- **System:** A group of interacting, interrelated or independent element forming a whole
- **Computer system:** is a group of associated components that work together.
  - *Hardware*: includes the cpu and peripherals that execute a machines instructions.
    The hardware that affects/include these are:
    - **Storage and external**
    - **Processors**
    - **Memory (ram rom cache)**
    - **Input and output devices**
    -

  - *Software*: consist of various application and software that the operating system makes available to the program.
    The components that are important and influence software include:
    - ***Low to high level =*** *an air condition or siri as high*
    - ***System software- operating system***
    - ***Programming language***

- **Computer:** is a device that performs an information processing cycle.

  - **Input:**
    - first operation of information processing cycle enables computer to accept data.
    - Entered to computer through input devices such as- mouse, printer

  - **Processing:**
    - Cpu Converts data into information. Which is essentially consolidated, organized processed data
    - Ram (main memory) temporary stores data and programs needed by cpu
  - **Output:**
    - Output devices such as- printers or computers to computers, electric switch done so we can see or hear results
  - **Storage:**
    - Holds program software and data that the computer system uses. These may include storage space like- usb, dvd drives etc
  - **Communication:** communication devices are hardware components that move data in and out of computers. high speed movement of data or information.

- A computer and human are different because a computer can do the task again and again complex. But simple task it can't eg: staircase. Humans produce human errors

- **Network:** connects two or more computers to share input/output devices and other resources via ***Network interface card.***

- The three different computer types include: Individual computers, organization computers, organization computer- servers

- **Individual computers**: designed for one user at a time include- ***Personal computers***

    o **Desktop computers-** designed for home and office use now include all in one computers that combine the system unit and monitor
    o **Portable computers-** notebook small and easy include tablet pc
    o **Wireless devices, chromebooks, and smart phones**

- **Organisation computers:** designed for multiple users at same time [HOME/HOTEL]
    o **Clients-** user computers connected to network
    o **Servers-** enables users connected to computer network to have access to network program, data and hardware.
    o **Cilent/server network-** includes use of client computer with centralized server.

- **Organization computer- server [BIGGEST]**
    o **Minicomputer –** designed to meet needs of small business and companies.
    o **Mainframes –** very large processing jobs to meet the needs of agency of government or large companies
    o **Supercomputer –** able to perform extremely high school processing and show underlying patterns.

- Mini/main frame is getting demished because cheaper to build 1000 small computer they'll do same job then 1000x powerful

- **Digital divide:** concept that there is a disparity between computer ownership due to income, economics, and geographically. Ie poor vs rich.

- The advantages of computer use:
    o Provide support for those at a *disadvantages* or *disabled* via kindle, text to speech
    o Provide opportunities for those living far away from the location required for learning at specific time ie: reduce travel cost
    o Allows communication via skype and Facebook. So long distant communication
    o People who don't have good mobility may be stuck at home and is window to world and see museum and webcams they see

- The disadvantage of computer use:

- o **Automation:** replacement of people by machine and computers
- o **Outsourcing:** come from other country due to cheaper

- Computer stores stuff as an encoded digital data.

- The measurements used to describe data storage include way data is transferred and the storage capacity
  - o Kilobyte: 1 thousand bytes
  - o Megabyte: one million
  - o Gigabyte: one billion
  - o Terabyte: one trillion bytes
- **Bps:** described rate at which information is transferred between computers

- **System unit**: case that contains major hardware components of a computer. Eg:Notebook and in one like imac, smartphone, desktop. Inside it contains
  - o Motherboard
  - o Cooling fan: stops cpu overheating
  - o Optical drive: uses to read or write data in disc
  - o Hardisc: stores information permanent for long term use. To access hard disc rotates then it reads it via read head. (STORAGE NOT MEMORY). Usually in drive bay
  - o Tv capture card
  - o Hdmi

- **Footprint:** is basically physical side
  - o Amount of space unit uses up
  - o Size/shape of materials
  - o some have inbuilt things like retina scanners and fingerprint scanners.

- **Motherboard is:**
  - o Printed circuit board that contains the electricity current for the computer.
  - o Contains millions of transistors that carry electric current
  - o **Transitor:** Is a switch that controls electrical signal flow to the circuit.

- **The motherboard contains:**
  - o **Ram:**
  - o **cpu**
  - o **Soundcard:** Converts digital data to analog sound waves you can hear
  - o **Network interface card:** Contains electronic cirtcutary required to communicate via wires or wireless connection
  - o **Video card**

- **Cpu:** (microprocessors)
  - Integerated circuit chip that process electronic signals.
  - Part of the computer system where it manipulates, numbers, signals and controls other parts of system.
  - Factors that affect cpu performance include:
    - Type of chip
    - Number of existing transistors
    - Clock speed
    - Amount of cache

- The different types of memories include: Ram, Rom, Virtual memory and cache memory

- Memory: Chips on the cpu /motherboard that retains instructions or data

- **Ram: random access memory**
  - Stores part of software application that is being executed
  - Temp holds instruction for cpu
  - Stores parts of the operating system that manages computer operating system
  - Stores in memory cards (small circuit) on motherboard

- **Read-only memory**
  - Contains precorded instructions to start computer
  - Non-voliate contents stored when cpu power off
- **Memory footprint**
  - Amount of ram the operating system uses when operates
- **Virtual memory:**
  - Sections of hard drive set aside when ram gets full
- **Cache memory:**
  - Faster than ram
  - Small unit of ultra-fast memory built near processor
  - Used to store frequent or recently accessed program data.

- **The issues that arrived when using a computer include**
  - Computer rooms too hot to handle. This may cause equipment to fail. This then results in the purchase of coolers which use as much energy as servers
  - May be data hungry this wasting money and bandwidth
  - Negative effects on environment and operation cost
- An improvement to cpu include:
  - Access time reduced
  - Enhanced process performance ie more efficiently runs multiple task at same time

- o Reduced power consumption, lower cooling and space requirement.
- Difference between 8bit 12 byte and 32 byte means that data that is processed coes out in cycles of 8 byte and 16 and 32 byte
-

CLASS NOTES

- Components on the computer motherboard include:
  - o Ram:
  - o A cpu
  - o Graphic cards

- Difference between 8 bit 16 bit and 32 bit is basically means that every cycle is process 8 bit 16 bit and 32 bit in each cycle. Data that is process coming out of memory it comes out in 16... 32 ... 64. We

- Ipv4 only allows 4 billion. Everything that is connected need ip address. So we may run out of ip addresses.

- **Internet of things:**

  5) The measurement used the discuss data transfer rate include and data storage capacity include:
     - o Kb: Kilobytes
     - o Mb: megabytes
     - o Gb: gigabytes of storage
     - o Tb: Storage
- AI: really just analysis data and models it
- **Ska:** Square kilometer array- more data a day than all internet a year.
- **Nbn:** bandwitch the is increase of traffic still decreases download speed.

- One of the operating system is windows then another is debian. Chrome and firefox. So the operating system allows it to be compatible to hardware. But you need software application to run the hardware. Layers are like kernal

  6) Data: is raw data. Information: is processed data may be different meaning.
  7) Other components of system unit include:
     - a. Powersupply
     - b. Cooling unit
     - c. Hardrives

       d. Input output controllers
       e. Hdmi
       f. Tv capture card

8) A computer runs faster if you put more memory because: of swapping. It slows down program if you get more memory than you don't need to swap

9) Multiple cpu: does not make program faster because application and operating system make not take advantage of extra cpu. When reading disc it still requires to read. Access to data

- Cisc vs risc
- cuda