TCP1201 Object-Oriented Programming and Data Structures
Lab04 Inheritance and Polymorphism

Exercise 1: Inheritance and Polymorphism

Draw a complete UML Class Diagram for the classes below. Implement all the 4 classes. Make all data fields protected. Do not create any accessor or mutator method.

1. Define a class named Person.
2. The Person class has 2 subclasses named Student and Staff.
3. The Lecturer class has a subclass named Staff.
4. A person has a name.
5. A student has a student ID.
6. A staff has a salary.
7. A lecturer has a subject to teach.
8. Create a Subject class to represent a subject. A subject has subject code and subject name.
9. Override the toString method in each class to return the class name and the values of their data fields.

Write a program that:

1. Without using polymorphism, creates a Person, Student, Staff, and Lecturer. Invokes their toString methods.
2. Using polymorphism, creates a Person, Student, Staff, and Lecturer. Invokes their toString methods.

Exercise 2: Without protected Visibility Modifier

Make all data fields in the previous classes private. Recompile the program. Suggest a way to make the program work again while keeping the data fields private. You may add methods.

Update the whole program so that it works again.