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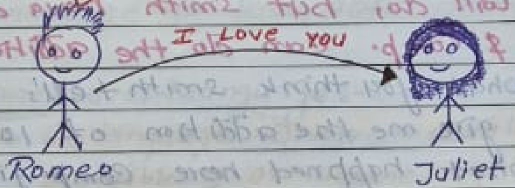
Topic:- What is programing Language ?

It is an language or a medium which is used to instruct a Computer to perform a specific task is known as a programming Language.

Explanation:-

Hello, Everyone, In this class let us understand what is programing longuge.

let us try to understand with three Scenario

1>


let us suppose their is a Romeo and juliet. and Romeo wants to express his feeling to the juliet. " How can he do that".

Simply Romeo tell's I Love you to express his feeling. then what is " I Love you" It is an language through this language Romeo express his feeling to juliet. " Let us take another Scenari

2> Suppose their are two friends Martin and Smith, Smith is very lazy, Simply smith is seating in a chair and his friend is standing next to the freeze. Smith tell his friend Martin that Hey Martin Can you please give me a bottel of water.

Martin Suddenly give a bottel of water to Smith.

" Here also smith used language to tell Some thing to his Friend.

(It mean by using language we can instruct and express our feeling to other's)
→ some one to do a specific task.

Similarly let us take an last senario

3> Suppose smith don't Know Math and He want's to performe addition of two no. 10 & 20 what he will do, but smith have a computer & comp. can do the addition very easy. " what you think smith tell's hey computer give me the addition of 10 and 20"
" what happned here comp. give any. result " NO, why Because computer don't know english. then, what smith have to do.

imp → " To tell the Computer to perform the some task smith have to learn programing language"

So,

What is programing language?
→ It is an language or a medium used to instruct the computer to perform a specific task is known as programming language.

Topic:- Type's of programing Language?

Explanation:-

So, Guys, In this presentation we are going to learn Type of programing Languages.

So, generally we have three types of programing Language that are:-

- → Machine-level-language (low-level-language)
- → Assembly-level (mid-level-language)
- → High-level-programing-language.

"let us ~~do~~ a small disscurion on this three types of language ~~to~~ know about that"

1) Machine-level-P-language:- (low level langugo)

→ A language which is easily understandable, readable & executable by a machine is known as Machine level langufge.

" which language is machine level language. for example (Binary Language)

The meaning of Binary is 'two' that is 0 & 1 so, every thing is written in the form of 0 & 1 only.

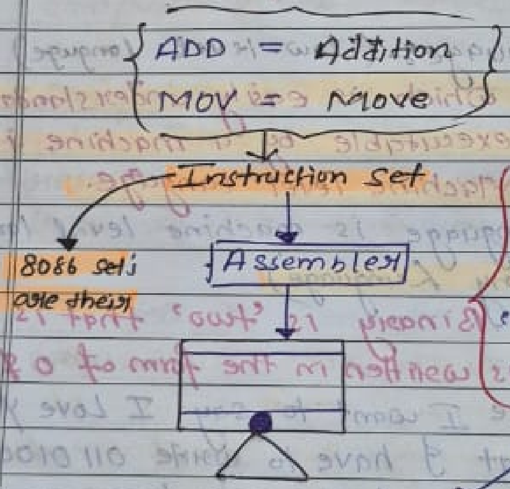
" suppose I want to say I Love you to the computer for that I have to write 011 0100 100100 and so on belive me if this is a language used by. Human's then, they never proposed to any one.

2) Assembly-level-Language:- (mid level language)

" then, slowly they came up with the next level evaluation we normaly call it as Assembly-level-language"

In this language we come up with some words to give some instruction to the Computer's

" Suppose i have to perform additions of two number we don't have to give instruct in 0 & 1 to the Computer" ~~to~~ to performing this specific task their is a predefined word "ADD" similarly if i want to move data from one memory location to another memory location the word is "MOV" for the same way for all the general instruction we have a predefined words.



all this predefined word are Known as "Mnemonic"

"Do you think the Computer can directly. understand this No "Because Computer Know only Binary language"

"Hence we have develop a software and that Software is Known as "Assembler" "

So the Job of the Assembler to Convert this word into 0 & 1 where a machine can Understand and then we can execute.

High-level-P-Language:- Explanation

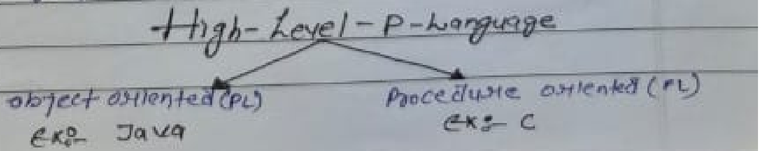
" But Do you think this language give comfort to the Developer to Develop a Application like 'Flipkart' $ 'Facebook' "Not at all"

So, as a day's goes on obiausly thing get evovlect and peoples there alway's trying to go their comfort zone So their is a Community who started to develope a programming language which is very much simple similar and a common language that is used. " generally in western side the most common language that is used is English so they decided to develope a language which is very much similar to english. and that category of language we generally call it as "High-level-programing-language" which is very easy, Readable, Understandable and Instruictable by the programer's.

Ex:- C, C++, C#, Java, python, HTM $ etc.

Do you think I write some instruction using java and Computer will understand No, their for the same Community is develope a software called " Compiler/Interpretor "

" So I know some of people think what is compiler or Interpriator Don't think so much about that simply this Compiler and Interpretor easily take Java file $ convert into machine language"



- Summary:-

(Machine level Language)

A language that is easily understandable by the processor is Known as machine level language.

Example:- Binary language 0's and 1's

(Assembly level language)

A architecture-dependent language that consists set of pre-defined words called Mnemonics.

ex:- 8086 instruction set

(Require an "Assembler" to convert it into machine language)

(High-level language)

A language that is easily readable, instructable, and understandable language by humans/programer.

Ex:- Java, python etc, ...

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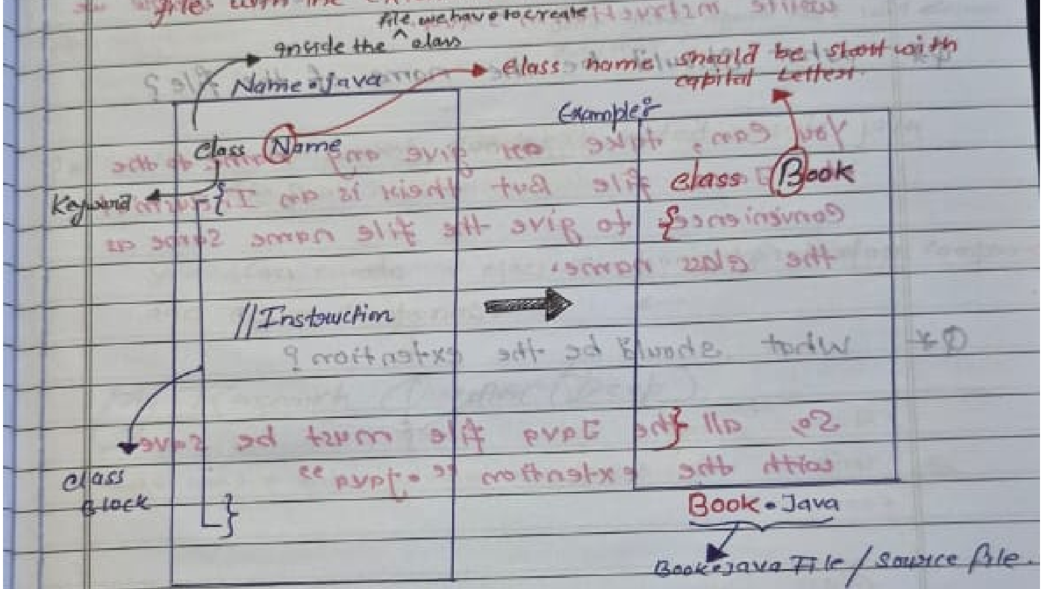
Topic:- Structure of Java

First of all what ever instruction that we write using Java, it is always written inside a "class".

→ Create a file and provide a specific Name to the file with the extention ".Java"



⇒ Step / syntax to create a class inside Java file :-

with the use of keyword "class" followeel by "Name" and then simply . open the block "{" and close the block "}"

Note :- You Can give any name to the file But their is a Industry Convension that Sava th file with the Same name given to the Class.

Imp. Question's :-

Q* What is Java Source File?

Java source file is nothing but a normal file with the extension ".Java" where we write instruction in Java.

Q* What should be the name of the file?

You can, take or give any name to the the Java file But their is an Industrial Convienience to give the file name same as the class name.

Q* What should be the extention?

So, all the Java file must be save with the extention ".java"

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Inside a java file (we can't write any thing we can create only

- → class
- → interface
- → enum

class component of Java.

Don't think about that will discuss further.

* Which component can be created inside java src file?

We can create a class component, interface compon and enum component.

My Reasearch Question (Deep)

※ First Let us Focus on Class (Most of the time we use class)

class

① → Keyword:-

→ some thing which is already pre-defin and Java compiler will understand.

→ keyword should always written in Lower case.

⑪ → It is used to create class block

→ Syntax:- class Name

```
{
            class Block
}
```

What we have to write inside a class Block?

Example:-

```
class Demo
{
      → Declaration statment  → 1. Variable
          (creating)          → 2. Method
                              → 3. class/enum

      → Initializer           → 1. static initializer
                              → 2. non-static intializer
                              → 3. Constructor
}
```

Declaration → also called as creating statment or Creating something.

Initializer → Somthing Happing at the begning/start

Q.* What can be created inside the class Block?

(Decleration statment)

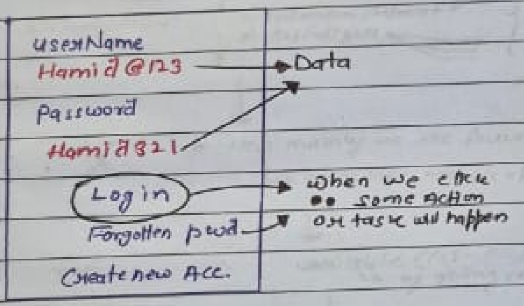
1. Variables
2. Methods
3. class/enum

(Initializer)

4. Static initializer
5. Non-static initializer
6. Constructor.

Note:- The statment which is used to declare known as decleration statments.

ex:- → Variable decleration statment.
→ Method decleration statment etc.



Data
↓
Type of Data
↓

Data → store → Variable
↓ ↓
user input It is a containar to store the data

for every Application two thing is Important:-

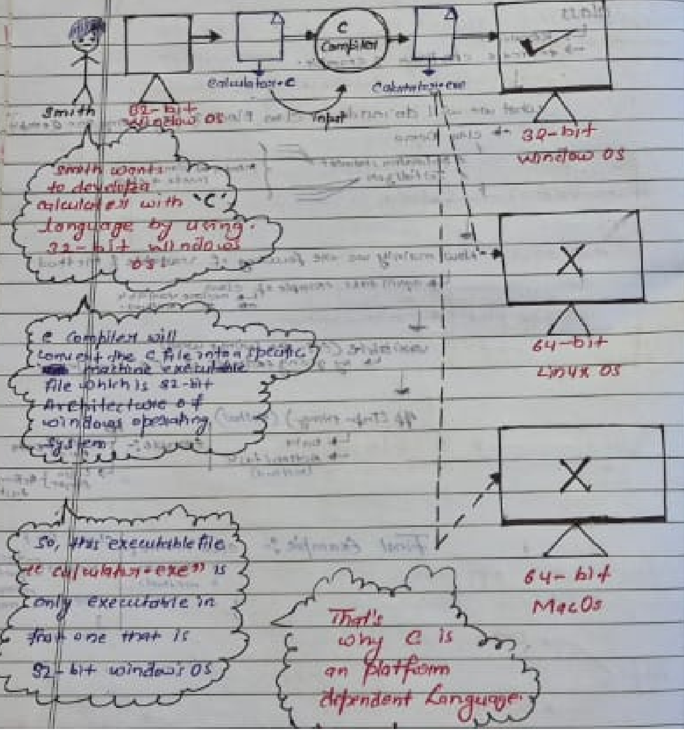
App. → Data → store → in Variable/Array/obj
App. → Action/task → methods

example:-
Facebook → 1. user Id 2. password
Facebook → 1. login 2. Forgot passw 3. Create Acc

Topic:- Java is platform Independent/ Architectural Neutral

" In this session let us understand why Java is platform Independent or Architectural Neutral "

" let us understand with few senarios "



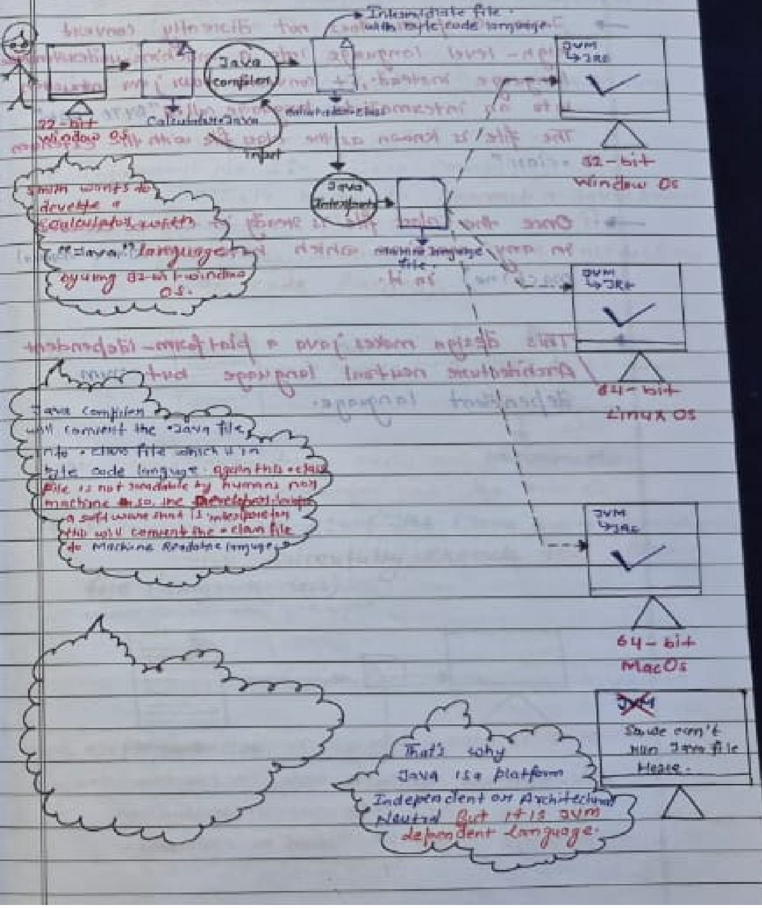
Smith wants to develop a calculator with 'C' language by using 32-bit windows OS

C compiler will convert the C file into a specific machine executable file which is 32-bit Architecture of windows operating system

So, this executable file "calculator.exe" is only executable in that one that is 32-bit window's OS

That's why C is an platform dependent Language.

Java Example:-



Smith wants to develop a calculator with "Java" language by using 32-bit window OS.

Java compiler will convert the .java file into .class file which is in byte code language again this .class file is not readable by humans nor machine so, the developers designed a software that is interpreter this will convert the .class file to Machine Readable language.

That's why Java is a platform Independent or Architectural Neutral But it is JVM dependent language.

Conclusion

→ Java compiler does not directly convert high-level language into a machine-understandable language instead., it converts your java instruction into an intermediate language called "BYTE CODE" The file is known as the class file with the extension ".class"

→ Once the class file is ready it can be executed in any machine which have JVM (Java Virtual machine) in it.

→ This design makes java a platform-idependent /Architecture neutral language but JVM dependent language.

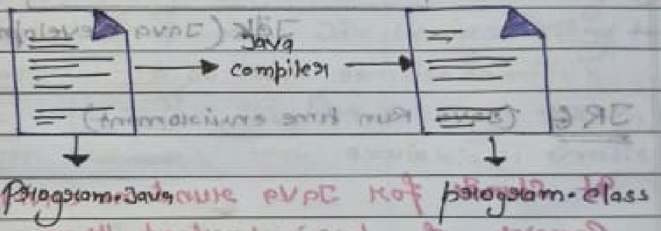
Topic :- What is JDK, JRE & JVM ?

" If a programmer wants to devlope a software in Java platform "

" The programmer have two basic Requirment let disscuse that "

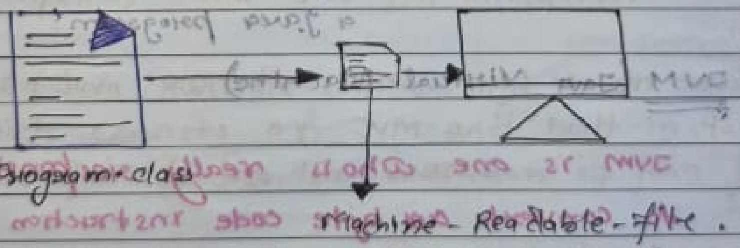
→ Requirment No 1 :- (Java Compiler)

That's helps to Convert a Java source file (Program.Java) into Java class file (program.class) which will have instruction in byte code langage.



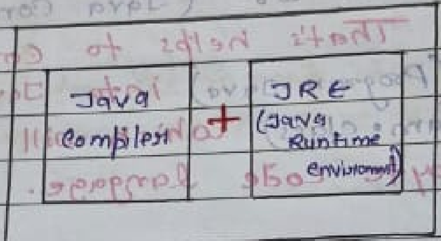
→ Requirement No 2 :- (JRE (Java Run time Environment))

JRE successfully execute the class file (Program.class)



JDK (Java Development kit)

The Java Community Beautyfully develope or designed a package and that packet will include the development tool such as " JRE (Java Runtime Envirsoment) and " Java compiler" This package is Known as " Jdk (Java Development Kit)"



Jdk (Java Development kit)

JRE (Java Run time envirsomont)

It stands for Java runtime envirsoment it Consist of two important thing

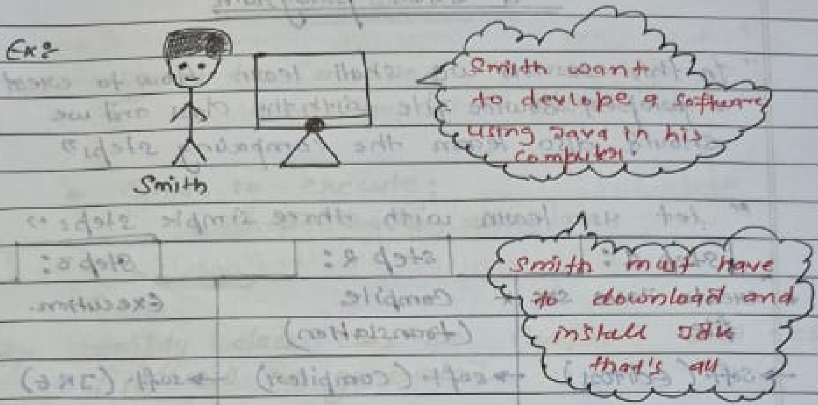
1. JVM
2. Builtin Class File or

The library files which is required for the execution of a java program.

JVM (Java Virtual Machine)

JVM is one who is really responsible for to convert an byte code instruction line by-line into Machine understandable language and it would be executed.

Ex:-


Smith
Smith want to develope a software using Java in his computer.
Smith must have to download and install JDK that's all

Note:- It is alway recommded to use any Jdk b/w JDK 8 and JDK 14 according to current industry standard.
→ this JDK version are available is Oracle website

Conclusion

→ JDK (Java Development Kit) is a package which consists of java development tools like java compilers, and JRE for execution.

→ JRE (Java Runtime Envisroment) is an envisroment which consists of JVM and built-in class which is required for the execution of java program.

→ JVM (Java Virtual Machine) helps to convert byte code into the current system machine level language with the help of interpreter.

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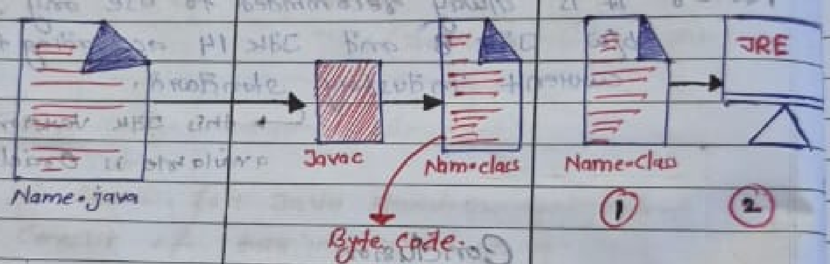
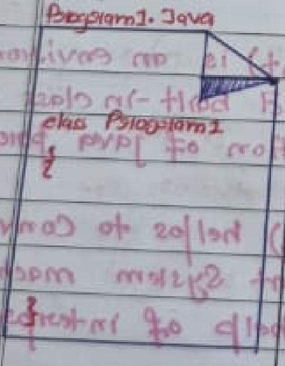
Topic:- Steps to Compile & Execute a Java program

" In this session we shall learn "How to create a proper source file with the class and we should also learn the compailing steps"

" let us learn with three simple steps "

Step 1:	step 2:	Step 3:
* Create Java src file	* Compile (translation)	Execution.
→ soft (Editor)	→ soft. (Compiler)	→ soft. (JRE)



Example:		
Editor: ↳ VS code → Eclipse etc Program1.Java  	(i) Java Compiler (ii) src file Syntax: ↳ Javac ∋ srcfile.Java Ex:- input Javac Program1.Java → Rules (Syntax) o/P: class File ↳ Program1.class	(i) JRE (ii) class File Syntax: ↳ Java ∋ className Ex:- Java Program1

Conclusion

1> * Syntax to Compile:
↳ Javac src-file.Java

* Syntax to execute:
↳ Java class-Name

2> Empty class can be Compiled and .class file will be generated.

3> Empty class can't be used for exectution.

Imp Question :-

→ what is byte code?
→ what is class File?
→ what is the extention for the class File?
→ who creates class File?
→ which software is required for creating source file?
→ which software is required for creating class file?
→ which name is chosen for class file
→ Can we create an empty class?
→ Is class file generated for empty class?
→ Can we execute empty class file?
→ What is the syntax to compile a source file?
→ what is the syntax to execute a class file?

Topic:- Statment To print Data

* Now we are going to discuss about a very very important statment, to print some data in our Console"

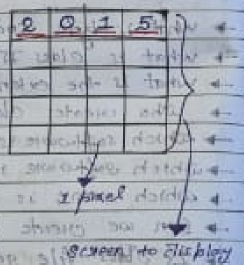
Statment:
→ System.out.print (data);
→ System.out.println (data);

{ So This are the two statment which is very frequently used in java to print the data in console.

→ **System.out.print (data);**

1) System.out.print (20);

System.out.print (15);



print statment will print the data on the cursor and move the cursor to the right side on the same line and if we use another print statment it will print the data in the same line

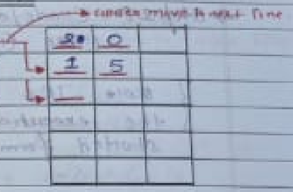
2) System.out.print ( );
↳ If we not passing any data it will give compile time error (CTE) (syntax error)

{ we are not allowed to used print statment without passing any data }

→ **System.out.println (data);**

1) System.out.println (20);

System.out.println (15);



println statment will print the data on the cursor by moving the right side if there is no data to print then cursor [] print will move to the next line

• print ln
line

It will instruct that if no data is available to print go to the next line

2) System.out.println ( );
↳ If we are not passing any data here it will accepted so it is Compile time Success (CTS)

It is use not to printing the data but it is used to move the cursor into the next line

Ex:-

```
class Program2
{

    System.out.println(20);

}
```

→ CTE

Because inside a class we can write declaration statment and this is not declaration statment.

Topic :- Introduction to Main Method & Execute "Hello Java" program :-

→ Step 1 :- Create / declare a method with name (main)

{ our JRE is pre-programmed that the execution of the program is alway started from main method.

Main method systax :-

It's a block of code which is used to perform a specific task

```
public static void main(
                String [] args)
{
        // Statment ;
}
```

main method

main method block/body

statment must be end with semcolon (;)

⟹ Where we have to write the main method

```
class Program 4
{

    public static void main(String [] args)
    {
        System.out.println("hello Laila");

    }
}
```

class Block

method Block

⇒ Step 2:- Compile the src file
↳ Javac Program4.Java
↳ generate class File.

⇒ Step 3:- Execute the class file
↳ Java Program4
↓
o/p → hello Laila

So,
the conclusion
is main method
is required to execute the
every Java program
or
A program is always
starts the execution
from main
method.

Imp. Question

Q* When can we execute a class?

Q* What is the syntax for main method?

Q* Exectulan of java app starts from when?

Q* What will happen if main method is not creating in the class?

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Topic:- Comment

* Generally we have two types of Comment.
- → Multi line comment
- → Single Line comment

* Multiline Comment :-
- → Rule
  - → /*
    statments ....
    ....
    */

→ It is used to Comment multiple lines

* Singleline Comment :-
- → Rule
  - → // statmenpts
  - // statments

Comments:-
→ It is those line which we don't want that compiler will Convert into machine level language.

→ Comment are only used for developer Onderstanding.

Tokens

" In this session we shall learn very - instresting thing in all the programming languages "

" That is Tokens "

→ Token :-

↳ It is smallest unit/ Component of any programming Language is known as Tokens.

Exe Like take any language like. english, Hindi, kanada, all this having alphabets or words in the same way. programming Language also have some alphabets & words is know as tokes.

* Type of tokens:-
- ↳ Keywords
- → identifiers
- → literals / Values

* Keyword:-
- ↳ pre-defined word
- → Easily Understand by Compiler
- → re served words
  - ↳ It is also called as reserved words becaus this word can't used by the programmer for his own purpose.

Defination:-

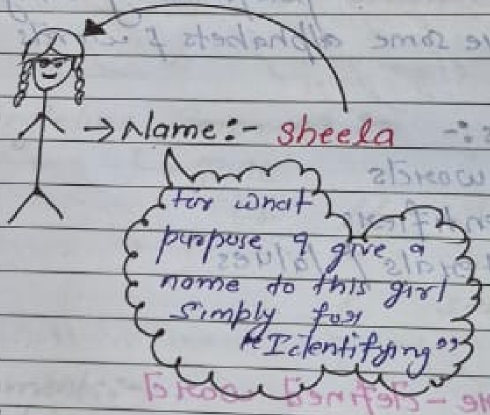
↳ pre-defined compiler aware words are called as keywords

Rule :-

→ they are written in lower case.
Ex:- class ✓ Class ✗

→ this are Case sensitive
Ex:- "public and Public" both are different.

* identifier :-


→ Name:- sheela
for what purpose I give a name to this girl simply for "Identifying"

- In side class what are thing a programes can create

→ Variable
→ Methods
→ class
→ interface
→ enums.

→ Name

when a programs create any one of this component it is mandatory that programer should provide a name for that

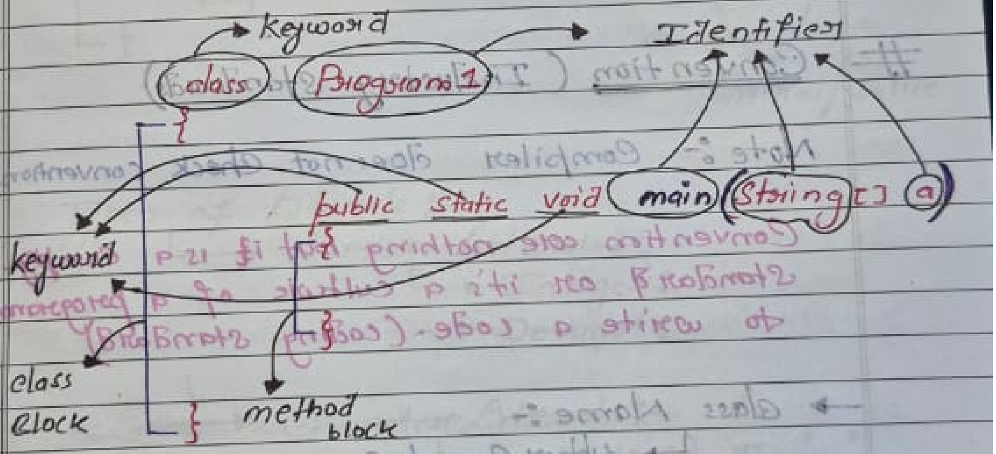
Defination:-

→ The name given to the Component of Java by the programer we call it as a identifier.

Ex:- Name given to a Variable
Name given to a class
Name given to a methods
⋮

} Identifier

Example:-



Rules:-

(i) → It should not start with no.

→ Ex:- Program1 ✓ 1Program ✗

(ii) → only $ and _ special character are allowe

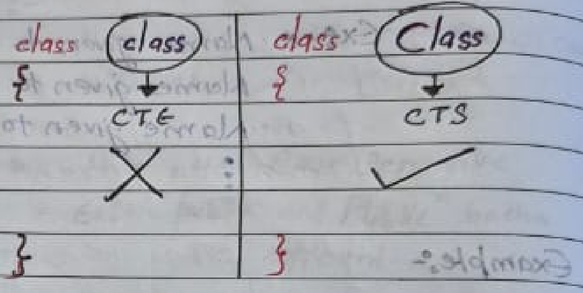
→ Ex:- $Program ✓ Program_1 ✓

Program@1 ✗ #Program1

(iii) → we cannot use keywoards as identifier

↳ Ex: class X if X public X

Class ✓ If ✓ Public ✓



Convention (Industry standards)

Note :- Compiler does not check convention.

Convention are nothing but It is a Company standard or it's a culture of a programmer to write a code. (coding standard)

→ class Name :-

↳ upper Camel Case

↳ Ex:- hello X Hello ✓

Textbook X TextBook ✓

→ Method Name :-

↳ lower Camel Case

↳ Ex:- GetId() X getId() ✓

GetAge() X getAge() ✓

Literal (Value):-

→ The data written by the programer in a program is known as Literal

Example:-

```
class P1
{
    public static void main (String[] a)
    {
        System.out.println ("hi");
        system.out.println (10);
    }
}
```

Literal/Value

Types of Literals :-

→ Number Literals:-
  → Integer:
  → Decimal:

→ Charater Literals :-
  → enclosed in '
    → a ✗ 'a' ✓
    → '12' ✗ '1' ✓

→ String Literals :-
  → enclosed in " "
    → "abcd", "1"

→ Boolean Literals :-
  → Two represent Logical data
    → true
    → false