JAVA:

- Java is a Object Oriented Programming language which is used for developing applications(mobile,web,desktop).
- Java is developed by **SUN MICROSYSTEM** of USA in 1991.
- The original name of the language was called 'oak' and it is invented by '**JAMES GOSLING**' and his team.
- Java was designed for the development of software for consumer electronic devices such as TV's,VCR's,posters's and such other electronic machines.

FEATURES OF JAVA:

- Compiled and Interpreted
- Platform Independent and portable
- object oriented
- Robust and Secure
- Distributed
- simple small and familiar
- Multithreading and Iterative
- High Performance
- Dynamic and Extensible

ADVANTAGES OF JAVA:

1.Open source-purchase any license/pay any money it is free of use.

2.Platform(os/processor) Independent-JVM(Java virtual Machine)-Compiler which makes java platform independent.

3.code security,reliability,performance.

JAVA PROJECT AND SETUP ECLIPSE:

This step will shows how to create a java application project in Eclipse.

1.Choose File->New->Class from the Eclipse menu bar.

2.make sure "Java Project" is selected and click the next button,enter the Project name which is MyJavaProg ,click on finish.

3.created the first java project.

What is main class?

A main() Method in java is an entry point to start the execution of a program.Every java application has atleast one class and atleast one main method.

Syntax:

```
public static void main(String[] args)
{
  //Method body goes here.
}
```

- public-To call by JVM from anywhere.
- static-Makes it class method so that it can be called using class name without creating an object of the class.
- void-main method does not return value to JVM.
- main(String[] args)-Name of the method which is called by JVM,the main() method accepts one argument of type string array.

How to run java using command line and IDE?

After successful installation of JDK in our system and set the path,We can able to compile and execute java programs using command prompt.

Step-1: Need to create a java program either in notepad or other IDE.

Step-2: Need to save this java file in a folder with "MyJavaProg.java" and it can be saved in a folder.

step-3: Need to compile this java file from the command prompt using javac command(javac MyJavaProg.java).

Step-4:"MyJavaprog.java" file is successfully compiled with a generation of ".class" file.

Step-5: Need to execute this java file using java command without ".java" extension(java MyJavaProg).

Step-6: Able to see "Welcome to First Program" output in the console.

What is Class and Object?

Class:-Class is a blueprint/template representation of your application -data variables and functions/methods.

- Class is a collection of object,it has no memory and its is a logical entity.
- Whenever a class is to be defined then it can be defined using a keyword called class.
- we can create any number of objects under a defined class.

Syntax:

```
Class Program //name of the class is Program and the starting letter is Uppercase.
```

Object:-Object is the real world implementation of class,it is an entity which holds the memory and moreover an object has its own behaviour and attributes.

- An object is always created for a class whenever a class is declared.
- An object has its behaviour this behaviour tells what the object has done and how it did.

Syntax:

prog p=new prog;

- Prog-class name.
- p-Reference variable.
- new-keyword for creating objects.

Variable Declaration and Initialization:

Variable:-Variable is a named memory location used to store data temporarily.During program execution we can modify that data

- A variable is created by using datatypes,as we have two types of datatypes we can create two types of variables are Primitive variables,Referenced variables

Declaration of variables:

public static int x; or int x

- public -It is a accessibility Modifier
- static-It is s Modifier
- int-It is a data type
- x-It is a variable name

Initialization of Variables:

int x=20;

- int-It is a data type
- X-It is a variable name
- 20-It is a initial value stored in the variable

CONDITIONAL STATEMENTS:

Java has the following Conditional statements:

1.**if Statement:-**if statement consists of boolean expession followed by one or more statements.If the boolean expression is evaluated to true that the block of code inside the if will be executed otherwise set of code after the end of the if statement will be executed.

Syntax:

```
if(boolean expression)
 {
   //block of statement;    }
```

Example:

```
if(score>=95)
{
   System.out.println("you are a good student"); }
```

2.**if-else Statement:-**It is a keyword, by using this keyword we can create alternate block for 'if' condition using 'else' means optional.when we are working with 'if' and 'else' only one block will be executed and when the if condition is false then only else part will be executed.

Syntax:

```
if(boolean expression)
 {
  //block of statement 1;
 }
 else
  {
   //block of statement 2;
  }
```

Example:

```
        if(score<=50)
    {
          System.out.println("you didn't pass");
    }
    else
    {
          System.out.println("you did pass");
    }
```

3.**Switch Statement:-**Switch statement allows variable to be tested for equality against list of values.Each value is called case and the variable being switched on is checked for each case.

Syntax:

```
switch(expression)
{
 case value:
   //statements;
   break;
 ..
 ..
 ..
 default:
  //statements;
  break;
}
```

Example:

```
        switch(rno)
    {
       case 1:
          System.out.println("I am a java student");
          break;
      case2:
        System.out.println("I am dot net student");
        break;
        default:
          System.out.println("no student found");
          break;
    }
```

Ternary operator:-It is the only conditional operator that takes three operands.We can use the ternary operator in place of if-else conditions or even switch conditions using ternary operators.

Syntax:

```
variable=Expression1?Expression2:Expression3
```

Example:

```
max=(n1>n2)?n1:n2;
```

LOOPING:

The process of repeatedly executing a block of statements is called looping..The statements in the block may be executed any number of times from 0 to infinite numbers.

- Java language provide 3 constructs for performing loop operations are:

1.while loop

2.do-while loop

3.for loop

1.**while loop:-**The while loop is an entry control loop statement the test condition is evaluated and if the condition is true the body of loop is executed.The body of the loop may have one or more statements.

Syntax:

```
initialization;
while(test condition)
 {
  //body of the loop;
 }
```

Example:

```
    sum=0,n=1;
        while(n<=10)
{
          sum=sum+n*n;
  n=n+1;
}
```

2.**do-while loop:-**If the condition is true then the program continues to evaluate the body of the loop once again.If the condition is false the loop will be terminated and the control goes to the statement that appears immediately after the while statement.

Syntax:

```
initialization;
do
{
 //body of the loop;
 }
while(test condition);
```

Example:

```
    sum=0,n=1;
do{
      sum=sum+n;
       n=n+2;
    }
    while(sum<40||i<10);
```

3.**for loop:-**The for statement includes an expression that specifies an initial value for an index,another expression that determines whether the loop is continued or not and a third expression that allows the index to be modified at the end of each pass.

Syntax:

```
for(initialization;condition;increment/decrement)
{
  //statements or code to be executed;
}
```

Example:

```
int i,a=10;
for(i=1;i<=a;i++)
{
   System.out.println(i);
}
```