Day 1 : 21/10/2023

Backend technology -→ Java and connecting database using JDBC.

Java

Core Java

J2SE	J2EE	J2ME
JavaSE	JavaEE	JavaME
JSE	JEE	JME
Java Standard Edition	Java Enterprise Edition	Java Micro Edition
Desktop application	Servlet and JSP : web application	
Console base application	We will teach how to create	
Basic Java Programming	Rest API	
OOPs Concept	those rest api we will	
Object,	call in angular	
Class,	maven build tools	

Exception handling

Collection Framework with Data structure

JDBC topic to connect MySQL

Java8(Lambda Expression and Stream API)

and 11 and 15

Regex

Java 22

Intro to Mongo DB

No SQL Database

Using Java we can connect to database using

1. JDBC
2. ORM -→ Hibernate and JPA.
3. Using Core Java, Servlet /JSP we can use JDBC or Hibernate or JPA.
4. Spring Framework we can use JDBC or Hibernate or JPA.
5. In Spring boot JDBC or JPA or Spring Data.

Phase 3 or Course 3

Spring framework and Spring boot

Junit 5 testing tool

Course 4 : Testing and deployment

Testing

TestNG, Selenium,

Docker, CI and CD using Jenkin, Overview of AWS

In AWS we will teach you how to deploy application in EC2 instance using Docker with CI and CD tool ie Jenkin

Frontend -→ angular

Backend → spring boot

Database -→ MySQL

Day 2 : 22/10/2023

Java : Java is pure object oriented and platform independent programming language.

Java develop in nov 1995. The initial name of java is Oak.

Version of Java

Java 1.0,1.1,1.2 7, 8,9,11,15 22

Java is an open source.

From java 11 onward java is not open source.

Java was belong to sun micro system

Now it is part of oracle.

Oops

object : object is any real world entity. Example

property or state or variable -→ have → variable, fields etc

name, age, weight, height, colour etc.

int, float, char, double, string etc.

Person

Behaviour or function or methods -→ do/does → function or methods.

Teaching(), sleeping(),talking(), typing(), etc

Bank

Animal

Car

Customer

class : blue print of object or template of object or user defined data type which help to describe the object.

Syntax of class

```
class ClassName {
        fields or variable declaration
        method or function declaration
}
class Demo {
    main method : pre defined methods.
}
```

Class name must follow pascal naming

1. If class contains one world first letter upper case.
2. If class contains more than one world each world first letter upper case.

Syntax to write method in java

```
returnType methodName(parameterList) {
    Method body;
}
```

```
    void display() {


    }
```

Method name is display no passing parameter and no return type.

```
void add(int x, int y) {


}
```

Method name is add. We need to pass two parameter of type int but no return type.

```
String sayHello(String name) {
        return “Welcome user “+name;
}
```

Method name is sayHello. Need to pass one parameter of type string and return string value

In java all method must part of class.

```
class Test {
                public static void main(String args[]) {
                        System.out.println(“Welcome to Java”);
                }
}
```

Method name and variable name must be follow camel naming rules.

1. If variable name or method name one world. Then it must be in lower case. Like main(), sleeping(), display(), read() etc and id, name,salary etc.
2. If variable name or method name more than one world then from second world first letter upper case like displayInfo(), calSalary(), empId, etc.

Data types : Data type is a type of data which tells what data type data it can hold.

a=10;	python
var b=20;	js
let c:number =30;	ts

datatype variableName;

datatype variableName=value;

In java data types are divided into two types.

1. Primitive data types :it is use to store only value
   8 types
   a. byte 1 byte -128 to 127
   b. short 2 byte
   c. int 4 byte
   d. long 8 byte
      without decimal point
   e. float 4 byte
   f. double 8 byte
      with decimal point
   g. char 2 byte in single character
   h. boolean 1 bit true or false value

Operator :

1. arithmetic operator : +, -, *, /, %
2. logical operator : &&, ||, !
3. conditional operator : >, <, >=, <=, ==, !=
4. assignment operator =
5. increment and decrement operator : ++, --

if statement

a. simple if
b. if else
c. if else if
d. switch statement

syntax of switch statement

```
int label =1;

switch(variableName) { variable type must be int, char or string in java.

case 1:block1

          break;

case 2:block12

          break;

case 3:block3

          break;

case 4:block4

          break;

default : default block ;

          break;

}
```

Looping : looping is use to execute the task or statement again and again repeatedly Till the condition become false.

```
Initialization

Condition

      Task

Increment and decrement.
```

a. While loop : entry loop
b. Do while loop : exit loop
c. For loop

Type casting :

Converting from one data type to another data type is known as type casting.

Two type of type casting.

a. Implicit type casting
b. Explicit type casting

int family

----------------→ implicit type casting -----→

byte short int long

←------------ explicit type casting -------------

int	to	float	implicit
float	to	int	explicit

in java by default every decimal number double consider.

2. Non primitive or reference data types. : it is use to store value as well as reference of another data types.

4 types of non primitive

1. array :array is user defined or reference data type which help to store same type of values.
In java array is known as fixed in memory size.
datatype arrayname[]; array declaration
int num[];
int a;

int num1[]={10,20,30,40,50}; array declaration with initialization

array memory creation syntax
datatype arrayname[]=new datatype[size];

int num2[]=new int[10];
num2 can hold 10 value. Start from 0 to 9 position.

Taking the value through keyboard in java

Using Scanner class.

Scanner is a pre-defined class part of util package.

Package is a collection of classes as well as interfaces.

We need to create Scanner class object.

Syntax to create Scanner class object

```
Scanner obj = new Scanner(System.in);
```

While creating scanner class object we will get error. Because Scanner class part of util Package. We need to import it.

2. class

   Scanner : pre defined class which help to scan the value through keyboard.

   String : in Java String is a pre defined class. which help to store more than one Character in double quote.

   String is pre defined class part of lang package.

   By default java imported lang package.

3. interface
4. enum

in Ts or JS

```
class Customer {

}

var obj1 = new Customer();

let obj2=new Customer();

Scanner obj1 = new Scanner(System.in);

obj.nextInt(); int value
```

obj.next()   string value

obj.nextFloat()   float value

Day 3 : 28/10/2023

Java OOPs concept

object : any real world entity.

Property or state -→ have -→ variable or fields.

Person

Behaviour -→ do/does -→ functions or methods

Bank

Car

Animal

Customer

Employee

class : blue print of object or template of object or user defined data type which help to describe the object.

Method or function syntax

```
return type methodName(parameterList) {


}
void info() {
        coding….
}
```

Method name is info. For this method we are not passing any parameter while calling

And this method doesn’t return any value to caller method.

```
void add(int x, int y) {


}
```

Method name is add while calling this method we need to pass 2 parameter of type int and not return type.

```
String sayHello(String name) {
        Coding
        return “Welcome to my method user “+name;
}
```

Method name is sayHello. We need to pass one parameter of type string and it return string value to caller method.

Fields or variable.

In Java variable or fields are divided into 3 types.

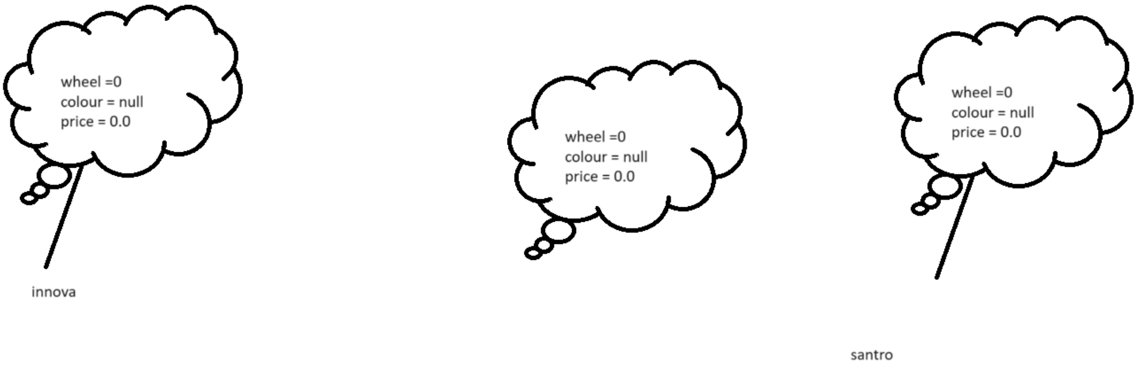
1. Instance variable
   a. The variable which declared inside a class but outside method including main method also is known as instance variable.
   b. Instance variable hold default value base upon their data types.
      Int family →0
      Float family →0.0
      Char -→ space or white space
      Booean –> false
      String → null
   c. Instance variable we can use all method directly but method must be part of same class and it must be non static.
2. Local variable
   a. The variable which declared inside a method is known as local variable.
   b. Local variable doesn’t hold default value we have to initialize.
   c. The scope of the variable within that method where it declared.
3. Static variable

Constructor : constructor is a type of special method which help to create the object.

Pts.

1. Constructor have same name as class itself.
2. Constructor no return type not even void also.
3. Constructor get call automatically whenever we create the object that class.

```
class Employee {
        Employee() {}                in Java Constructor
        constructor(){}              in typescript or angular
}
```



When local or parameter variable and instance variable have same name then local variable or parameter variable hide the visibility of instance variable.

If we want to refer to instance variable this we need to use this keyword. this is a keyword which refer to current to object.

Parameter constructor

Encapsulation : binding or wrapping data or variable and code or method/function is single unit is known as encapsulation.

Example : class.

JavaBean class

Inheritance :

Inheritance is use to inherits or acquire the property and behaviour of old class to new class.

```
class OldClass {            super class or base class or parent class.
        property
        behaviour
}
class NewClass extends OldClass{        sub class or derived class or child class.
        property
        behaviour
}
```

Types of inheritance

1. Single inheritance : one super class and one sub class
   ```
   class A {               }
   class B extends A {     }
   ```
2. Multilevel inheritance : one super class and n number of sub class connected one by one.
   ```
   class A {         }
   class B extends A {     }
   class C extends B {     }
   class D extends C {     }
   ```
3. Hierarchical inheritance : one super class and more than one sub class connected directly to super class.
   ```
   class A {         }
   class B extends A {     }
   class C extends A {     }
   class D extends A {     }
   ```
4. Multiple inheritance : more than one super class and one sub class
   ```
   class A {         }
   class B {         }
   class C extends A,B {     } Java doesn’t support multiple inheritance. Error
   ```
   this type of inheritance in java we can achieve using interface.

```
class Employee {
        id,name,salary
        readEmployee()
        displayEmployee();
}
class Manager extends Employee {
        numberOfEmp;
        readManager()
        displayManager();
}
class ProjectManager extends Manager{
        clientInfo
        readProjectManager()
        displayProjectManager();
}

class Developer extends Employee{

        techName;

        readDeveloper()

        disDeveloper()

}
```

Day 4 : 29/10/2023

Scanner is a pre defined class part of util package.

Outside a class we need to import java.util.Scaner;

Scanner sc = new Scanner(System.in);

System.out.println(“Enter the id”);

Int id = sc.nextInt();	to scan int value
String name = sc.next();	to scan string value but only one world.
String msg = sc.nextLine();	it take more than one world till hit enter key.
float salary = sc.nextFloat();	

Polymorphism : one name many forms or many implementation.

2 types

1. Compile time or static binding or early binding
   Example : Method overloading :
   In C++ Operator overloading is example of compile time polymorphism
   The method have same name but different parameter list ie type of parameter list or number of parameter list must be different.
2. Run time or dynamic binding or late binding
   Example : Method overriding
   The method have same name and same method signature (number of parameter list, type fo parameter list and return type must be same).
   To achieve method override we need inheritance.

Annotation : annotation is like a meta data . meta data is data about data.

Annotation is like a decorator in angular.

Java provided lot of pre defined annotation. All annotation start with pre fix @ followed by annotation name. few annotation we can use on class level or method level or property level.

@Override. This annotation we can use on method level of sub class. if sub class method

Overriding super class method then we doesn't get any error else we will get the error.

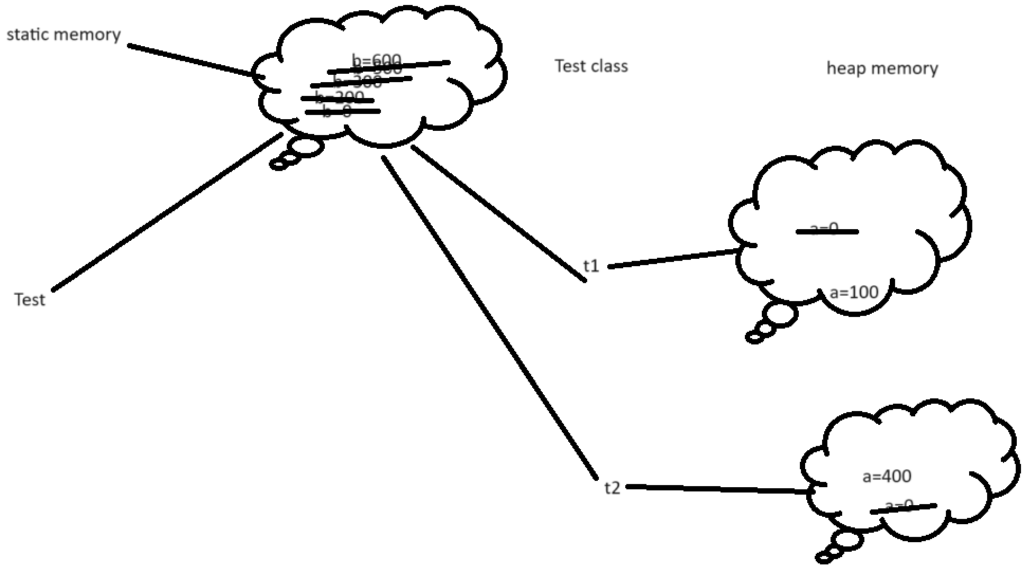
Non access specifiers keywords.

Java provide 3 non access specifiers keywords.

1. abstract :abstract is a keyword we can use with method and class but not with variable.
   a. Abstract method : method without body or without curly braces or incomplete method is known as abstract method.
      abstract returnType methodName(parameterList);
   b. If class contains one or more abstract method that class we need to declare as abstract class.
      abstract class classname{

      }
   c. Whichever class extends abstract class that class must be provide the body for all abstract method belong to that class mandatory.
   d. Abstract class can contain normal as well as abstract method. Means it can contains zero or 1 or many abstract methods.
   e. Abstract class we can't create object.

2. final : final keyword we can use with variable, method and class.
    a. final variable : to declare constant value in java we use final keyword.
       final int A=10;
       A=20;   error
    b. final method : if method is final we can’t override that method. But we can use that method.
    c. Final class : if class is final we can’t inherit that class or extends that class.
3. static : static keyword we can use with variable and method but not with class.
    a. static variable : if variable is static we can access or assign the value of variable using class name.
    b. static method : if method is static we can call that method with help of class name.
    c. we can access static variable using object also as well as we can call static method with help of object also.
    d. Inside non static method we can access both the type of variable directly but inside static method we can access only static variable directly.
    e.



interface : interface is a type of reference data type. It is also known as

100% pure abstract class.

Syntax for interface

```
interface interfaceName {
        variables;
        methods;
}
```

By default all variable inside a interface are public ,static and final.

By default all methods in interface are public and abstract.

```
interface Abc {
        int A=10;
        void dis1();
}
interface Xyz {
        int B=20;
        void dis2();
}
interface Mno extends Abc,Xyz{
        int C=30;
        void dis3();
}
class Test implements Abc,Xyz {
        dis1() and dis2() methods.
}
```

Like a class one interface can extends another interface as well as interface can extends more than one interface but class can't.

Class always implements interface. Class can implements more than one interface.

Which ever class implements any interface that class must be provide the body for all those methods belong that interface.

Interface Vs Abstract class.

1. Abstract class can contains normal as well as final variable but interface contains only final variable.
2. Abstract class can contains normal as well as abstract method but interface contains only abstract method.
3. Normal class can extends only one abstract class but normal class implements more than one interface.
4. Abstract class can contains default constructor as well as we can write empty or parameter constructor but interface doesn’t contains any constructor.
5. Using abstract class we can achieve partial abstract but using interface we can achieve 100% abstraction.

Common point we can’t create object of interface as well as abstract class.

Class extends class only one

Interface extends interface more than one

Class implements interface more than one

Interface can’t extends or implements to class.

```
abstract class Bank {
    abstract void withdraw();
    abstract void deposit();
    void rateOfInterest() {
    }
}
```

Or

```
interface Bank {
    void withdraw();
    void deposit();
    void rateOfInterest();
}
```

Package and access specifiers

Package is a collection of classes and interface which have same name but different purpose.

In java package are divided into 2 types.

1. User defined package.
2. Pre defined package.

To create the package we need to use

package packagename;

school	college
Attendance	Attendance
School student	College student

Package is like a directory or folder

Access specifiers

Using access specifiers we can provide the visibility of variable, method and class part of same package or other package.

Java provided 4 types of access specifiers

1. private: we can use this access specifier with what
   we can use private with instance variable, static variable, non static method, static method, constructor but not with local variable as well as class.
   scope : within a same class.
2. default or nothing : we can use this access specifier with what
   we can use with all
   scope : within a same package

3. protected : we can use this access specifier with what
   we can use private with instance variable, static variable, non static method, static method, constructor but not with local variable as well as class.
   scope : within a same class as well as other package if it is sub class

4. public : we can use this access specifier with what
   we can use private with instance variable, static variable, non static method, static method, constructor, class but not with local variable.
   scope : same package well as other package.