1 Hardware Basics

A Answer the following questions.

1. What is the system unit?

A. The collection of hardware components that work together to perform a task makes a system unit.

2. How many shapes does a desktop system box have? Describe them.

A. Desktop computers have two shapes of system box:

i. Tower

Towers are upright rectangles. They are usually kept below the desk, or in a cabin below the desk. They can also be kept on the floor.

ii. Desktop

Desktops are flat rectangles. They can be kept on the desk. The display i.e. the monitor or LCD can be also be mounted on top of the system unit. It is preferred to save space.

3. Name the components of the motherboard.

A. Following are the components of a motherboard:

i. Peripheral ports
ii. CPU Chip
iii. RAM slots
iv. Expansion slots
v. Floppy controller
vi. IDE controller
vii. CMOS Battery
viii. CPU slot
xix. Power supply plug in
x. Cache memory
xi. BIOS chip

4. Write about the following what you learnt in the unit:

i. CPU chip

This chip is fixed on the motherboard. It is also called the processor, or microprocessor. It heats up soon. Therefore, a fan is also fixed on its top. This fan keeps the processor cool.

ii. Floppy controller

Reading a floppy disk and writing to it is controlled by the floppy controller.

iii. CMOS battery.

All personal computers require this battery. It provides power to the Complementary Metal Oxide Semiconductor (CMOS) chip, even while the computer is turned off. This chip contains information about the system configuration. The CMOS battery allows the CMOS to preserve the configuration settings.

5. What do you understand by compatibility of a processor?

A. Processors differ from each other by the instruction set. If the same program can run on two different computer brands they are said to be compatible. Programs written for IBM compatible computers usually do not run on Apple computers. It is because the two architectures are not compatible.

6. Describe the parts of a microprocessor.

A. The CPU is composed of several units: Control Unit, Arithmetic& Logic Unit, Registers, and Clock Unit.

The **control unit** directs and controls the activities of the internal and external devices. It interprets the instructions fetched into the computer, determines what data, if any, are needed, where it is stored, where to store the results of the operation, and sends the control signals to the devices involved in the execution of the instructions.

The **arithmetic and logic unit (ALU)** is the part where actual computations take place. It consists of circuits which perform arithmetic operations (e.g. addition, subtraction, multiplication, division) over data received from memory and capable to compare numbers.

Registers are used for memory addressing, data manipulation and processing. Some of the registers are general purpose and some are reserved for certain functions. It is a high-speed memory which holds only data for immediate processing and results of this processing. If these results are not needed for the next instruction, they are sent back to the main memory and registers are occupied by the new data used in the next instruction.

The clock unit regulates the rate at which instructions are executed. It also synchronizes all the various computer components. The faster the clock, the more instructions the CPU or processor can execute per second. The speed or clock rate is usually measured in gigahertz (GHZ).

7. What is the difference between the primary and secondary memory?

A. Primary memory is also called main memory. It holds instructions and data for rapid and direct access by the computer's central processing unit (CPU). Primary memory is synonymous with random-access memory (RAM). And secondary memory is also called auxiliary memory or mass storage. It consists of devices not directly accessible by the CPU. Hard drives, floppy disks, tapes, and optical disks are widely used for secondary storage.

8. How many types of secondary memory devices you know? Name them.

A. Names of some secondary memory devices are:
hard drive, floppy disk, tape disk and optical disk.

9. Describe the functions of following expansion cards:

MPEG decoder

It is used by computers to display a video

i. Sound card

It provides a computer with the ability to produce sound that can be heard by the user either over speakers or headphones.

ii. Video card.

It is alternatively referred to as a graphics card, video card, video board, or a video controller. It allows a display device such as a monitor to display images from the computer.

10. Write about the following types of slots:

i. Accelerated Graphics Port (AGP)

AGP is a high-speed point-to-point channel for attaching a video card to a computer's motherboard. It assists in viewing 3D computer graphics.

ii. PCI Express (PCIe)

PCI Express is the newest standard for expansion cards on personal computers. PCI Express has replaced older standards like PCI and AGP. PCIe provides significantly more bandwidth, allowing for higher performance video cards and network cards.

iii. ISA (Industry Standard Architecture).

ISA is another type of expansion slot you may have heard of. It was the predecessor to PCI. You will find it only on much older computers.

B Circle the correct answer.

1. The combination of some components and their relationship makes

a) **a system** b) a unit

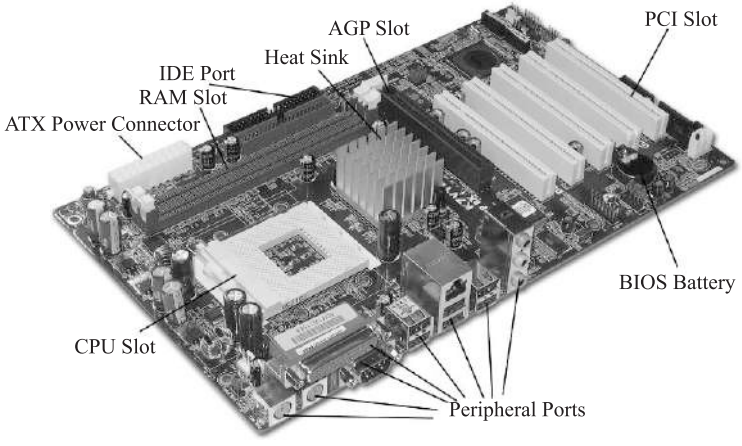
c) hardware d) processor

2. Which is not a name for the motherboard?
   a) circuit board b) mainboard
   c) system board d) logic board
3. CMOS is short for
   a) Complementary Metal Oxide Semiconductor
   b) Complex Metal Oxide Semiconductor
   c) Comprehensive Metal Oxide Semiconductor
   d) Complete Metal Oxide Semiconductor
4. _____ memory can be accessed even before the RAM.
   a) Cache b) Primary
   c) Secondary d) USB
5. The part where actual computations take place is
   a) The ALU b) The CPU
   c) The RAM d) The motherboard.
6. Term "mass storage" is a synonym for
   a) secondary memory b) primary memory
   c) tertiary memory d) USB memory
7. The newest standard for expansion cards on personal computers is
   a) PCI Express b) PCI
   c) AGP d) ISA

C Fill in the blanks with the appropriate words.

1. Desktops are flat rectangles.
2. All the major functional components, like the processor and memory, are fixed onto the motherboard.
3. The fan keeps the processor cool.
4. The operations a microprocessor performs are called the instruction set of the processor.
5. Modern RAM is made of semiconductor circuitry.
6. ISA was the predecessor to PCI.

D Label the different parts of the motherboard.



A motherboard

E Name the following storage media.

2 Software Basics

A Answer the following questions.

1. How is the operating system different from the application software?

A. An operating system (OS) is the program that is initially loaded into the computer by a boot program. It manages all the other programs in a computer whereas Applications Software is a program designed to perform a specific function directly for the user.

2. Define utility programs and explain their function.

A. A utility program or utility is a program that performs a specific task related to the management of computer functions, resources, or files. The examples of tasks performed by utility programs are such as password protection, memory management, virus protection, and file compression. Copying data from one storage location to another is also a utility.

3. Write five functions of Windows operating system briefly.

A. Booting

The process to start or restart a computer is called booting process.

The operating system consists of a supervisor portion and a set of system programs. When the computer is switched on, the supervisor portion of the operating system (known as kernel) is loaded in the RAM from the disk. We say that the system has booted.

User interface:

User interface means how the user interacts with the computer to perform various tasks. The user runs the application programs, opens the documents, enters the data, prints the output reports, etc.– all these are examples of user interfacing. The operating system plays the main role for interfacing between the user and the computer.

Configuration of devices and software:
Windows configure both the software and hardware. Hardware configuration means the relationship of hardware elements to each other, and the manner in which they are electronically connected. This configuration enables interaction between all hardware devices. The configuration is also at work in the software settings that allow various hardware components of a computer system to communicate with each other.

Management of programs
The main services that an operating system provides to programs are:

- Saving the data from memory in files on the disk.
- Loading the files from disk into memory.
- Sending the document on the printer.
- To copy or move data from one document to another or from one program to another.
- The services of hardware.
- To prepare the disk to store data, etc.

Memory Management
The memory unit has very important role for data processing. The processor takes data and program instructions from RAM during processing. The data and programs are loaded from disk into RAM. The operating system loads the data and programs into RAM and allocates the memory areas and manages these properly. When the program is closed, the operating system clears the memory area allocated to that program and its data.

4. How does Windows manage different tasks? Explain.

A. A task is an operation such as storing, printing or calculating etc. A computer can perform many tasks at a time. For example, in word processing it accepts input data, stores data on the disk and prints out a document simultaneously.

Some operating systems can handle more than one program at the same time. The operating systems can perform the following tasks.

i) Multitasking

In multitasking, more than one program can be executed at a time on a single computer. Some operating systems allow multitasking. In multitasking, you can run multiple programs concurrently. When multiple programs are running in different application windows, one is in the foreground called the active window and others are in the background. You can easily switch between different application programs running on the computer.

ii) Multiprogramming

In multiprogramming, different users can simultaneously run two or more programs. This type of tasking is controlled by the multi-user operating systems on mainframe or supercomputer where thousands of users can perform different tasks at same time.

iii) Multiprocessing

In multiprocessing, multiple programs (more than one programs) are executed on different processors at same time. This type of processing is very fast. Some operating systems have features of multiprocessing and can control these types of tasks.

iv) Time-sharing

In time-sharing, a single computer processes the tasks of multiple users at the same time. Time-sharing is used when multiple users are connected to a single computer in a communication network.

v) Multithreading

In multithreading operating systems a running program can start the execution of another program before the completion of its own execution. The started program

(called child program) in turn can trigger the execution of other programs and so on. These child programs are called threads and the top most program is called parent program. Parent program's execution proceeds on the completion of execution of all its child programs or threads.

vi) Virtual memory usage

Some operating systems use virtual memory to manage multiple programs simultaneously. Virtual memory is actually a portion of secondary storage, like a hard disk, which is linked with actual memory (i.e. RAM). Thus a greater memory space becomes available to running programs. This increases the speed of computer and the user can run programs, which are larger than actual RAM space.

vii) Spooling

Spooling is a technique in which an operating system uses buffers (a segment of memory) to place data before transferring it from or to input/output devices. This is done because sometime earlier data is being processed while the new data arrives.

5. How is a new folder created at some specific location using the Window Explorer?

A. Do the following to create a folder:

1. In the left pane, click the drive or folder icon where the new folder will be placed.
2. Right-click in blank area. A menu appears.
3. Point at New; then click the Folder.
4. The new folder will be created at the bottom of the right window

6. Name the image viewer used in Windows XP. Describe its functions.

A. The name of the viewer is 'Windows Picture and Fax Viewer'.

Its functions are:

· It allows successive viewing of all images in the current folder.
  - You can zoom the image in or out.
  - It allows basic file management from within the viewer: Delete, Save, Copy to, Print and Open with.
  - You can save/convert an image to a different format using the Copy To (Save) button.
  - You can set an image as the desktop wallpaper/ background from the context menu.
  - You can print the image.
  - You can view a slide show of the images.
  - Images can be rotated right or left by 90 degrees.
  - Any image can be e-mailed by selecting the "Send To" option
  - The viewer saves and remembers the window position and size of the image.

7. What is the educational software? How can it be useful to students?

A. Educational software is computer software whose primary purpose is teaching or self-learning. It ranges from programs for pre-school children to straightforward typing tutors and programs that teach foreign languages. Educational software includes programs for child-learning and home learning, educational material for teachers and trainers, classroom aids, and computer games for learning.

B Choose the correct answer and encircle it.

1. A driver acts like a _____ between the device and programs that use the device.
   a) translator b) narrator
   c) teacher d) cleaner
2. When computer is switched on, the process of starting it is called

a) cold booting b) surfing
c) warm booting d) entering

3. Microsoft Windows operating system is an example of
a) Dos **b) GUI**
c) Command-line interface d) Mac OS

4. Some operating systems use the hard disk as memory. It is called
a) the virtual memory b) spooling
c) sharing d) networking

5. In multiprocessing, multiple programs (more than one programs) are executed on _____ at same time.
a) different processors b) the same processor
c) two processors d) three processors

6. In the earlier versions of Windows (Windows 3.0 and 3.1), the file manager was appropriately named "File Manager". Starting with Windows 95 and NT 4.0, it became_____.
a) Internet Explorer **b) Windows Explorer**
c) Files Explorer d) Folders Tree

7. Bad sector is an area on a disk that cannot_____.
a) store data b) read data
c) read and store data d) play movies

C Fill in the blanks with appropriate words.

1. The driver accepts generic commands from a program and then translates them into specialized commands for the device.
2. A utility program or utility is a program that performs a specific task related to the management of computer functions, resources, or files.
3. Windows configure both the software, and hardware.
4. The CD-ROM drive has the first available letter following the hard drive(s) letters.

5. The child programs are called threads and the top most program is called parent program.
6. To select a single icon, just click it with the left mouse button.
7. The application software is also called the end-user application.

D Tick T for true and F for false statements.

1. Graphics design and editing software is a productivity software. T ☑ F
2. NTFS is short for New Testing File System. T F ☑
3. The image viewer allows to retrieve the deleted image files. T F ☑
4. Spooling is a technique in which an operating system uses buffers. T ☑ F
5. The operating system loads the data and programs into RAM and allocates the memory areas and manages them properly. T ☑ F
6. The configuration does not work in the software settings. T F ☑
7. When you turn on the computer, the electric signals make active the memory chip. T F ☑