

* Computer Fundamentals

computer आपको Binary भाषा कहते.

- Binary - Binary is such a language which contains only two entity in it (1,0). Bi नंबर 2 (1,0) में से 1 ने Binary.
- laptop माध्यमी सर्वात महत्वीय and main part is ~~is~~ Micro processor (CPU) ← Brain
- Micro processor बनवानारी Company - intel
 - AMD
 - ARM (phone)
 - Moto rola
- laptop चा speed G Hz (Giga Hz) या Unit मध्ये मोजतात 9 Hz हे megarament चा Unit आहे.
eg:- 1.4, 2.4, 4.8 GHz. हे यांची काढीतरी असतो.
- eg:- 1.4, 1.8, 2, 2.4, 3.2, 3.8, 4, 4.2, 4.8 GHz?
- - Primary storeg
 - Secondary storeg

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    graph TD
      PS[Primary storeg] --> RAM[RAM]
      PS --> ROM[ROM]
      SS[Secondary storeg] --> HD[Hard Disk]
      SS --> CD[CD]
      SS --> FD[flopy Drive]
    
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- SSD (Solid state Disk)
- computer ची smallest Unit Bit असते.
- Bit हे बनवल आहे Binary digit = Bit

- * Bit - Byte types

4 Bit - 1 nibble

8 bit - 1 byte

1024 byte - 1 kB (Kilo Byte)

1024 kB - 1 MB (Mega Byte)

1024 MB - 1 GB (Giga Byte)

1024 GB - 1 TB (Tera Byte)

1024 TB - 1 PB (Peta Byte)

1024 PB - 1 EB (Exa Byte)

1024 EB - 1 ZB (Zeta Byte)

1024 ZB - 1 YB (Yota Byte)

- computer - की सरवात भोंगी Unit YB (Yota Byte) and सरवात छोटी Unit Bit

- Mother bord -

- mother bord माथे computer की सरवे components connect करते हैं और आसताएं.

- आपने ही antity इंतर प्रोसेसर को connect करते हैं mother bord आहे.

- mother bord द्वा रight and left sides में socets आसताएं

- Input Devices -
 - 1> Keyboard
 - 2> mouse

e.g:- टोके, नाक, कान

standard Input Device - keyboard

कारबॉल द्वारा शीताय laptop किंवा computer पुर्झी द्वारा जावा

- Output Devices -
 - 1) Console (monitor)
 - 2) Speaker
 - 3) Printer

eg:- दोंडे

Standard Output Device - Console

eg:- मी वॉलणार आहे तोंडाने आणि तुम्ही आश्कनार आहात कानोने मानते गाळा Output Device तोडे आणि तुमच्या input Device कान. मनजे my output connected with your input than communication is perform आणि मी ते दाखवार ते तुम्ही वंदावार. मनजे ज्याच्या Output आहे ते कोनी तरी input मनवू घेतला पाईजे

- Bus type -
 - 1) Address Bus
 - 2) Data Bus
 - 3) Control Bus

Bus मनजे दाचार

Eg:- आपल्याला इकडा तीकडे जायला आपण Best Bus अप्रतो तसेच एका Device ला दुसऱ्या Device शी connect करायला Bus अपरतात.

- पाहील Mother board याच्या वरती रुप सारे component असतात आणि या components ला Connect करायला अप्रतात दाचारी मनजे Bus.

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- Laptop मध्ये design making ची प्रवालदारी micro processor ची असते. आणि program run करण्याची प्रवालदारी ही micro processor ची असते.
- micro processor हा वारीक आणि चेपटा असतो, आणि त्याचा खोलच्या side ला छोटे छोटे टोक असतात. आणि हे त्याला Electricity मीलावा माहजन mother board शी connect केलेले असतात.
- micro processor हा लवकर गरम होतो माहजन त्याच्या अर्दी cooling fan भावलेला असतो.
- micro processor सोडात एक separate Math co-processor असतो. हा Math च्या related काम करतो. CO माहजन कोनासोबत तरी काम करूनारा।
- Math co-processor - इयाची काम mathematical calculation handal करण असत.
- micro processor या company असते. त्याच्या company या Math co-processor असते.
- storage - स्ट्राइंग पहील कोणताही data primary storage device' मध्ये योती. नंतर data store करायचा असेल तर ते secondary storage device मध्ये जाते.

- Hard Disk - Hard Disk is one of the most important secondary storage which is responsible to store the data per permanently.
- Storage Devices -
 - 1) Primary storage Device -
 - RAM (Random Access Memory)
 - ROM (Read Only Memory)
 - 2) Secondary storage Device -
 - Hard Disk
 - CD (compact Disk)
 - Floppy
- Mother board - mother board ~~stand~~ micro processor ~~company~~ company ~~make~~ निर्माण करता. ~~make~~ असे शक्तीत. Laptop मध्ये होणाऱ्या नवीन गोडवीचा नाम या board पासण होता.
- Input Device - या user करून input देतात ते.
- Output Device - या laptop through user करून output देत्या शक्तीत ते.
- std::in - keyboard
- std::out - console
- प्रतेक programming language interact with std::in, std::out only.

- mother board खाला (Printed circuit Board)
पर्याय बोर्ड (PCB)
- micro processor ~~मिक्रो प्रोसेसर~~ 1 sec मध्ये किती instruction run करते. हे या वैसांग त्याच्या speed कंठते.
- micro processor आणि ~~फॉर्म~~ Binary शाखा करते.
- Binary आणि machine language असे म्हावाता. machine language म्हणजे अशी language की ~~फॉर्म~~ machine आणि करते.
- Laptop हे एक machine आहे.
- कोणत्याही programming language मध्ये लिहिलेला program हा Binary मध्ये convert करून छायला आणतो. आणि या नंतर ते execute होते.
- Binary मध्ये आपला program की शक्ति नाहीत म्हणजे आपला High level language वापरतो.
- every programming language program ~~wright~~ written in High level language gets converted into the middle level language and the middle level L gets converted into the low level L & transform to the micro processor and micro processor is execute your task.

- Primary storage Devices needs electricity to store the data as well as to retrieve (परत मनाने के लिए विद्युतीय संग्रहीत डिवाइस)
- RAM करती store जालेला data हा तात्पुरता असतो. मनाने जो परचाते electricity आहे तो पैर्यंत तो असतो. पण electricity गेली तर ते data पुरण पांढे जातो. - मध्यांे RAM करचा data हा volatile असता. आज आहे अद्यां नाही.
- ROM एवं permanent data store करते.
- Hard Disk is a magnetic storage medium.
- Hard Disk मध्ये data store करण्या करीता electricity लागते. पण Hard Disk मध्याला data maintain करण्या करीता electricity नाही. पण आतमध्याला data वाढवण्या साही & electricity नागते.
- CD is used to store the data in optical format. CD वर light पडून ती light reflect झाली तर its consider consider as (1) पण ती light reflect नाही झाली तर its consider as (0)
- CD मध्ये data read करण्या साही optical rays ची गरज असते. पण data write करण्या साही Ultra violet rays ची गरज असते.
- CD is an Optical storage Device.

- as a programmer when you write the program your program gets stored into Hard Disk .but when you execute the program it gets stored into RAM
- Hard Disk कराणे RAM वरती येऊनी Program हा program नसुन तर ती process असते.
- ~~ROM~~
- types of ROM (Read - only memory)
 - 1) PROM - (Programmable Read - only memory)
 - 2) EPROM - (Erasable Programmable ROM)
 - 3) EEPROM - (Electrically Erasable PROM)
- कोणतीही Application चालवण्या साठी system ROM मध्यून Application रा data access करते. आणि नंतर RAM च्या मदतीने Application काम करते. आणि नंतर Application वांद ~~कराणा~~ केल्या नंतर Application रा data ROM मध्ये वापर पाते. आणि RAM मध्यांचा data साली होऊन पाते.
- Pendrive माणजे(EEPROM) ~~(EPROM)~~ Electrically Erasable Programmable Read - only memory
- ज्याच्या मध्ये mechanical part असतो move होनारा तो खरात होतो. आणि ज्याच्यात हालचालाच नसते ती life time होकरे. आणि ~~Hard Disk~~ लिंबकर खरात होते ~~लक्कड~~ कारण याच्या मध्ये move होनारा part असतो. आणि जीशे धरशन असत तीत इंडिझ असते आणि तीते इंडिझ असते याला life असते.

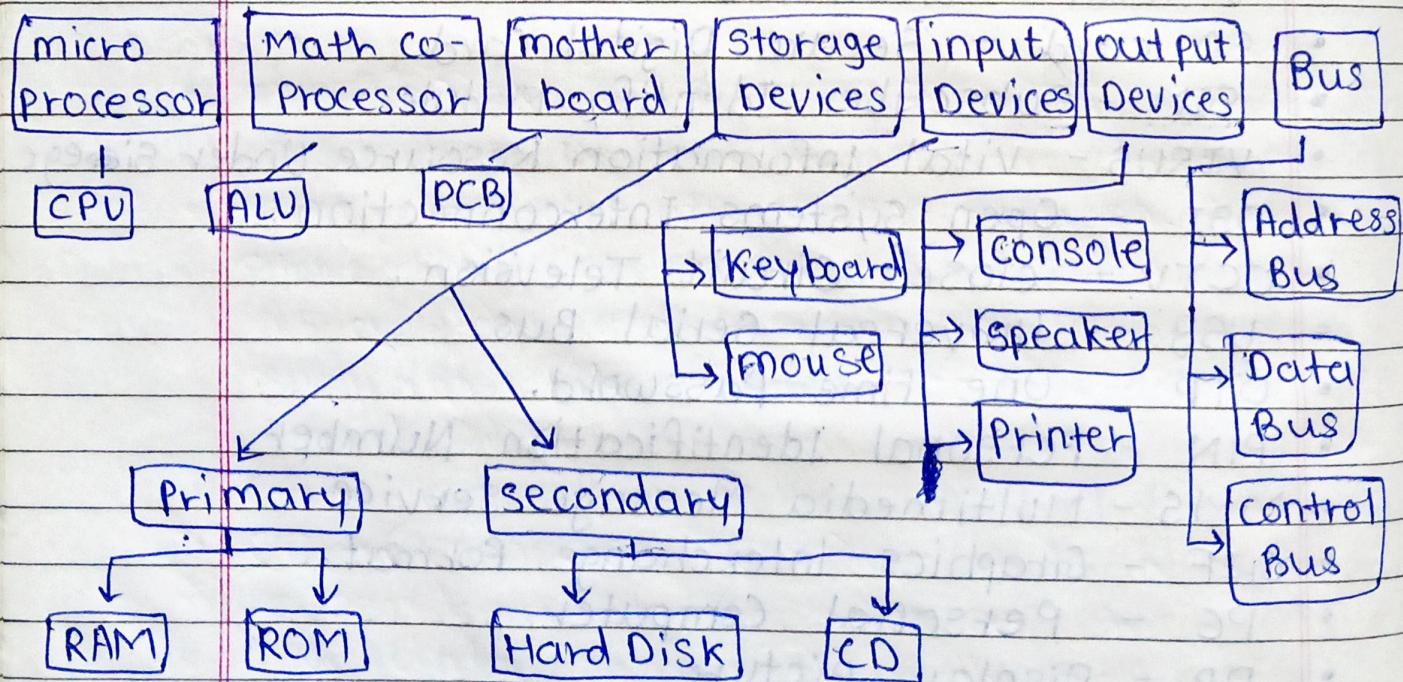
* full forms .

- CPU - Central Processing Unit.
- DVD - Digital Versatile Disc
- HTTP - Hyper Text Transfer protocol
- ALU - Arithmetic Logic Unit.
- CD - Compact Disc
- WWW - World Wide Web
- URL - Uniform Resource Locator
- PDF - Portable Document format
- HTML - Hyper Text Markup Language
- QR CODE - Quick Response code.
- IP - Internet Protocol
- E-mail - Electronic mail.
- SD card - Secure Digital card
- SIM - Subscriber Identify Module.
- VIRUS - Vital Information Resource Under Siege
- OSI - Open Systems Interconnection.
- CCTV - closed Circuit Television .
- USB - Universal Serial Bus.
- OTP - One Time Password.
- PIN - Personal Identification Number
- MMS - Multimedia Message Service
- GIF - Graphics Interchange format.
- PC - Personal Computer
- DP - Display picture

* Computer fundamentals

- Under the topic of Computer fundamentals we consider all the component of computer and it's use. To understand this topic we consider the components from a desktop machine or from the laptop.
- every computer contains multiple component in it. which is responsible to perform the specific task.
- as a programmer we need to understand the working of each and every components.

component of computer



- 1) Micro processor - it is one of the important parts of the computer which is responsible to take the designs.
when we execute any program it gets executed by the micro processor.
- 2) Math-CO-processor - it is a processor responsible to perform the mathematical calculations only.
- 3) Mother board - it is a printed circuit board (PCB). mother board is responsible to connect all the components of computer together.
- 4) Storage Devices -
it is consider as a type of Device used to store the data (information) in it.
based on the working of the storage Device it gets classified into 2 types as primary storage and secondary storage.
- Primary Storage Device -
the primary storage device is a type of storage device where the data get stored initially.
there are 2 main types of primary storage devices as RAM and ROM.
- RAM (Random Access Memory) - it is a type of primary storage Device used to store and retrieve the data.
the data stored in RAM is volatile (it is temporary).

as a programmer our application gets executed inside RAM.

- ROM (Read Only Memory) - it is a type of primary storage but the data stored in it is permanent. generally ROM contains the code or information which is used to load the operating system into memory.
- Secondary Storage Devices - it is a type of storage devices where data gets stored after storing into a Primary Device.
- Hard Disk - it is a type of secondary storage devices where the data gets stored in format of magnetism. the data stored in it is permanent in nature. as a programmer when we create our program file it gets stored into the Hard Disk.
- CD (compact Disk) - it is a optical secondary storage device which stores the data and retrieve the data by using the optical rays.

- Input Devices -

it is a type of device which is used to accept the input from the user. there are 2 major type of input devices as keyboard and mouse.

- Keyboard is considered as a standard input device. (STD-IN).

- Output Devices -

it is a type of device which is used to display the output to the user. there are 2 main output devices as console (monitor), printer.

- ~~Console~~ is consider as a standard output device. (STD-OUT).

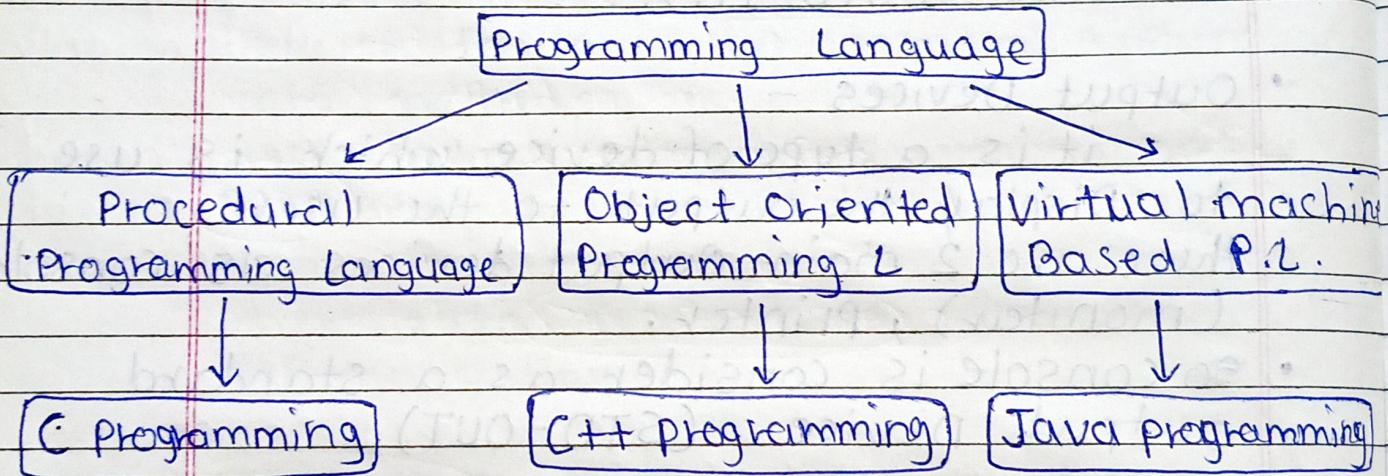
- BUS -

Bus is consider as a ~~wire~~ medium used to connect devices which each other.

depends on its working Buses are classified in 3 type. as Address Buss, data Bus, control Bus.

* Programming languages.

- Programming Languages मात्रा Computer क्षेत्री काढी काम करणा घायचे असले. तर त्या Computer शी लोलण्या करीता तयार केलेली ◎ Language मात्रे Programming Language.

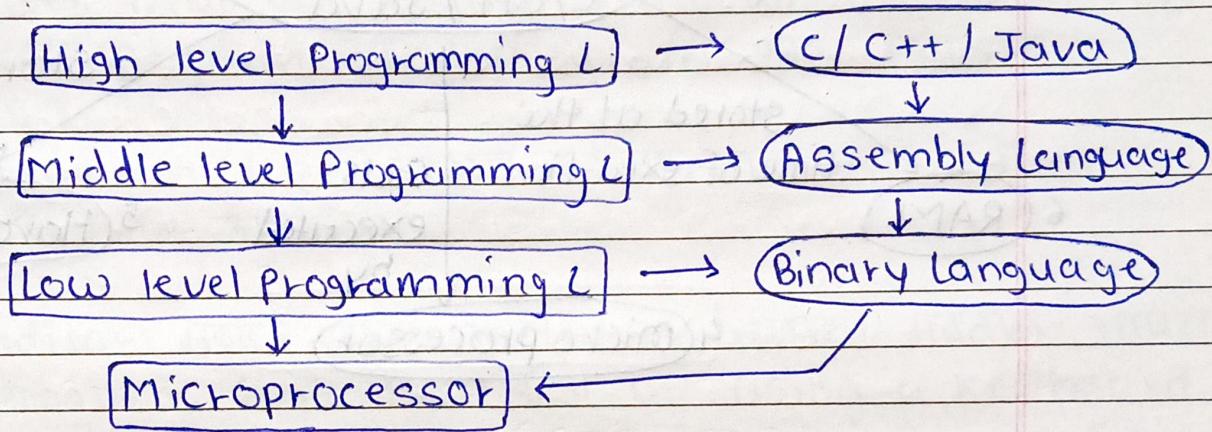


- programming language types -
 - 1) procedural programming language
 - 2) Object Oriented Programming language
 - 3) Virtual machine Based Programming Language.
- Programming Language -

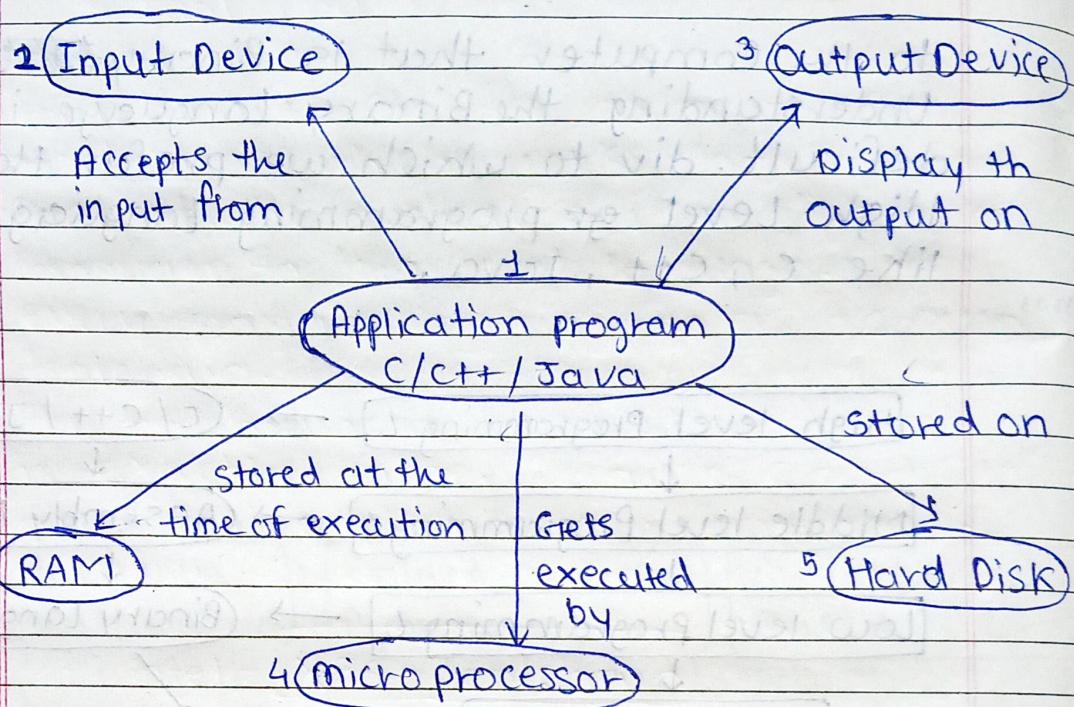
it is a language which is used to interact with the computer.
if we want to interact with the computer directly we should learn the language which is directly understandable

to the computer that is Binary ~~(0,1)~~ (0,1). Understanding the Binary language is very difficult. It is to which we prefer ~~the~~ High Level ~~of~~ programming Languages like C, C++, JAVA.

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- तेवढे आपण सोल मांगाहे आतमाचे खाते तेवढी complexity वाढते. आणि तेवढी complexity वाढते तेवढे competition कमी होते. आणि तेवढी competition कमी होते तेवढी पर्याप्त असते.
- High level programming Language gets converted into the middle level language and the middle level gets converted into the low level language and the low level language get executed directly with the help ~~of~~ of micro processor. the conversion of High to middle and middle to low gets performed by the set of Software which is called as tool chain.



- 1) when we create our program it gets permanently stored on Hard Disk.
- 2) when we want execute the program it gets stored inside RAM.
- 3) our application program Accept the input from user from the input Device (~~Keyboard~~)
- 4) our program Displays it's output on Output Device & ~~console~~ (console)
- 5) to execute the program we have to pass that program towards the micro processor.