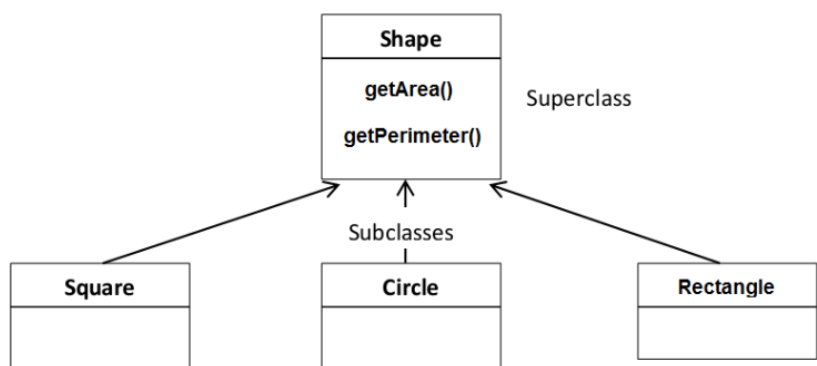
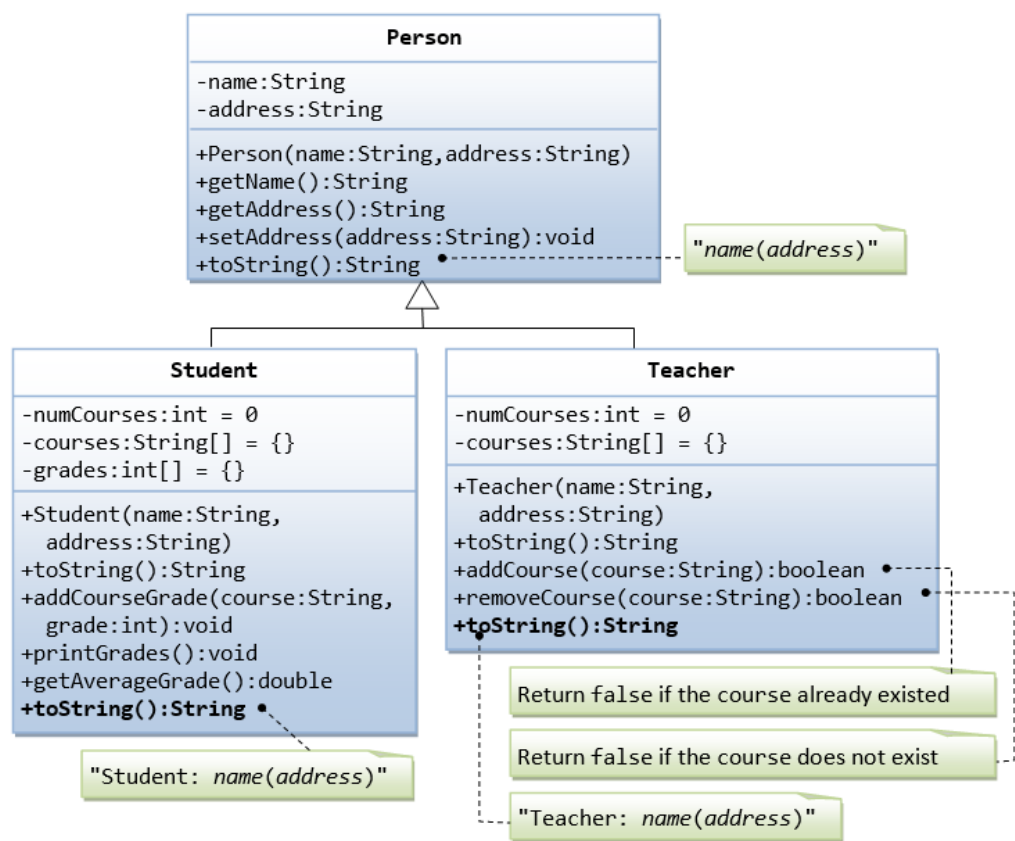


OBJECT ORIENTED PROGRAMMING
LAB - IV

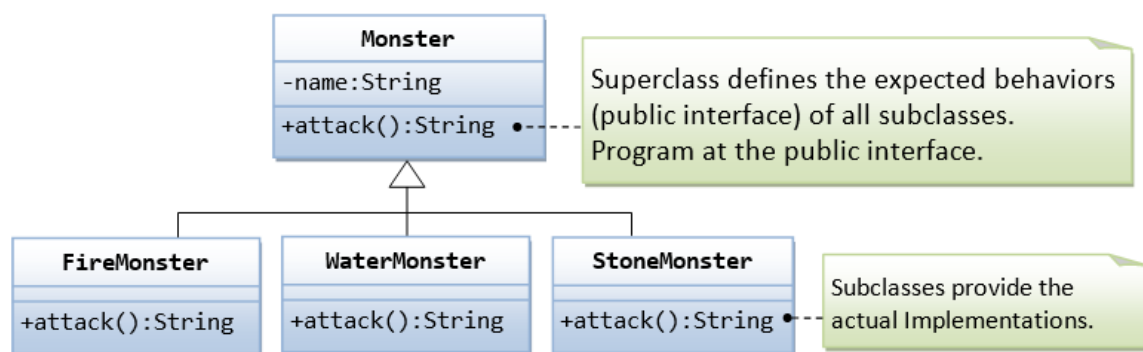
1. Write an application that prompts the user for required inputs to find the area and perimeter of Circle, Square, Rectangle using methods getArea() and getPerimeter().



2. Suppose that we are required to model students and teachers in our application. We can define a superclass called Person to store common properties such as name and address, and subclasses Student and Teacher for their specific properties. For students, we need to maintain the courses taken and their respective grades; add a course with grade, print all courses taken and the average grade. Assume that a student takes no more than 30 courses for the entire program. For teachers, we need to maintain the courses taught currently, and able to add or remove a course taught. Assume that a teacher teaches not more than 5 courses concurrently.



3. In following game app, we have many types of monsters that can attack. We shall design a superclass called Monster and define the method attack() in the superclass. The subclasses shall then provides their actual implementation. In the main program, we **declare instances of superclass, substituted with actual subclass (Up casting)**; and invoke method defined in the superclass.



4. RGUKT planned to provide vehicles (2 and 4 wheelers) to all class CR's, and requested the company name and model of 2 and 4 wheelers from CR's. As Indian market has lot of models in 2 wheelers and 4 wheelers, Mr. Ramesh is in dilemma to choose the best model among all 2 wheelers and 4 wheelers.

Write an application which compares the best model among 2 wheelers and 4 wheelers. Create a super class Vehicle, derive the sub-classes TwoWheeler and FourWheeler .

Two wheeler can have properties such as Company, Model, Mileage, Fuel Capacity, Displacement, Front Brake, Rear Brake, Tyre Type, Head lamp, User Reviews

Four wheeler can have properties such as Company, Model, Mileage, Fuel Capacity, Displacement, Air Conditioner, air bags, Power Steering, Rain Sensing Wiper.

Maintain atleast four 2-wheelers and Four 4-wheelers details in repository.

Application usage : Display all companies and models of 2 and 4 wheelers available in repository. User can choose any number of vehicles to compare, compare among them and display the Company and model of the vehicle to buy. If user opted for 2 wheeler, compare only 2 wheeler vehicles and same with 4 wheeler.

5. Case study : Bank Management System

SBI Bank had two branches Basar and Nizambad each with 5 customers, uniquely identified by their Branch_name and Acct_No. Implement an application that prompts account holders to enter user name(Branch_name) and password(Acct_No), on successful authorization they can perform following transactions, after every exit() , the application should ask for Exit_application(Yes/No), on **Yes** exit from application on **No** prompt for New user credentials.

Create a class Account with an instance variable balance (double). It should contain a constructor that initializes the balance, ensure that the initial balance is greater than 1000.0

Account details : Bank_Name, Branch_Name, Acct_Name, Acct_No, Acct_Bal, Acct_Address.

Create four methods namely credit(), debit(), getBalance() and exit().

The credit() adds the amount (passed as parameter) to balance and does not return any data. debit() withdraws money from an Account, getBalance displays the amount, exit() exits from the individual Transaction.

Note :

Ensure that the debit amount does not exceed the Account's balance, in that case the balance should be left unchanged and the method should print an alert message as "Debit amount exceeded account balance".

6. New year welcomes with a Grand sale from topmost E-commerce sites Amazon and Flipkart. Design an application that prompts user to enter product name, company it belongs to and the quantity(Note : you can input more if your application requires) and suggest him/her(cost effective) where to buy the product either from Amazon or E-commerce.

Amazon offers 10% Discount for HDFC credit card holders and 15% discount on purchase above 50,000.

Flipkart offers 30% Discount if he/she is a RGUKT student and 5% discount on purchase above 30,000.