Java Concepts

1. **Steps to install java**

Type java in google and then go to the site -> After downloading java - > open exe file and run. We need to set environment variables for our system to understand where the java is present.

Setting Environment variables:

**Step:1**

Go to program files and open java -> copy the entire path -> right click on my computer and click on properties -> click on advance system settings and select environment variables -> select new in system variables, then enter variable name, paste the above copied path and click on ok

**Step:2**

Go to program files and open java -> open jdk and finally open bin folder and copy the entire path -> right click on my computer and click on properties -> click on advance system settings and select environment variables -> edit the path from system variables by adding “;” at the end and paste the above copied path -> click on ok

**--** Now, open cmd and type java -version -> then if you get the details of java then it got successfully installed.

1. **Steps to install eclipse**

Type eclipse in google and then go to the site -> choose Eclipse 64 bit if you download java 64 bit and choose Eclipse 32 bit if you download java 32 bit -> Now download and run the exe file, it will get installed -> It will show the default workspace (we can even change it to different)

1. **Steps to create workspace**

Open Eclipse and click on File -> go to Switch workspace and click on other -> you can choose different workspace and click on ok -> it will refresh and Eclipse will restart again with new workspace.

1. **Steps to create project**

Open Eclipse and click on File -> go to new and select project -> In that we can select our desired project and click on next -> give project name, choose saving location of the project if you don’t wish to save in the default one’s and click on Finish

**-->** You can see src folder and java jars which got imported. package resides in src folder and in that package classes will be there.

**-->** If you directly created a class, then it will automatically saves in default package or we can create our own package first and also desired classes in that package.

1. **create .java file/class**

After creating the project right click on it -> go to new and click on class ->select the desired package -> Enter name and check the public static void main(String[] args) if you want main method -> click on Finish

(or)

Directly right click on the desired package -> go to new and click on class -> Enter name and check the public static void main(String[] args) if you want main method -> click on Finish

1. **how to create packages and what is best way to give name**

After creating the project right click on it -> go to new and click on package -> Enter name -> click on Finish (or) If you directly created a class, then it will automatically saves in default package.

Best way to give name: Always use lowercase letters for package in order to avoid conflicts between classes and interfaces.

1. **what is main method will do?**

**Public static void main(String[] args)**

It is like an entry point for execution.

**public -** it is an access specifier where each and every class have an access.

**static -** it is given because we can invoke without the need of creating an object.

**void** - it doesn’t return any value to the caller(JVM).

**main()** - it is required for the interpreter(JVM), without this it cannot run the program but compiler can convert “.class” file without main.

**String[] args** - it can accept all types of values as arguments.

1. **creating property/data members**

There are two types of data members :

1. Non-static:

They access with respect to object name so, they are like object level data members and memory space is created each and every time whenever an object is created. They are used to store specific values.

1. static:

They access with respect to class name so, they are like class level data members and memory space is created only once irrespective of the creation of objects, They are used to store common values.

code:

public class DataMembers {

// Declaring static data members - they are fixed  
 static String FullName = "SowmyaLakkireddy";

static int rollNo = 25;

public static void main(String[] args) {

// Declaring Instance or Non-static data members - we can change the values  
 String name = "Sowmya";  
 int age = 25;  
 double height = 5.4;  
 }}

1. **what is data type and different data types**

Data type - It is a type of data/information which the variable holds.

Different data types:

1. **primitive data types:**

They are predefined by the language and specified by a keyword. They have fixed size.

Byte - made of 8bits and used to save space in Arrays, which is 4 times smaller than int.

Default value = 0, min = -128(-2^7), max = +127(+2^7-1)

Short - made of 16bit signed 2’s complement integer, which is 2 times smaller than int

Default value = 0, min = -32,768(-2^15), max = +32,767(+2^15-1)

Int - made of 32bit signed 2’s complement integer

Default value = 0, min =- 2,147,483,648(-2^31), max = 2,147,483,647(+2^31-1)

Long - made of 64bit signed 2’s complement integer

Default value = 0, min=-2^63,max=+2^63 -1

Float - It is a single-precision 32-bit IEEE 754 floating point

Default value = 0.0f

Double - It is a double-precision 64-bit IEEE 754 floating point

Default value = 0.0d

Boolean - False and true, Default value=false

Char- It a single 16-bit unicode character, min value = 0, max = 65,535

**b) Reference/Object data types:**

These represents arrays and class objects. So, whenever a new object is created then its reference will be stored in the variable instead of the object and while accessing the code these references will be helpful in locating the object/array

Default value = null

1. **What is variable?**

It is a storage location which holds some information (different data types) in the system’s memory. So, when you create a variable then it reserves some space in the memory based on the data type.

1. **creating method with void**

Void method : It doesn’t return any value

**Code:**

public class Methods {

public static void main(String[] args) {

int a = 1;

int b = 2;

Person(a, b);

}

public static void Person(int a, int b) {

int sum = a + b;

System.out.println(sum);

}

}

1. **creating variable, we can create variables inside method**

We can create non-static variables inside the method but, we cannot create static variable inside the method because they belong to the class level.

**Example:**

public class DataMembers {

// Creating static variables

static String FullName = "SowmyaLakkireddy";

static int rollNo = 25;

public static void main(String[] args) {

// Creating Non-static variables  
 String name = "Sowmya";  
 int age = 25;  
 double height = 5.4;  
 }}

1. **creating method with return data type, int/string/double/float/date**

Step 1- create a class with all methods

public class MethodsReturn {  
  
 public int add(int m, int n) {  
 return m + n;  
 }  
  
 public String names() {  
 return "sowmya";  
 }  
  
 public double substract(int m, int n) {  
 return m - n;  
 }  
  
 public float multiple(int m, int n) {  
 return m \* n;  
 }  
  
 public boolean result() {  
 return false;  
  
 }  
   
 public String date(){  
 return null;  
 }

Step2: now create main class, then create object for the above class and invoke all the methods

import java.util.Date;  
  
public class Methods {  
   
 public static void main(String[] args) {  
 // TODO Auto-generated method stub  
 int a = 1;  
 int b = 2;  
 int m = 10;  
 int n = 5;  
  
 Person(a, b);  
  
 MethodsReturn mr = new MethodsReturn();  
 Date date = new Date();  
 System.out.println(mr.add(m, n));  
 System.out.println(mr.substract(m, n));  
 System.out.println(mr.result());  
 System.out.println(mr.multiple(m, n));  
 System.out.println(date);  
 }  
  
 public static void Person(int a, int b) {  
  
 int sum = a + b;  
 System.out.println(sum);  
 }  
  
}

1. **method that will return hard coded value**

It returns hard coded value sowmya

public String names() {  
 return "sowmya";  
 }  
Output: sowmya

1. **method that will return property value**

Here the method add will return value based on the data members.

public int add(int m, int n) {  
 return m + n;  
 }  
Output: 15

1. **write code to add items to integer, string array**
2. Adding items into integer array

int[] values= new int[3];  
 values[0] = 1;   
 values[1] = 2;  
 values[2] = 3;

(or)

Int[] values = {1,2,3};

1. Adding items into string array

String[] names= new String[4];  
  
 names[0] = "Sowmya";  
 names[1] = "Roja";  
 names[2] = "Pallavi";  
 names[3] = "Vrundha";

(0r)

String[] names = {“Sowmya”,”Roja”,”Pallavi”,”Vrundha”}

1. **write code to retrieve items from integer, string array**

Retrieving items from integer array

for (int s : values) {  
  
 System.out.println(s);  
 }

Output:

1

2

3

Retrieving items from string array

Arrays.sort(names);  
 for (String n: names) {  
 System.out.println(n);  
  
 }

Output:

Pallavi

Roja

Sowmya

Vrundha

1. **write code to add items to ArrayList collection**

ArrayList<String> animals = new ArrayList<String>();  
   
 animals.add("dog");  
 animals.add("cat");  
 animals.add("monkey");

ArrayList<Integer> values = new ArrayList<Integer>();

values.add(1);

values.add(2);

values.add(3);

values.add(4);

1. **write code to retrieve items from arraylist (using for each loop)**

System.out.println(animals);

for(String a:animals){

System.out.println(a);

}

Output:

[dog, cat, monkey]

dog  
cat  
monkey

System.out.println(values);

for(int v:values){

System.out.println(v);

}

Output:

[1, 2, 3, 4]  
1  
2  
3  
4