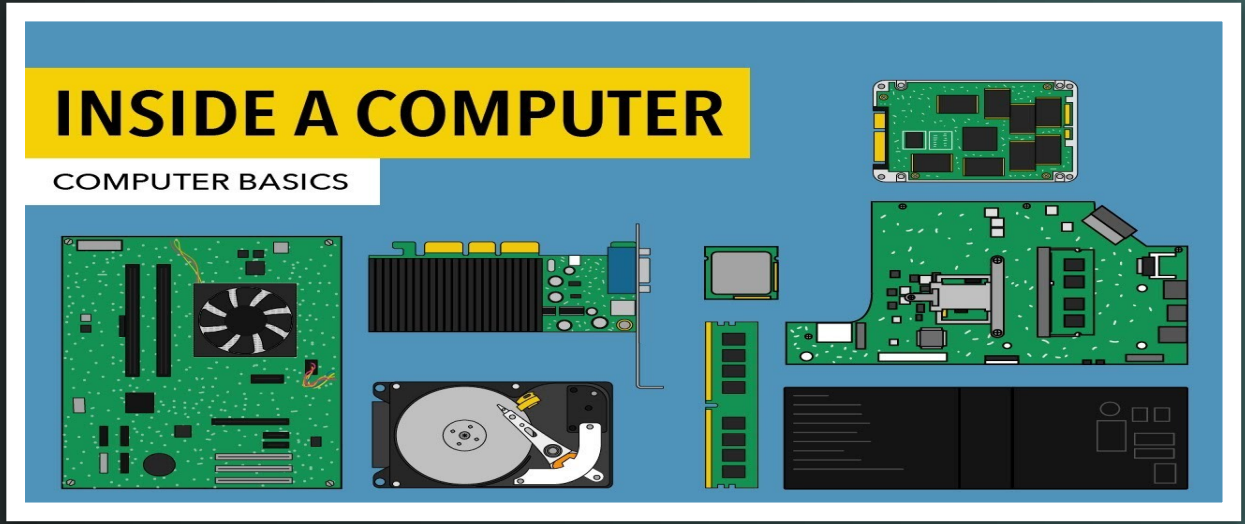


Homework

Write a summary of the chosen computing technology by providing the principles, challenges, and applications.


Thank You
For Your Attention

Inside the computer



Objectives:

1. **Identify and describe the primary internal components of a computer;**
2. **Read and comprehend the meaning of the terms related to computer components;**
3. **Use target vocabulary in speaking and writing.**

Get Ready!

1. Which components make up a typical desktop computer?





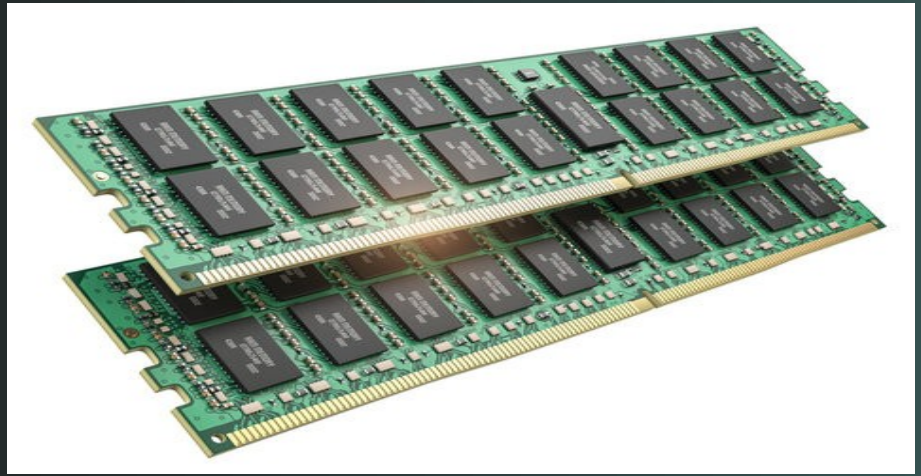
2. What do you call a person who repairs computers?

Heat sink



it transfers heat away from the processor in the computer.

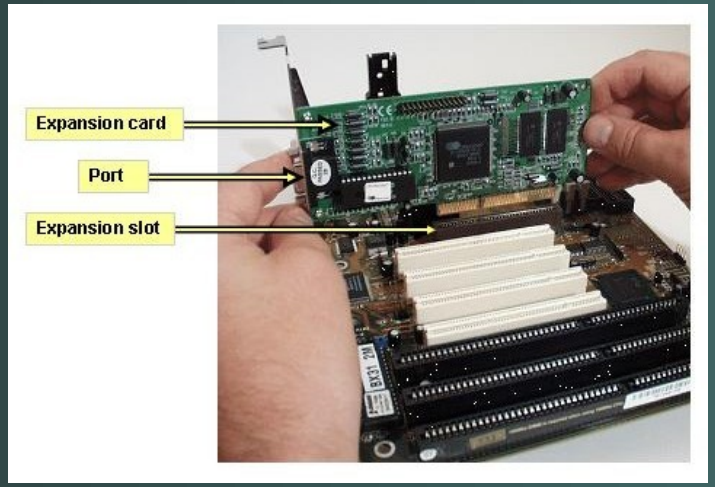
RAM



(Random Access Memory) is a memory that can be quickly accessed.

Expansion cards

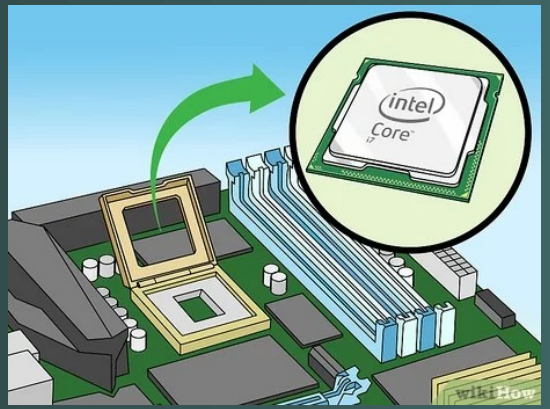
extra circuit boards that are used to increase the functions of a computer.



Processor

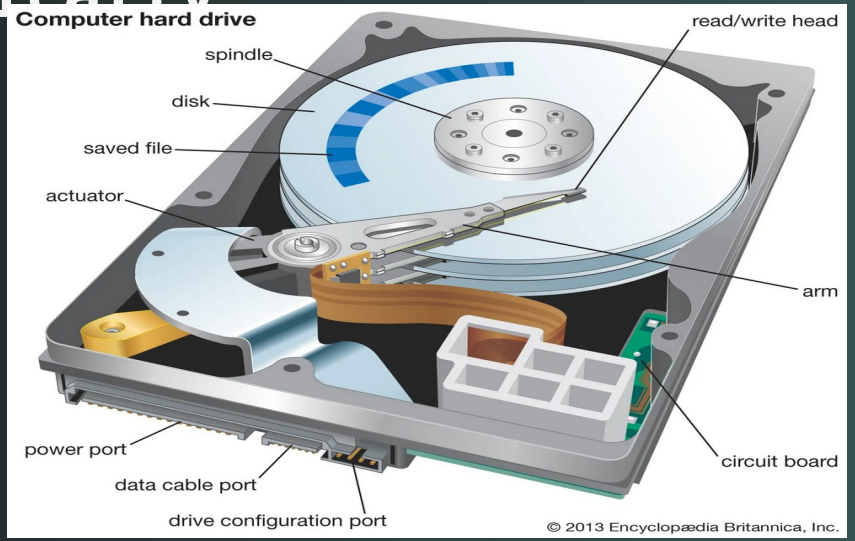


holds the instructions of computer programs.



Hard drive

equipment that stores data electronically



Case

an enclosure that holds the computer’s components.



Fan



an equipment that moves cool air onto computer components inside the case.

Motherboard



a firm slotted board onto which computer circuitry is attached.

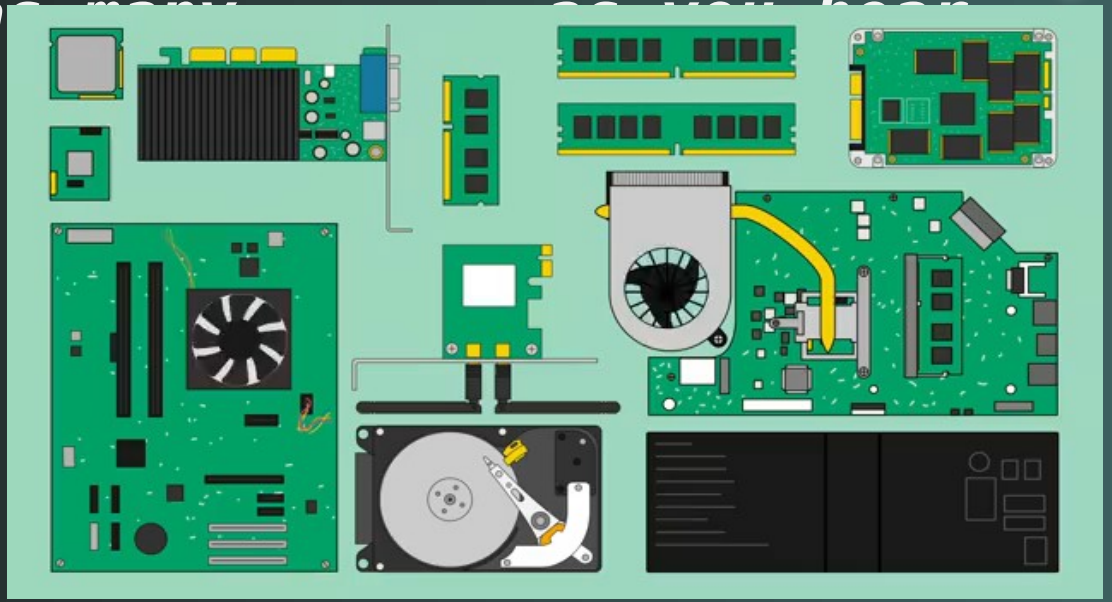
Power supply

it delivers electricity to all parts of a computer.



Activity:

Watch a video about “Inside a computer” and write the main components of a computer as many as you hear



Activity:

Write a word that is similar in meaning to the underlined part.

1.The central processing unit in the data center processes large volumes of information.

mainframe

2.Spinning blades keep the computer from overheating.

fan

3.Joey purchased a protective bag for his computer.

case

4.The technical staff gathered around the desktop computer to collaborate on the project.

workstation

5.Make sure to back up your important files regularly on the disk drive.

harddrive

Match the words with the definitions (A-F)

heat sink	motherboard	hard drive	RAM	expansion card	processor

A. a slotted board with circuits and ports **motherboard**

B. a short-term, quick memory source **RAM**

C. a part used to cool the processor **heat sink**

D. a part used to store large amounts of data **hard drive**

E. a part used to increase a computer's functions **expansion card**

F. a part that completes tasks for the computer **processor**

Reading

Inside the Computer

In a computing system, the mainframe is used by large organizations for handling massive data processing tasks. Workstations are powerful computers designed for professionals working on complex projects. Tablets are portable devices favored for their convenience and mobility. RAM serves as the computer's temporary memory, while expansion cards enhance its functionality. The processor is the brain of the system, executing instructions at lightning speed. Data is stored on the hard drive, and the motherboard acts as the central hub connecting all components. The power supply ensures a steady flow of electricity to keep the system running smoothly, while the heat sink dissipates heat generated by the processor, preventing overheating issues. Each

Questions to check comprehension:

Read the text and answer the questions

1. Which type of computer is used by large organizations for handling massive data processing tasks?
a) Workstation
b) Tablet
c) Mainframe
d) Expansion card
c) Mainframe

2. What component of a computing system acts as the computer's temporary memory?
a) Hard drive
b) Processor
c) RAM
c) RAM

Questions to check comprehension:

3. What is the role of the motherboard in a computing system?
a) Acts as the computer's temporary memory
b) Connects all components together
c) Processes instructions at lightning speed
d) Prevents overheating issues

4. Which component of a computing system dissipates heat generated by the processor?
a) RAM
b) Power supply
c) Heat sink
d) Expansion card

Questions to check comprehension:

5. What type of computer is favored for its convenience and mobility?
a) Workstation
b) Mainframe
c) Tablet
d) Expansion card

6. Which component of a computing system ensures a steady flow of electricity to keep the system running smoothly?
a) RAM
b) Heatsink
c) Power supply
d) Processor

Listen to a conversation between a technology support specialist and a customer. Mark the statements as True or False.

1. The woman replaces the disk drive.

True

False

2. The woman disconnects the power supply first.

True

False

3. The hard drive connects to the motherboard.

True

False



Listen again and complete the conversation.

Ivan: Technology Support, Ivan speaking. How can I help?

Natalie: I have an old **1)** **hard drive** and I need help taking it out.

Ivan: Okay. Unplug the connection to the power supply first. Then, disconnect the **2)** **motherboard** cable.

Natalie: Which one is the **3)** **power supply**?

Ivan: It's the smaller black box in the corner.

Natalie: I'm **4)** **unplugging** both. What's next?

Ivan: Next, take out those two small screws. They fasten the hard drive to the **5)** **case**

Natalie: I see, and then it slides out. Thanks!

Grammar Focus: Present Simple in Active & Passive

Choose the correct form (Active or Passive).

1. The software **(install / is installed)** by the technician every week.
2. Engineers **(design / are designed)** the network architecture.
3. The database **(back up / is backed up)** daily to prevent data loss.
4. Computer engineers **(develop / are developed)** algorithms for machine learning.
5. The system **(monitor / is monitored)** by a security team around the clock.

Case Study: Troubleshooting a Slow Computer

Troubleshoot the problem:



Th
tak
fre

Brainstorm to prevent this problem:

1**. Insufficient Memory (RAM).** Upgrading the RAM may improve performance.
2. **Malware or Viruses.** Running an antivirus scan and removing any detected threats can improve performance.
3**. Too Many Startup Programs**. When too many applications launch during startup, it consumes system resources, slowing down the boot process and affecting overall performance. Disabling non-essential startup programs can help.
4**. Overheating.** Cleaning dust from the internal fans and ensuring proper airflow can prevent overheating.
5**. Old or Failing Hardware**. Aging hardware, such as a hard drive nearing the end of its life, can result in slow performance and frequent freezing. Upgrading to a solid-state drive (SSD) or replacing faulty components may be necessary.

Group Presentation

Research the different components of computer in a group (e.g., CPU, GPU, RAM, Hard Drive) **. Present:**

- The component's function.
- How it works with other parts of the computer.
- Interesting facts about that component (e.g., new technologies or innovations).

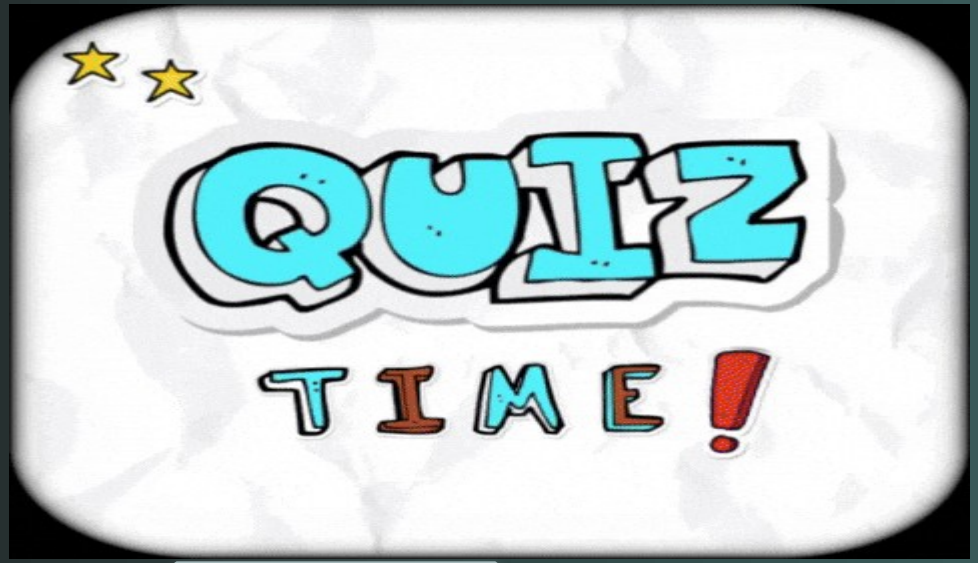
Role-Playing: "Be the Technician"

Create a dialogue on this scenario where you will act as computer technicians diagnosing issues “The computer is overheating. What could be wrong?” or “The screen isn’t displaying anything, and the fan is very loud. What should you check?” Work in pairs or groups to suggest solutions.



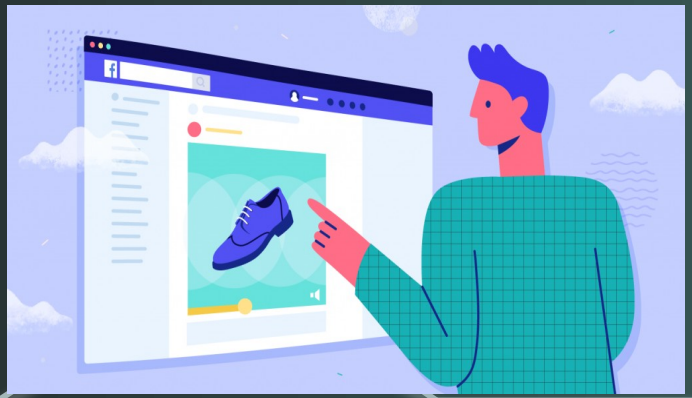
Let’s wrap-up with quizzes!

https://quizizz.com/admin/quiz/5b987565ea47280019db6938/inside-a-computer



Create a Computer Component Ad

Use creativity to apply knowledge of computer parts. Design an advertisement (social media ad) for a specific computer component, highlighting its features and why someone should buy it.



Home Assignment

Write a detailed description of at least five major components inside a computer.

Explain their functions, how they work, and how they connect with other components. The components should include: CPU (Central Processing Unit), RAM (Random Access Memory), Motherboard, Power Supply, Cooling Systems (Fans, Heat Sinks)




Thank You
For Your Attention