Laboratory -4: Inheritance

Task1:

a) There are three (3) classes inside the InheritanceDemo.java (Teacher, Student, and Person).

```
7   public class InheritanceDemo
8   {
9       public static void main(String args[])
10      {
11          Person pObj = new Person("Rayan","Miller");
12          Student sObj = new Student("Jacob","Smith",1,"1 - B","Roma");
13          Teacher tObj = new Teacher("Daniel","Martin","English", 6000,"Primary Teacher");
14          System.out.println("Person :");
15          pObj.Display();
16          System.out.println("");
```

Output - LabReportQuestions (run)

```
run:
Person :
First Name : Rayan
Last Name : Miller

Student :
First Name : Jacob
Last Name : Smith
ID : 1
Standard : 1 - B
Instructor : Roma

Teacher :
First Name : Daniel
Last Name : Martin
Main Subject : English
Salary : 6000
Type : Primary Teacher
BUILD SUCCESSFUL (total time: 0 seconds)
```

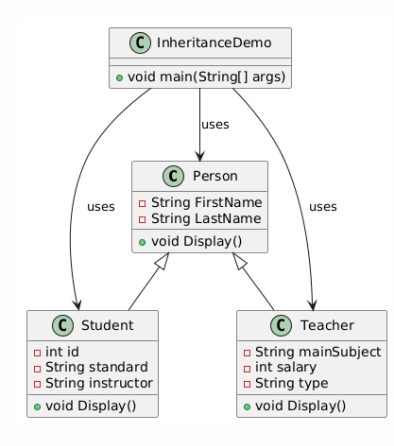
b) Output was:

c) In InheritanceDemo.java, an instance of the **Person** class is created and its **Display** method is called to print out the first and last names. This connectivity demonstrates basic class instantiation and method invocation.

d) Teacher class inherits from Person class, adding its own properties (mainSubject, salary, type) and methods (Display), and is instantiated and used in InheritanceDemo class.

e) Student inherits properties and methods from Person, adds its own attributes (id, standard, instructor), and is instantiated and used in InheritanceDemo class.

f) UML Diagram (made by PlantUML).



g) Output looks perfect after changing the values:

```
11                  Person pObj = new Person("Alamin","Rakib");
12                  Student sObj = new Student("Arafat","Muhammad",1,"1 - B","Rabeya");
13                  Teacher tObj = new Teacher("Nuha","Akter","Arabic", 5000,"Islamic Teacher");
14                  System.out.println("Person :");
15                  pObj.Display();
16                  System.out.println("");
17                  System.out.println("Student :");
18                  sObj.Display();
19                  System.out.println("");
20                  System.out.println("Teacher :");
```

Output - LabReportQuestions (run)

```
run:
Person :
First Name : Alamin
Last Name : Rakib

Student :
First Name : Arafat
Last Name : Muhammad
ID : 1
Standard : 1 - B
Instructor : Rabeya

Teacher :
First Name : Nuha
Last Name : Akter
Main Subject : Arabic
Salary : 5000
Type : Islamic Teacher
BUILD SUCCESSFUL (total time: 0 seconds)
```

Task-2:

a) m2() – method only overridden in the Child class.
b) Differentiate between instance variables and local variables when they share the same name.
c) The super keyword is used to call the constructor of the parent class (Parent.java). When we use super(name) in the Child class constructor, that time the Parent constructor is invoked as a parent class, and the **name** variable is going to properly initialized to the Parent class as well as in the Child class. On the other hand, there is another reason to use the super keyword. Using super avoids duplicating the code that's already in the Parent constructor.

Task-3:

It is done inside the lab_report project.

Task-4:

It is done inside the task4 package

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Section: A

Semester: Fall-2024