

**SWT 12031: Practical for Object oriented Program**  
**Lab Sheet No: 07**  
**Java Inheritance**

**Time :- 09.30 – 12.30 pm**

**Submission Due: 2023-06-23**

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**Title:** Inheritance in Java.

**Aim:** Getting practice to use inheritance while writing java programs.

**Tasks:**

- Inheritance in Java

**Exercise 01:**

Write the java Code to get the following outputs by using java inheritance.

**Geeks**

**for**

**Geeks**

1. Create a base class :- one
2. Within the class Create the method1 :- print\_geek()
3. Create the extends class :- two
4. Inside the extends class Create the method2 :- print\_for()
5. Create the Driver class(Child) :- main3
6. Inside the Driver class Create the Object :- g
7. Invoke with the object to perform to show the output.

### Exercise 02:

Write a calculator program in java using inheritance.

1. Create a parent class Calculator.
  - a. Within the class create the method add() to add two integers.
  - b. Within the class create the method sub() to subtract two integers.
2. Create the child class AdvancedCalculator that extends the parent class.
  - a. Within the class create the method mul() to multiply two integers.
  - b. Within the class create the method div() to divide two integers.
3. Create the object and invoke the methods to perform the operations of the calculator.

*Hint: You may use the following format when writing the program*

```
class Parent {  
  
    // methods  
    // fields  
  
    // .....  
}  
  
class Child extends Parent {  
  
    // already supports the methods and fields in Parent class  
    // additional features  
}
```

### Exercise 03:

Write the java Code to get the following outputs by using java inheritance.

**Class A**

**Class B**

**Class A**

**Class C**

**Class A**

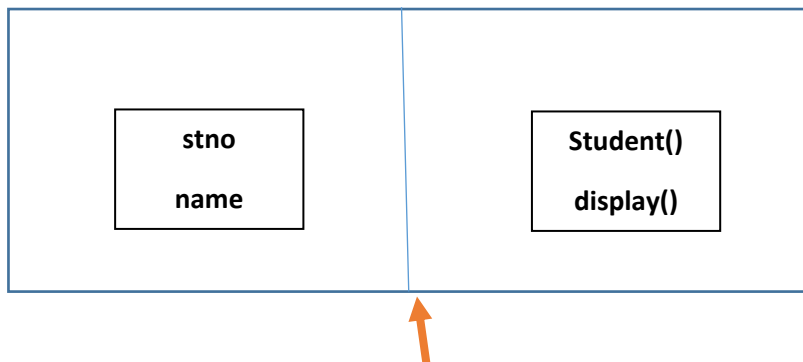
**Class D**

1. Create a base class :- A
2. Within the class Create the method1 :- print\_A()
3. Create the first extends class :- B
4. Inside the extends class Create the method2 :- print\_B()
5. Create the second extends class :- C
6. Inside the extends class Create the method3 :- print\_C()
7. Create the third extends class :- D
8. Inside the extends class Create the method4 :- print\_D()
9. Create the Driver class(Child) :- Test2
10. Inside the Driver class Create the Object respectively :- obj\_B, obj\_C, obj\_D
11. Invoke with the objects to perform to show the output.

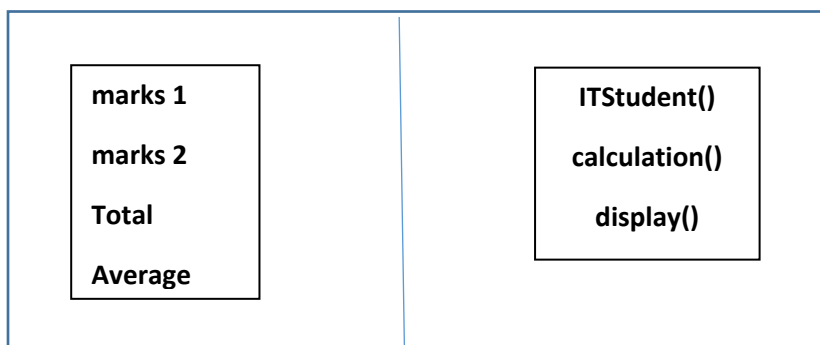
#### Exercise 04:

Write a java program to the scenario described below using inheritance.

#### class Student



#### class ITStudent



1. Create a class Student
  - Within the class:
    - a. Initialize the attributes student number and name.
    - b. Initialize a user defined constructor to the object.
    - c. A display method.
2. Create a sub class ITStudent that extends the main class Student
  - Within the class:
    - a. Initialize the attributes to have two marks of the student, total and average.
    - b. Initialize the sub class constructor.
    - c. A calculation method to return the total and average marks of the student.
    - d. A display method.
3. Create another class TestStudent
  - a. Within the class, create the object 'obj1'.
  - b. Call the methods.

#### **Exercise 05:**

1. Create a super class called Animal
  - a. Within the class create a method eat().
2. Create a subclass called Dog extending the Animal class
  - a. Within the class create a method bark().
3. Create a subclass called Puppy extending the Dog class
  - a. Within the class create a method weep().
4. Create another class TestAnimal with the main method.
  - a. Within the class, create an object 'd'.
  - b. Call the methods eat(), bark() and weep() for the object created.

## **Discussion**

- Can a class extend itself? Explain.
- Can a class extend more than one class? Explain.
- Can methods of sub class be accessed by the super class? Explain.
- Explain the types of inheritance.
- Explain Subclass & Superclass.