MS Excel

Worksheet

1. A single sheet in a ~~worksheet~~ spreadsheet is referred to as a worksheet. It contains a grid of cells where data can be stored

2. By default, only three worksheets are available in a workbook

3. You can easily add as many worksheets as you want in a workbook

4. Data analysis is possible only with worksheets using different formulas and functions

5. To add a new worksheet, click at + button at the bottom of the screen or click the Home tab, choose Insert and then select Insert option

Workbook

Workbook is a file that contains an indefinite number of worksheets

By default, only one workbook is available with three worksheets for work.

Adding a workbook to another workbook is not as easy as adding a worksheet in a workbook.

Data analysis is not possible with workbook as it only serves as a cover page.

To add a workbook, simply click on file tab and then select New to open a new workbook.

Data types : In data model, each column has an associated data type that specifies the type of data the column can hold.

Types :

① **whole number** : numbers that have no decimal places, integers can be +ve/-ve but must be whole number

② **Decimal number:** real numbers are numbers that can have decimal places. Real numbers cover -ve to 0 to +ve. values. Number of significant ~~value~~ digits is limited to 15 decimal digits.

③ **True/False :** boolean value

④ **Text :** A unicode character data string. Can be strings/numbers/dates represented in text format.

⑤ **Date :** Dates and times are ~~to~~ accepted in date-time representation.

⑥ **Currency :**

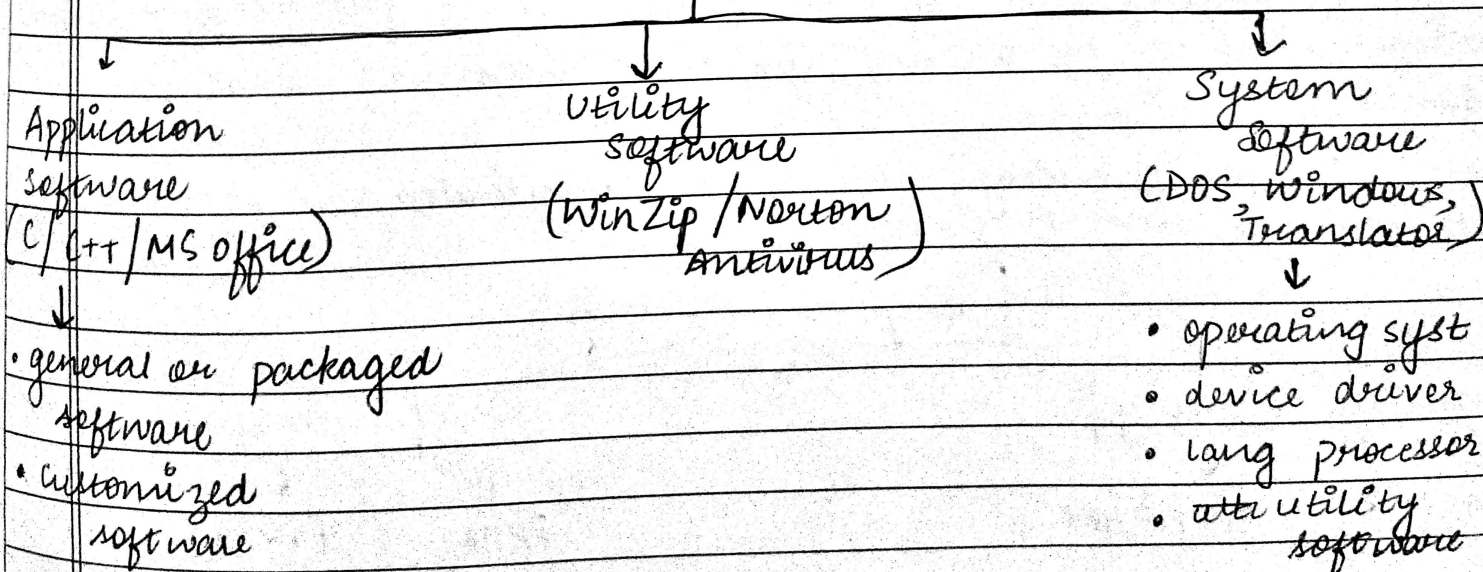⑦ **N/A also blank :** A blank data type in DAX that represents SQL nulls.

Computer Hardware Hardware is not a solitary term, and it is somehow related to software for the proper functioning of a comp system. These are the physical components of or devices that build a comp.

The hardware used in basic configuration of computer are:
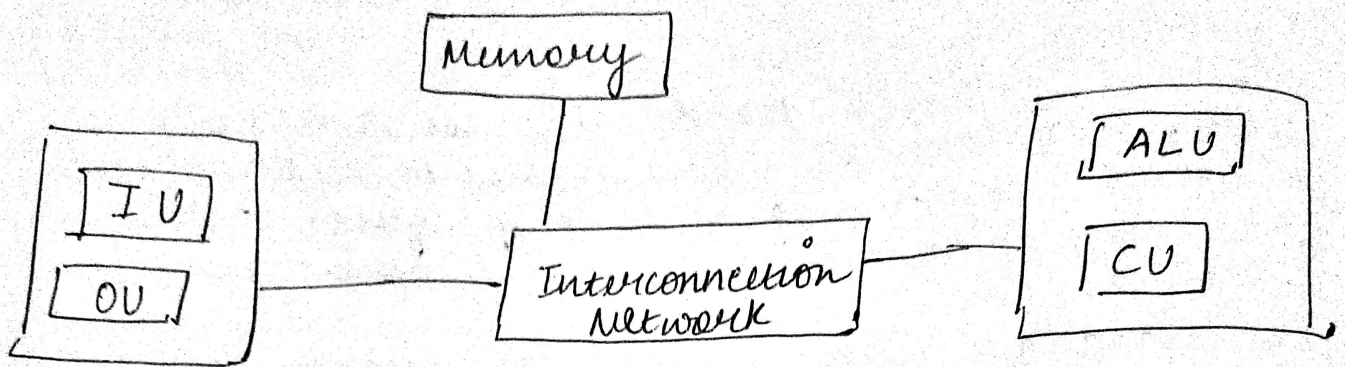
- Processor
- Motherboard
- Printer

- Random Access Memory
- Hard Disk
- SMPS

Computer Software

A software is intagible, which means we cannot physically touch it but just view and feel it. A hardware can not be utilized without the use of a software. To operate hardware, we require a set of instructions which is commonly known as software.

Types of software

Application software
(C/C++/MS office)

- general or packaged software
- customized software

Utility software
(WinZip/Norton antivirus)

System software
(DOS, Windows, Translator)

- operating syst
- device driver
- lang processor
- att utility software

```
┌──────────┐
│  Memory  │
└────┬─────┘
     │
┌──────┐        ┌──────────────┐        ┌──────────┐
│ I U  │        │Interconnection│       │ [ ALU ]  │
│──────│────────│  Network     │────────│          │
│ OU   │        └──────────────┘        │ [ CU  ]  │
└──────┘                                └──────────┘
```
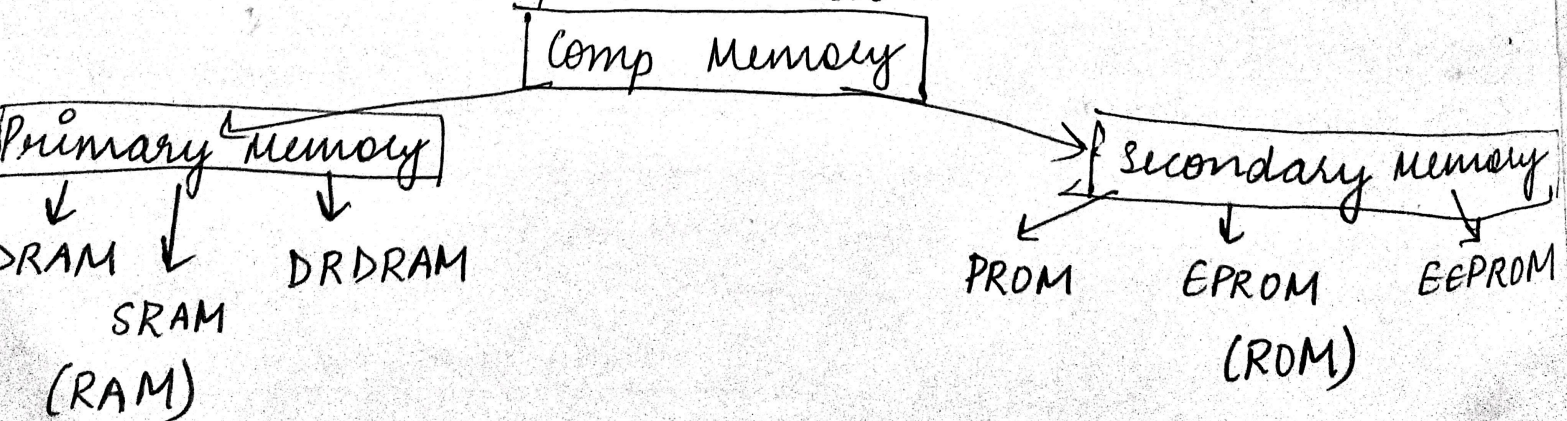
① **Memory Unit** — Comp memory is any physical device capable of storing info temporarily, like RAM (Random Access Memory) or permanently, like ROM (Read-only memory). Memory devices utilize integrated circuits and are used by operating systems, software, and hardware.

Memory can be either volatile or non volatile memory.

Volatile memory loses its contents when the comp or hardware devices loses power. Comp RAM is an example of volatile memory. It is why if your comp freezes or reboots when working on a prog, you loose anything that wasn't saved

Non-volatile memory, sometimes abbreviated as NVRAM, keeps its contents even if power is lost.

```
                  ┌──────────────┐
                  │ Comp Memory  │
                  └──────┬───────┘
        ┌────────────────┴────────────────┐
┌──────────────────┐              ┌──────────────────┐
│ Primary Memory   │              │ Secondary memory │
└──────────────────┘              └──────────────────┘
  ↓      ↓      ↓                   ↓      ↓      ↓
DRAM   SRAM  DRDRAM              PROM  EPROM  EEPROM

   (RAM)                              (ROM)
```

Functional units of computer - input unit, arithmetic and logic unit, memory, control unit, output unit all are connected with the interconnection network that helps them in exchanging info

(2) ALU - Arithmetic and Logic Unit. In the comp syst, ALU is a main component of the Central Processing Unit. and performs arithmetic and logic operation It is also known as an Integer Unit (IU) that is an Integrated circuit within a CPU or GPU, which is the last component to perform calculations in the processor. It has the ability to perform all processes related to arithmetic and logic operations such as addition, subtraction, and shifting operations, including Boolean comparisons (XOR, OR, AND, NOT) Also binary numbers can accomplish mathematical and bitwise ~~operators~~ operations

(3) Control Unit - The control unit is a part of the CPU. The CPU is divided into the ALU and the CU. The control unit generates the appropriate timing and control signals to all the operations involved with a computer. The flow of data b/w the processor, memory, and other peripherals is controlled using the timing signals of the control unit.

The main func^n of the CU is to fetch the data from the main memory, determine the devices and the operations involved with it, and produce control signals to execute the operations.
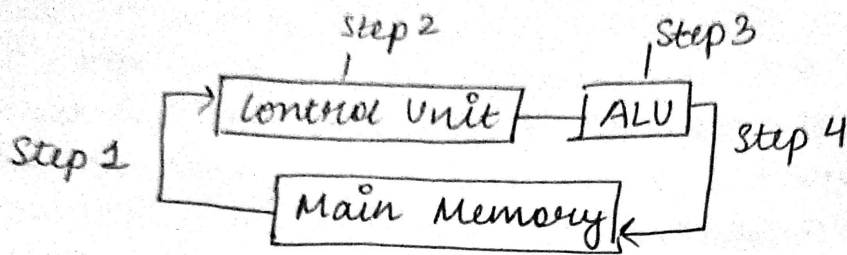
Step 1 : fetch instruction from memory
Step 2 : decode instructions into commands
Step 3 : execute commands
Step 4 : store results in memory

Various I/O Input devices

Keyboard   Joystick   Track Ball
Mouse   light pen   Scanner
Graphic Tablet   Microphone

Magnetic Ink ~~character~~ Card Reader (MICR)

Optical Character Reader (OCR)

Bar Code Reader

Optical Mark Reader (OMR)

Joystick is an input device that is used to control
                                    commonly
        gaming applications, and, sometimes, used
in graphics applications. The use of a joystick is to
manage a machine or a character in a computer
program. It includes a base and a stick that
can be moved to the left or right direction,
also, it can be rotated in different amounts to
handle the ~~moments~~ movement of the cursor in a
computer device.

Mouse is a small hardware input device used
        hand by hand. It controls the movement of
the cursor on the computer screen and allows
users to move and select folders, texts, files
and icons on a computer. It is an object, which
needs to be put on a hard-flat surface to use.
When the users move the mouse, the cursor
                                            display
moves in the same direction on the screen. The
name ~~moves~~ is mouse is derived from its size as
it is a small, corded, and elliptical shape ~~the~~
device that looks a bit like a mouse

Scanner is an electrical device that reads and
        converts documents such as photos and ~~texts~~
pages of texts into a digital signal. This changes
the documents in a form that can be viewed and
or modified on a computer system by using

software applications. There are numerous kinds of scanners available in the market that have different resolutions.

Most scanners have a flat scanning surface as they are flatbed devices, which are mainly used for scanning magazines, photographs, and numerous documents. Furthermore, because most flatbed scanners have a cover that lifts up, they can scan books and other heavy things. A sheet-fed scanner is another scanner that is only able to accept paper documents.

<u>Digitizer</u> is a hardware device that ~~rece~~ receives analog information, such as sound or light, and records it digitally. Usually, the information is stored in a file on a computing device. This process is called ~~dital~~ digitization.

Light enters through the camera lens, and the hardware and software inside the camera, converts that info to binary data, and stores it in an image file. The user may then transfer the file to a comp, where he/she can edit the image, print it out, ~~and~~ share it online

Output Devices
monitors (CRT, LCD, LED)   Speakers   Computer output microfilm
                                            multimedia projector
Graphic plotter
printer (Dot Matrix, line printer, inkjet, laser printer)

monitors Alternatively referred to as a VDT (video display terminal) and VDU (video display unit), a monitor is an output device that displays video images and text. A monitor is made up of circuitry, a screen, a power supply, buttons to adjust screen settings, and casing that holds all of these components.
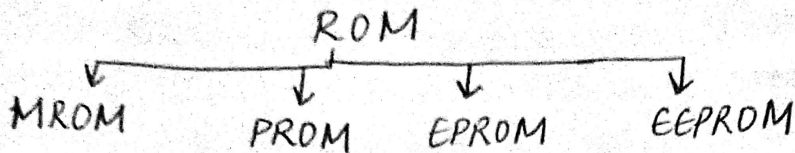
There are essentially 2 types of monitors:

① CRT (cathode - ray tube) monitor.

② LCD (liquid - crystal display) monitor

Computer Memory - A memory is just like a human brain. It is used to store data and instructions. Comp memory is the storage space in the computer, where data is to be processed and instructions required for processing and stored. The memory is divided into large numbers of small parts called cells. Each location or cell has a unique adress, which varies from zero to memory size minus one.

ROM means "Read only Memory". This memory is able to store data permanently, and it is non-volatile memory that means its data never destroy when power gets turn off. It is programmable chip because in which stored all instructions that most required

when starting a comp. This process is known as "Bootstrap".

```
                    ROM
      ┌──────────┬─────┴──────┬──────────────┐
      ↓          ↓            ↓              ↓
    MROM       PROM         EPROM          EEPROM
```

<u>PROM</u> stands for "Programmable Read Only Memory". On this PROM, data can be written only one time, and it remains there forever. PROM is capable to retain their needed data ~~from~~ when comp. is getting turned off. User purchases a empty PROM, and inserts the needed data with the help of PROM program.

<u>EPROM</u> stands for 'Erasable and Programmable Read Only Memory' and in which stored data can be deleted by using of ultra-violet light for some time frame up to 40 minutes. The UV light clears its data, and now you can to reprogram the memory. To write and to erase an EPROM, you require a special device called a PROM programmer or PROM burner.

<u>EEPROM</u> stands for 'Electrically Erasable and Programmable Read Only Memory' and in EEPROM, all activities such as programming and erasing are performed by electrically. This EEPROM is able to be reprogrammed and erased in more than 10,000 times. Entire chip cannot be erased at one time, only erase one byte at once

DATA REPRESENTATION

To a computer, everything is a number, ie;
alphabets, pictures, sounds etc are numbers.

Number system digits

System	Base	Digits
Binary	2	0, 1
Octal	8	0, 1, 2, 3, 4, 5, 6, 7
Decimal	10	0, 1, 2, 3, 4, 5, 6, 7, 8, 9
Hexadecimal	16	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F

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