**FEATURES OF JAVA**: [SOP]

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A list of most important features of java.

**Simple:**

* Simple to learn (Syntax's)

**Object-Oriented:**

* Object-oriented programming (OOPs) is a methodology that simplifies software development and maintenance by providing some rules.

**Basic concepts of OOPs are: [IPEA]**

* Object
* Class
* Inheritance
* Polymorphism
* Encapsulation
* Abstraction

**Portable:**

* Can be used with any other language.

**Secured**:

* any problem happens only JVM (JAVA VIRTUAL MACHINE) will get effected, but operating system is safe.

**Platform independent:**

* Java code can be run on multiple platforms, for example, Windows, Linux, Sun Solaris, Mac/OS, etc.
* Java code is compiled by the compiler and converted into byte code.
* This byte code is a platform-independent code because it can be run on multiple platforms, i.e., Write Once and Run Anywhere (WORA)

**Robust**:

* Most of things are automated Ex: garbage collection.

**Garbage Collection:**

It is the automated process of deleting code that's no longer needed or used.

**Multithreaded**:

* Running multiple processes (tasks) at same time.

----------------------- **BASIC STRUCTURE OF PROGRAM** -----------------------

public class Demo .......(1)

{

public static void main(String args[ ] ) .......(2)

{

System.out.println("This is my first program"); .......(3)

}

}

**Every programme has 3 main parts**:

**1.CLASS DECLARATION**

Ex: public class Demo

It consists of 3 things:

**1.Access Modifier: -**

* It indicates that program is accessible to other users or not.
* There are 4 access modifiers in java public, private, protected and default.
* in above section class is public so it is freely accessible
* All access modifiers will be in lower case.

**2.class: -**

* class is a keyword (reserve word or predefine word) in java.
* Every program must start with class keyword.
* all keyword must starts with smaller case so class-c is small.

**3. class Name: -**

* Every class has some name i.e. class name or program name or file name.
* class name for standard should start with Capital letter.
* Java File name and class name must be same for remembering purpose.
* class name can only be combination of A-Z,a-z,0-9,$,\_

**2.DEFINING MAIN METHOD**

Ex: public static void main(String args[ ] )

{

/ / LOGIC OF APP

}

It consists of 5 parts

1.Access Modifier :

2.Non-Access Modifier:

static--------------> can be used without object creation.

non-static ---------> needs to be used with object creation.

3.return type:

void indicated no specific return type.

4.method name:

if anyword contains ()----> we can identified it as a method Ex: main( ),run( ),display( ) etc.

main is name of method.

5.command line arguments:

String args [] String - S is capital -This statement can be written in 3 ways.

1.String args []

2.String [] args

3.String[ ] args

Note: In syntax of main method only String-S is capital remaining all words starting letters are small.

**3.PRINTING STATEMENT:**

System.out.println("This is my sample program");

System------> it is a pre define class[class System]

.--------------> it is a dot operator, any word after it can be reference variable/object or method.

out-----------> it is an object (predefine)

println()----> it is a method (predefine)

* In simple println() is accessed through out object but out object is present in system class.
* System is a class which contains out object and out object is referring to println().
* whatever we gave in double quotes that message will be printed as it is.

**Parts of java:**

1. J2SE/JSE (java 2 std edition) - Basic/core java.
2. J2EE/JEE (java 2 enterprise edition) - Full stack development.
3. J2ME/JME (java 2micro edition).

**Architecture of Java:**

**A diagram of a computer program

Description automatically generated**

**Step-1:**

-whatever program we write it is called as source code.

-source code should always save as ext ".java"

-above program should save as Hello.java

**Step-2: Compilation**

-The process of converting our program into system understandable form (byte code) is purpose of compiling a program.

-to compile a program, go to cmd prompt and enter command as

-javac programname.java

-Ex: javac Hello.java

-Compilation is done at once.

-During compilation, compiler will check syntax errors like [ ], ;,(),{ },:,spellings and case sensitivity.

-If anything is wrong we will get compile time error.

-If nothing is wrong there is one class file get generated (byte code file) with same

as .class

**Step-3: Execution**

-JVM -java virtual machine is responsible for execution of every java program.

-JVM's can identify by ------> Public static void main (String [ ] args).

-it is like one software or one program.

-execution will happen in line-by-line manner.

-during execution JVM will find logical error of program.

-for executing program go to command prompt and enter command as

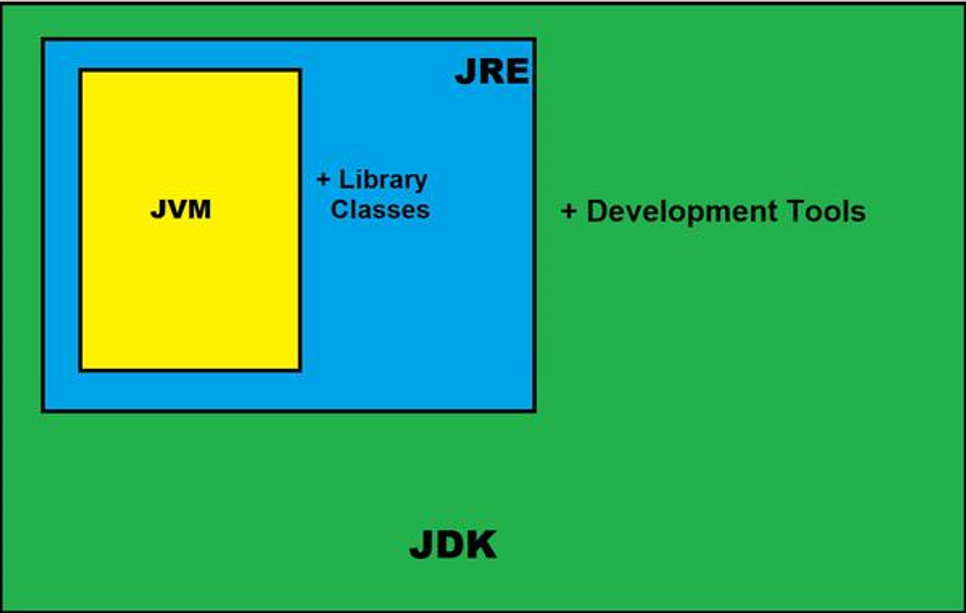
-java program\_name

-Ex: java Hello

-Once we enter this command JVM will go to class file and take first line and give to operating system for execution, once OS responds that i understood that line and it sends second line and it continues till last line like this whole code of class file gets executed.

**JDK-JAVA DEVELOPMENT KIT**

- IF WE WANT TO DEVELOP AND EXECUTE JAVA PROGRAM IN OUR SYSYTEM WE HAVE TO INSATLL JDK(JRE,JVM,SUPPORTING TOOLS AND SUPPORTING CLASSES).

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