

Zahid Notes

1st Year Computer Science

Chapter 1: Overview of Computer Systems

Federal Board (FBISE) | Proper Notes for Exam Preparation

PROPER NOTES IN ENGLISH: Detailed explanations, examples, tables, solved short and long answers, MCQs, fill in the blanks and a revision plan.

These notes are written in original words for practice and exam preparation. They are not a copy of the official textbook and they are not a board paper. Students should also read the textbook, because board questions come from the prescribed syllabus.

1. What is a Computer?

A computer is an electronic machine that takes data from the user, processes it according to given instructions, and gives useful results, called information. A computer does not think on its own. It only performs the work given to it through a program. Its power therefore depends on both its hardware and its software.

Take a simple example. A student wants to find the average of his marks. He enters the numbers into the computer. This is input. The computer adds the numbers and divides them. This is processing. It shows the average on the screen. This is output. If the marks are needed later, they are saved in a file. This is storage.

Computers are used everywhere: in schools for learning, in hospitals for patient records, in banks for accounts, in offices for letters and reports, and at home for study and communication. In every case, the basic work is the same: to process data quickly and correctly.

Four Basic Functions of a Computer

- Input: Entering data and instructions into the computer.
- Process: Performing calculations and logical operations on data.
- Output: Delivering the result to the user.
- Storage: Saving data and results for future use.

REMEMBER: IPO + S = Input, Process, Output, Storage

2. Parts of a Computer System

A computer system is not only one box. It is made of four parts, and if any one part is missing, the system cannot work properly.

Part	Work and Example
Hardware	Physical parts: keyboard, mouse, monitor, CPU, memory
Software	Programs and instructions: operating system, word processor
Data	Raw facts: numbers, names, pictures to be processed
User	The person who runs the computer and uses the result

Hardware can be seen and touched, software cannot. Without software, hardware is useless, and without hardware, software cannot run. Data is the material on which work is done, and the user is the person who sets the purpose.

3. Hardware in Detail

Input Devices

Input devices send data into the computer. A keyboard is used to type words and numbers. A mouse is used to select, open and move items on the screen. A scanner converts a picture or

document on paper into digital form. A microphone sends sound into the computer.

Output Devices

Output devices deliver the result to the user. A monitor shows text and pictures. A printer produces the result on paper. A speaker produces sound. A projector shows the result on a large screen, which is very useful in a classroom.

Processing and Storage

The CPU does the processing work and is called the brain of the computer. Memory holds data during work. A hard disk and a USB drive store data for a long time. Their detail is also covered in later chapters, but their basic work must be understood in Chapter 1.

4. Characteristics and Limitations of Computers

Characteristics

- Speed: A computer can perform millions of calculations in one second, which a human would take hours to do.
- Accuracy: If the instructions are correct, the result of a computer is also correct. Mistakes usually happen because of wrong input. This is called GIGO: Garbage In, Garbage Out.
- Storage: A computer can store a large amount of data, even records of many years, in a small space.
- Diligence: A computer does not get tired or bored and keeps working in the same way for a long time.
- Versatility: The same computer can be used for study, office work, pictures, music and communication.

Limitations

- A computer cannot take decisions on its own. It only follows the given program.
- A computer needs electricity. Without electricity, it cannot work.
- If the program or data has an error, the result will also be wrong.
- A computer does not have feelings, thinking or experience like a human being.

5. Types of Computers

Computers are classified by size and work. A personal computer, or PC, is made for one person and is most commonly used at home and in offices. A laptop is a portable PC that can be carried anywhere.

A supercomputer is a very large and fast computer used in science, weather forecasting and major research. A mainframe computer is used in a large organisation, such as a bank, where thousands of people work at the same time. A mini computer is of medium size and is used in smaller organisations.

Today, a mobile phone is also a small computer, because it has a processor, memory and software. A computer is therefore not only a box on a desk. It is present around us in many forms.

6. Uses of Computers in Daily Life

- Education: Online classes, notes, research and assignments.
- Health: Patient records, test reports and hospital systems.
- Banking: Accounts, ATMs and online banking.
- Business: Bills, stock, customer records and communication.
- Communication: Email, messages and video calls.

- Entertainment: Games, music, films and picture editing.

7. Solved Short Questions - In Detail

Q1. Define a computer and state its four functions.

A computer is an electronic machine that takes data, processes it according to instructions, and gives useful information. Its four functions are Input, Process, Output and Storage. In input, data is entered. In processing, work is done on data. In output, the result is given. In storage, data is saved for future use.

Q2. Explain the difference between data and information, with an example.

Data are raw facts, for example 80, 90 and 70. By themselves, they do not give a complete meaning. When these numbers are added and their average is found, the answer, for example 80, becomes useful information, because now its meaning is clear.

Q3. Differentiate between hardware and software.

Hardware consists of physical parts that can be seen and touched, such as the keyboard, monitor and CPU. Software is a set of programs and instructions that tells the computer what to do, such as an operating system. Hardware cannot work without software, and software cannot run without hardware.

Q4. What is meant by GIGO?

GIGO means Garbage In, Garbage Out. If wrong data is entered into a computer, the result will also be wrong, however fast and correct the working of the computer may be. Correct input is therefore very important.

Q5. Write three characteristics and two limitations of a computer.

Characteristics: Speed, Accuracy and Storage. A computer works fast, gives a correct result on correct instructions, and stores a large amount of data. Limitations: A computer cannot take decisions on its own, and it needs electricity to work.

Q6. Give three examples each of input and output devices and state their work.

Input: Keyboard for typing, Mouse for selecting, Scanner for converting paper documents into digital form. Output: Monitor for displaying, Printer for printing on paper, Speaker for producing sound.

8. Solved Long Questions

Q1. Describe the parts of a computer system in detail.

A computer system is made of four parts. The first is Hardware, which consists of physical parts such as the CPU, memory, keyboard and monitor. The second is Software, which consists of programs such as the operating system and application programs that tell the hardware what to do. The third is Data, which consists of raw facts on which work is done. The fourth is the User, who runs the computer, gives data and uses the result. If any one of these is missing, the system cannot work completely. For example, without software, the hardware will not know what to do, and without a user, the computer will have no purpose.

Q2. Write a detailed note on the characteristics and uses of computers.

The greatest characteristic of a computer is its speed. It can perform millions of operations in one second. The second is accuracy. On correct instructions, its result is not wrong. The third is storage. It can store a large amount of data for a long time. The fourth is diligence. It does not get tired. Its uses are present everywhere: in education for online learning, in health for patient records, in banks for accounts, in business for bills and stock, and in communication for email and video calls. A computer has therefore become an important part of life, but it must be remembered that it cannot replace a human being, because it only performs the work given to it.

9. MCQs, Fill in the Blanks and True / False

1. The basic work of a computer is:

- A. Only to make pictures
- B. To process data and produce information
- C. Only to play music
- D. Only to print

Correct answer: B

2. In IPO + S, S stands for:

- A. Speed
- B. Software
- C. Storage
- D. System

Correct answer: C

3. GIGO means:

- A. Garbage In, Garbage Out
- B. Good In, Good Out

- C. Game In, Game Out
- D. Group In, Group Out

Correct answer: A

4. Which one is NOT an output device:

- A. Monitor
- B. Printer
- C. Keyboard
- D. Speaker

Correct answer: C

Fill in the blanks:

- 1. The four functions of a computer are Input, Process, Output and _____. (Storage)
- 2. The CPU is called the _____ of the computer. (brain)
- 3. When data is processed, it becomes _____. (information)

True / False:

- 1. A computer can think and take decisions on its own. (False)
- 2. Hardware cannot work completely without software. (True)
- 3. A monitor is an input device. (False)

10. Important Points and Exam Revision Plan

1. Computer = electronic machine, data + instructions = information

2. System = Hardware + Software + Data + User

3. IPO + S = Input, Process, Output, Storage

4. GIGO = wrong input, wrong output

5. Characteristics: speed, accuracy, storage, diligence, versatility

Three-day plan before the exam:

- Day 1: Read the detail of this chapter and write the definitions in your own words.
- Day 2: Write the answers to short and long questions yourself, then match them with the notes.
- Day 3: Solve the MCQs and fill in the blanks, and read the important points box again.

These notes are for practice. Board questions will come from the textbook syllabus, so every topic of the textbook should also be read once.