

# FULL STACK JAVA DEVELOPER

(250+ hrs)

⇒ What you'll learn:-

- Fundamental of programming ↗
- Core java (detailed)
- JDBC
- JEE (Servlets, JSP, and Thymeleaf)
- Hibernate and JPA Specifications
- Spring Core
- Spring Boot
- Spring JDBC
- Spring ORM
- Spring Data JPA
- Spring MVC
- Spring REST
- Microservices and Runtime tools (Maven, Gradle, Log4J, JUnit, Splunk, Putty, Jacoco)
- Docker and Kubernetes
- Agile and Scrum
- Git and GitHub
- HTML and CSS
- JavaScript
- React.js
- SQL - MySQL
- NoSQL - MongoDB

# Fundamentals of programming and computer

classmate

Date 06/10/22

Page

⇒ [How computer works, Networking concepts (How Internet works),

⇒ 3 Technical discussion will happen in this class.

⇒ Now these days computers are there in different diff. forms like → Mobile, Laptop, Desktop etc.

So, which is the most important component in computer?

↓  
(processor or microprocessor)

- Everything is happening in your device the responsive is CPU.

CPU / MP (microprocessor)

nPN / PnN  
(0V) / (5V)

in CPU is ⇒ [ Semiconductor Technology ]

- When is made out of ⇒ [ Transistor ]  
[ nPN ]      [ pNP ]
- This transistor only understand high voltage (5V) and Low voltage (0V) only.
- This why computer only understand '0' and '1'.

⇒ So, processor is a dumb device. It only understands '0's and '1's' form. If we want to do any operation we have to give instruction as only '0' and '1' format. it is called MLL (Machine level language).

⑧ ⇒ So, How many languages there are in computer?  
3 types →

introduced

MLL	ALL	HLL (1960's)
(Machine level Language)	(Assembly level)	(High level Lang)

001001

100101

ADD A, B

SUB, DIV, RX, VX

+ (English Form)

(Numonix Form)

Stored in microprocessor in codices

Output (MLL)

ASSEMBLER

System Software

which converts ALL to MLL

\* difficult to write

Input

Computer

Computer converts to MLL.

\* Easy to write

\* difficult to write

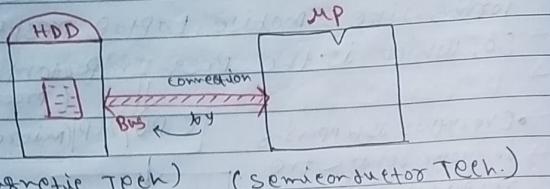
C, C++, JAVA → HLL

Output (MLL)

⇒ Semiconductor device is much faster than other type of device.

⇒ Processor only execute your program it will not store your data/program.

⇒ So, we need a storage to keep my program.  
Then comes HDD ⇒

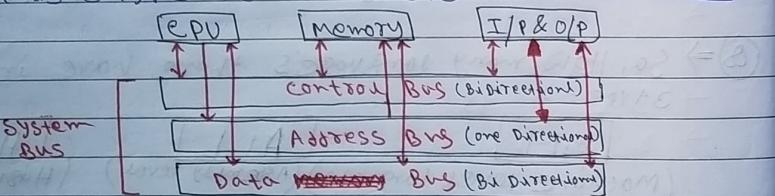


(magnetic Tech) (semiconductor Tech)

④ ⇒ HDD (Hard Disk Drive) :-

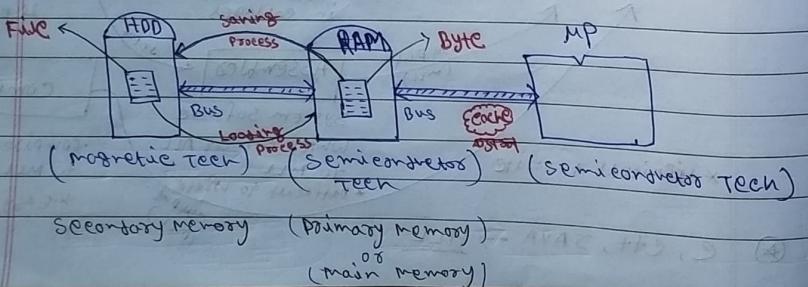
It is used to store our data/program. And it is made by Magnetic Technology. Because of M.T. it is very slow by nature and sending data to MP is also slow but MP is fast to execute and send output instantly to HDD. Here, Spec mismatch happened. Then comes RAM. HDD and MP is connected by wire it called Bus.

⑤ ⇒ BUS ⇒ Is a set of wire which will carry information from one memory unit to another memory unit. It is 3 type → (i) control Bus (ii) Address Bus (iii) Data Bus



⑥ ⇒ RAM ⇒ (Random Access Memory)

RAM is made by Semiconductor Technology. This is why RAM is also very ~~slow~~ fast.



⇒ Advantage of RAM

- (i) It is very fast
- (ii) It is compact

⇒ Disadvantage of RAM

- (i) It is a volatile device.
- (ii) costly

⇒ Advantage of HDD

- (i) It is NON-VOLATILE Device
- (ii) cheap.

⇒ Disadvantage of HDD

- (i) Bulky
- (ii) It is slow

Q) What is volatile & non-volatile Devices?

- Volatile Device ⇒ continuously power supply required. If power cut for a fraction of second (ms) all data will gone instantly.
- NON-Volatile Device ⇒ It can retain stored information even after power is removed.

→ Saving Process ⇒ To avoid volatility of data so we have to save the RAM's data on HDD. This process called Saving process.

→ Loading Process ⇒ To retain our saved data to RAM or doing certain operation/processes we need to load the saved data from HDD to RAM/processor. This why little loading process we see when click to open a file (saved).

★ [Actually we write code on RAM]

⇒ Primary or main memory ⇒ RAM

⇒ Secondary memory ⇒ HDD

⇒ Whatever we write it will save as in -

HDD → File.

RAM → Byte.

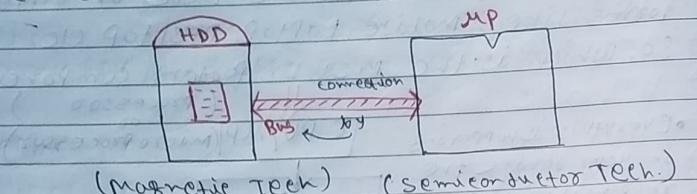
MP → Register. (Temporary memory)

⑦ ⇒ ROM ⇒ (Read-Only memory) (Semiconductor Technology)

It refers to computer memory chips containing permanent or semi-permanent data. Unlike RAM, ROM is NON-VOLATILE even after you turn off your computer, the contents of ROM will remain. Almost every computer comes with a small amount of ROM containing the Boot Firmware.

⇒ Semiconductor device is much faster than other type of device.

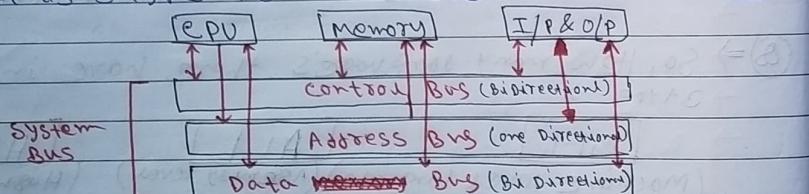
⇒ Processor only execute your program it won't store your data/program.  
So, we need a storage to keep my program.  
Then comes HDD ⇒



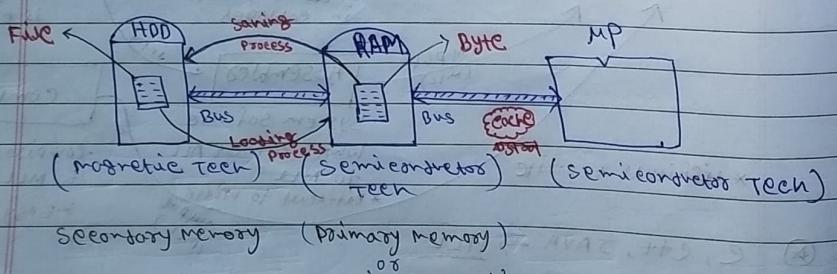
④ ⇒ HDD (Hard Disk Drive) :-

It is used to store our data/program. And it is made by Magnetic Technology. Because of M.T. it is very slow by nature and sending data to MP is also slow. But MP is fast to execute and send output instantly to HDD. Here, speed mismatch happened. Then comes RAM. HDD and MP is connected by wire it called BUS.

④ ⇒ BUS ⇒ Is a set of wire which will carry information from one memory unit to another memory unit. It is 3 types → (i) control Bus, (ii) Address Bus, (iii) Data Bus



④ ⇒ RAM ⇒ (Random Access Memory)  
RAM is made by Semiconductor Technology. This why RAM is also very ~~slow~~ fast.



⇒ Advantage of RAM

- (i) It is very fast
- (ii) It is compact

⇒ Disadvantage of RAM

- (i) It is a Volatile Device.
- (ii) costly

⇒ Advantage of HDD

- (i) It is NON-VOLATILE Device
- (ii) cheap.

⇒ Disadvantage of HDD

- (i) bulky
- (ii) It is slow

Q) What is Volatile & Non-Volatile Devices?

- Volatile Device ⇒ Continuously power supply required. If power cut for a fraction of second (ms) all data will gone instantly.
- Non-Volatile Device ⇒ It can retain stored information even after power is removed.

→ Saving Process ⇒ To avoid volatility of data so we have to save the RAM's data on HDD. This process called saving process.

→ Loading Process ⇒ To retain our saved data to RAM or doing certain operation/processes we need to load the saved data from HDD to RAM/processor. This why little loading process we see when click to open a file (saved).

★ [Actually we write code on RAM]

⇒ Primary or main memory ⇒ RAM

⇒ Secondary memory ⇒ HDD

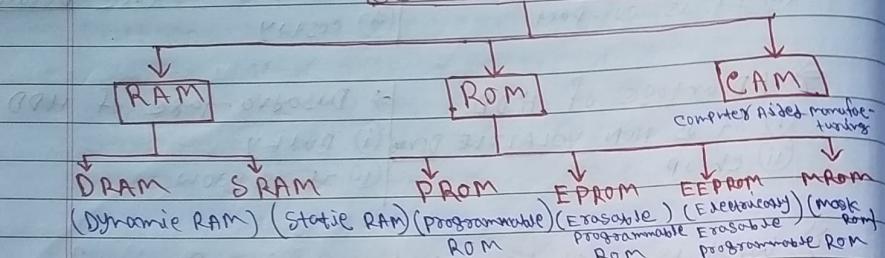
⇒ Whatever we write it will save as in -  
HDD → File.  
RAM → Byte.

MP → Register. (Temporary memory)

④ ⇒ ROM ⇒ (Read-only memory) (Semiconductor Technology)  
It refers to computer memory chips containing permanent or semi-permanent data. Unlike RAM, ROM is Non-volatile even after you turn off your computer, the contents of ROM will remain. Almost every computer comes with a small amount of ROM containing the Boot Firmware.

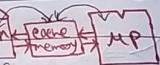
⇒ Classification of Semiconductor Memories :-

### Semiconductor Memories



⇒ Cache Memory :- (Static RAM) (UV-ray required to erase data)

Whenever a program or software run again and again the instruction will store on the cache memory. For the next time execution, processor take the instruction directly from cache memory not from RAM. That is why program run faster. Because cache



memory is more closer than RAM to UP. It is present inside the CPU.

It is a better and faster version of HDD. It is made by Semiconductor Tech, and it is a NO-VOLATILE memory because of flash technology used to transfer data fast.

① ⇒ Shorted of Semiconductor chip ?

Because, By nature Semiconductor chip is costly and may shorted in market.

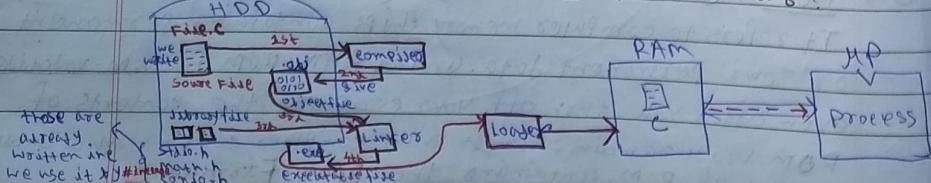
② ⇒ SSD is faster than HDD and also costly.

⇒ Object File (.obj) vs Executable File

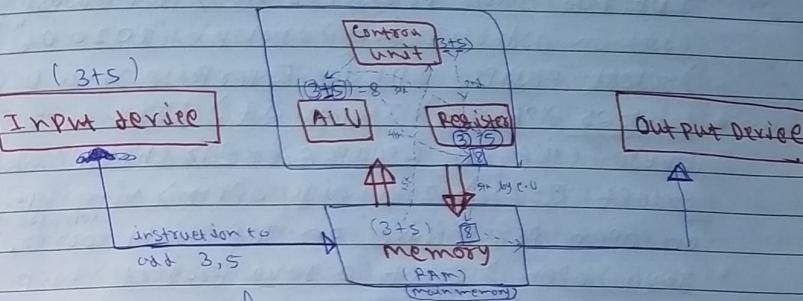
① It is a file that contain in it is a file where code MLL. (so, both are same format) contain in Binary form.

But, ② It is a incomplete file. ③ It is a complete file.

⇒ So, what is happen in C programming?



⇒ Architecture of CPU :- (Central Processing Unit)



⇒ Process :- If we want to add some data. By Input Device we type the data (instructions). Data will go to main memory. Main memory gives the data to CPU. In CPU the control unit receives the data and stores all the operands to registers. The control unit, gives the instruction to ALU (Arithmetic Logic Unit) to execute the Arithmetic operation and control unit also provides operands from register. After getting result ALU stored the result to register and then when getting display instruction C.U send the result to main memory from Register. Main memory send the result to output device to display the result.

### ★ Installation of Java ★

#### & IDE (Eclipse)

⇒ JAVA Stable versions are :- Java 8, Java 11, Java 17 (we use Java 17 edition)

① ⇒ How to install Java :- (need to install JDK)

Download the Search "Java for windows" in browser > open the Oracle site > click on 17 version > select windows "X64 installer" download it > after download open it > Install.

② ⇒ To run your computer the Java location (PATH)

① copy bin address paste it as PATH to Environment variable.

② create a new "JAVA\_HOME" name and paste the JDK location (previous address of bin folder)

③ ⇒ Installation of Eclipse :- (2020 version only)

Search Eclipse on browser > Then click on "Eclipse IDE for Java Developers" only > Not choose "Eclipse IDE for Enterprise Java Developers" > Select "Eclipse IDE for Enterprise Java Developers" > windows X86\_64 > Install it > ~~don't unzip it~~ > double click on Eclipse.exe > choose workspace except C:/ > It will open > After open click or open perspective on top right corner > select Java > open > create a Java project > give name > Select your JDK version > next > Finish.

⇒ All five should be under same file under a package. create a class file.

Short cut ⇒

~~ctrl + space~~ <sup>Shift</sup> - to maximize the font size.

~~ctrl + space~~ <sup>Shift</sup> - to minimize the font size.

Type "System.out.println();" then press ~~ctrl + space~~ <sup>Shift</sup> to complete typing of System.out.println();

⇒ How to change JRE System Library [JavaSE-1.8]  
 Right click on the JRE Port > Build Path > configuration  
 (Build Path) > Add Library option > JRE System Library  
 > next > Add > Standard VM (next) > Directory  
 C:/ProgramFile/Java > choose your version > Finish  
 > then click Your option (work) > apply & close > Finish  
 > you can remove old version also.