

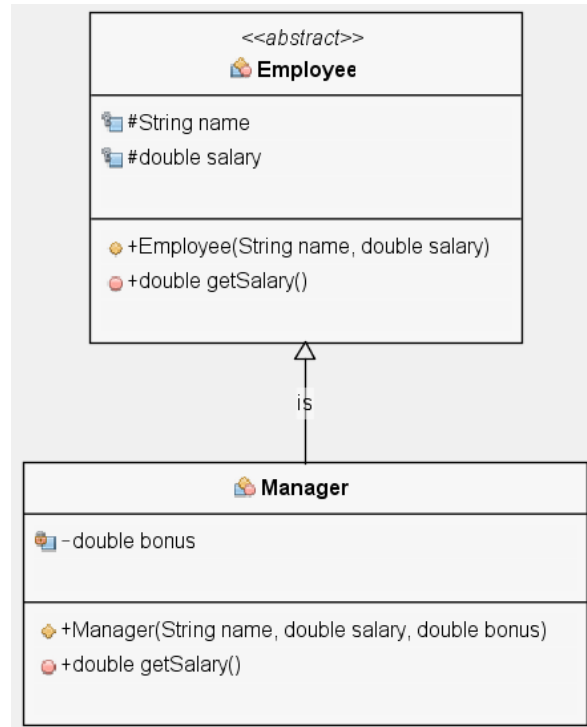
OOP Course Using C++ - Practice Test

Student ID:

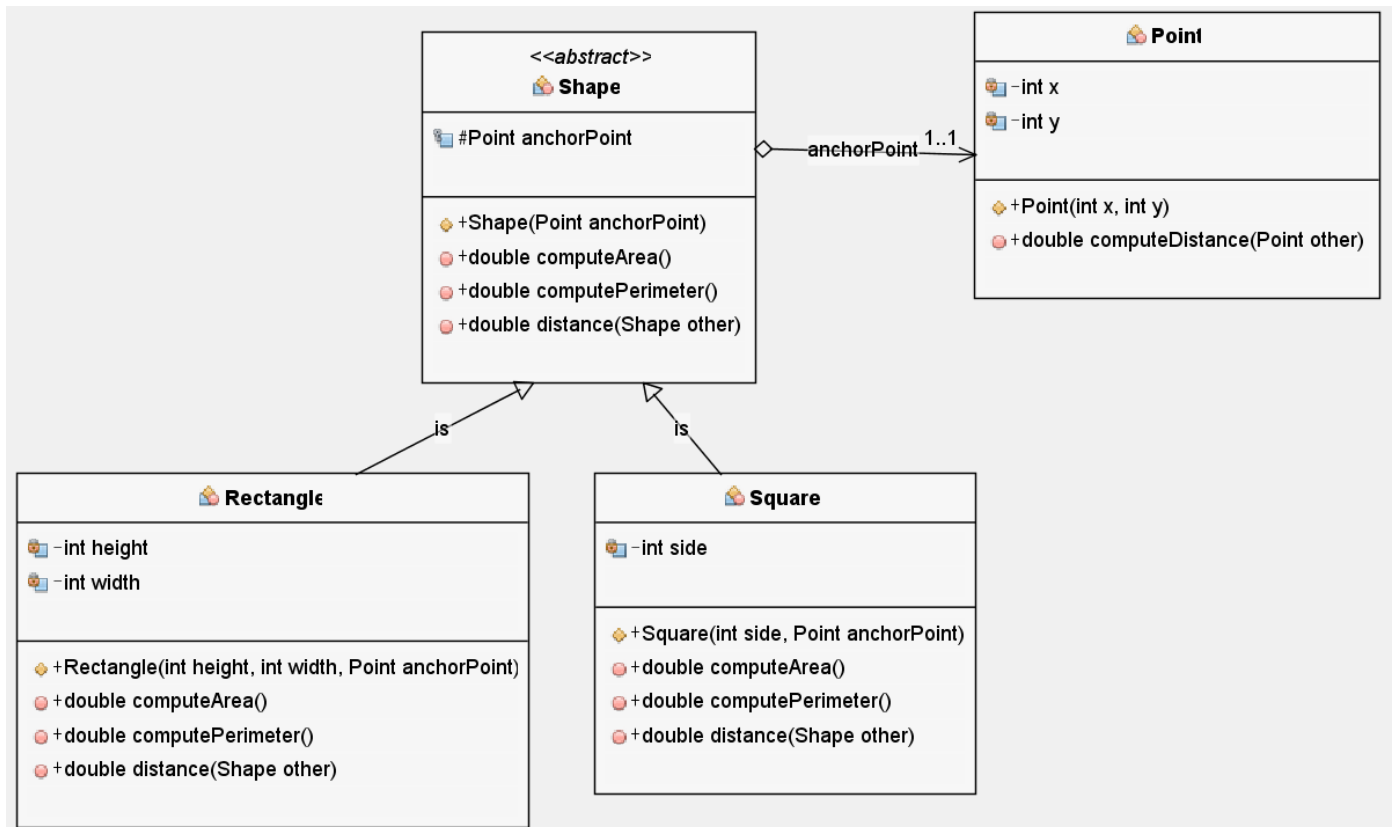
1) Problem 1

- a) What is **overloading** and give an example to illustrate the concept?
- b) What is **overriding** and give an example to illustrate the concept?
- c) What is **inheritance** and give an example to illustrate the concept.

2) Problem 2: Write classes to satisfy the following UML diagram and create Unit tests.



2) Problem 3: Write classes to satisfy the following UML diagram and create Unit tests.



3) Problem 4

A library consists of a name and a location. In addition, it has lists of books and newspapers. A book comprises of a book name and an author (including name and year of birth). A newspaper has a name and a newspaper ID.

- 1) Draw UML diagram.
- 2) Write a method to count the number of books and newspapers
- 3) Write a method to add a new book to a library
- 4) Write a method to remove a newspaper from a library
- 5) Create JUnit tests the above methods

4) Problem 5:

Create a class called **Employee** whose objects are records for an employee. This class will be a derived class of the class **Person**.

An employee record has an employee's **name** (inherited from the class **Person**), an **annual salary** represented as a single value of type **double**, a **year the employee started work** as a single value of type **int** and a **national insurance number**, which is a value of type **String**.

Your class should have a reasonable number of constructors and accessor methods, as well as an equals method.

a) Draw UML diagram

b) Implement the Person and Employee classes