**1. What is Encapsulation?**

Encapsulation is the concept of wrapping data (variables) and methods (functions) together into a single unit (class). It restricts direct access to some components and can only be accessed through getters and setters.

2. **How are ArrayLists different from Arrays?**

Array:-Array size is Fixed and can hold primitive s & objects Array cannot supported any inbuilt methods .

syntax:-

**int[] arr = new int[5];**

ArrayList:-ArrayList is a Dynamic size can grow /shrink or can hold only objects many methods can supported for ArrayList like as (add,remove,etc).

syntax:- **ArrayList<Integer> list = new ArrayList<>();**

3. **How to sort an ArrayList?**

**We sort data u sing Collections.sort () methods .**

**Like as**

**import java.util.\*;**

**ArrayList<Integer> list = new ArrayList<>();**

**list.add(10);**

**list.add(5);**

**Collections.sort(list); // list will be [5, 10]**

4. **What is Constructor Overloading?**

Constructor overloading means having multiple constructors in a class with different parameter lists.

public class Student {

Student()

{

// No-arg constructor

}

Student(String name) {

// Parameterized constructor

}

}

### 5. ****How does Garbage Collection work in Java?****

Garbage collection automatically removes objects that are no longer referenced to free memory. It helps in preventing memory leaks.

When obj=null and no other reference exists, it becomes eligible for garbage collection.

### 6. ****Why do we use Getters and Setters?****

To control access to private fields. And add validation logic before setting a value.

public void setAge(int age) {

if(age > 0) this.age = age;

}

### 7. ****What is a Static Variable?****

A static variable belongs to the class rather than to any specific object. It is shared among all instances.

public class Student {

static int count = 0; // shared by all objects

}

8. **What is the Use of final Keyword?**

Final variable cannot change and if we want to add fix value in our program that time

We use final keyword and also final keyword with methods and class because if we define method as a final we cannot chage logic in it during program execution.

and cannot be override this method .also can use with class and class cannot be inherited in another class.

final int x = 10; // x cannot be modified

9. **Difference Between Compile-Time and Runtime Errors?**

**Compile Time Error:-code is eing compile and syntax error ,missing semicolon**

**RunTime Error :-code is executing and divide by Zero ,null pointer there**

10. **What are Access Modifiers?**

**Access Modifiers is a keywords it is use to apply some rules in a variable ,methods ,and classes ,**

**There are four types of access modifiers :**

**1)Private :-Access within the same class only**

**2)default :-Access within the same package .**

**3)protected :-Access within the class and subclass or child class also.**

**4)public :-Access Everywhere**