**ITCS 209 Object Oriented Programming**

Assignment Week 2 (Due 28 January 2019)

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Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Section: \_\_\_\_ ID: \_\_\_\_\_\_\_\_\_\_\_\_

Instructions:

* Assignment must be uploaded to the My Courses system <https://mycourses.ict.mahidol.ac.th> by due date
* For questions that need to write a program, you also need to zip all the code files, rename the zip file to your student id, and upload it to the My Courses system.

**Exercise 1**: Explain the difference between an object and a class. And give an example of objects and classes.

**Answer**

Class is similar to initial (Original)blueprint which has the attributes, methods and constructors for creating an object.

Object it same as the result of this blueprint it depends on constructors that you have created before or you can creating new constructors to have the other objects.

Constructors can have more than 1;

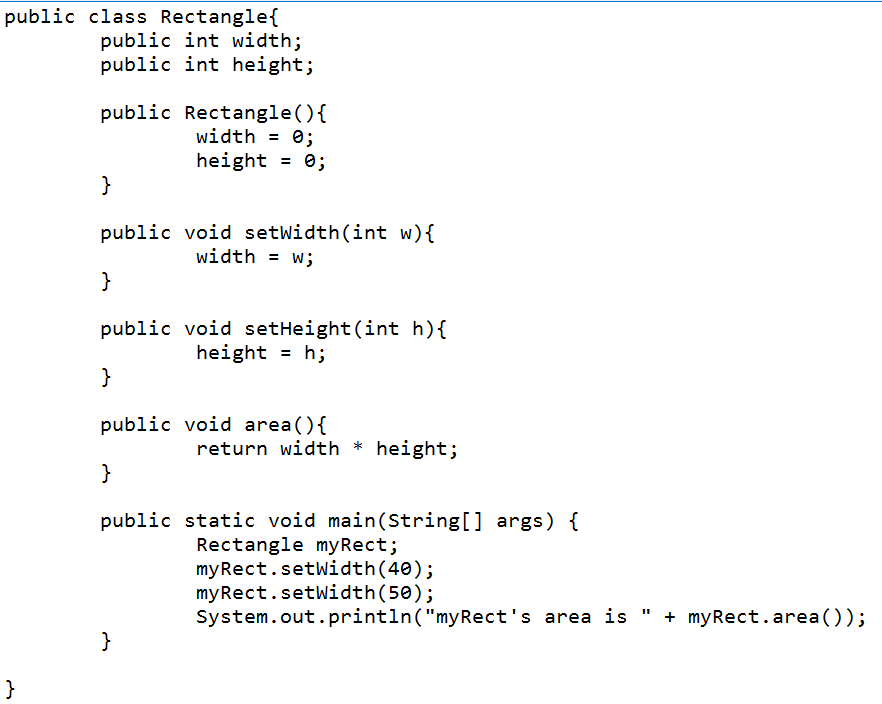
Ex. Class(blueprint) = building

This building have 4 rooms (Attributes) = bedroom, Livingroom, bathroom and kitchen room (have 4 Attributes in this class (blueprint))

If customers want this building have only bedroom, bathroom and kitchen room, so we will created a constructors that have only 3 room.

Then we can create building 1(object) have only bedroom, bathroom and kitchen room,

**Exercise 2:** What’s wrong with the following program?



2.

1.

**Answer.** *(Hint there are two problems in this code)*

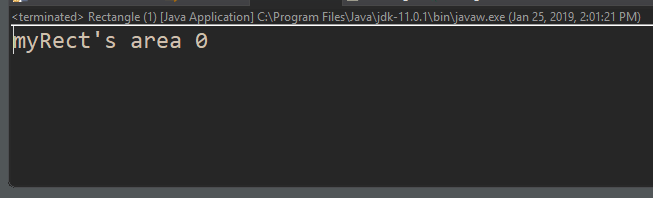
1.This method use void method, but void method can not return this statements to the code that call to use this method.

2. It not correct for initial.

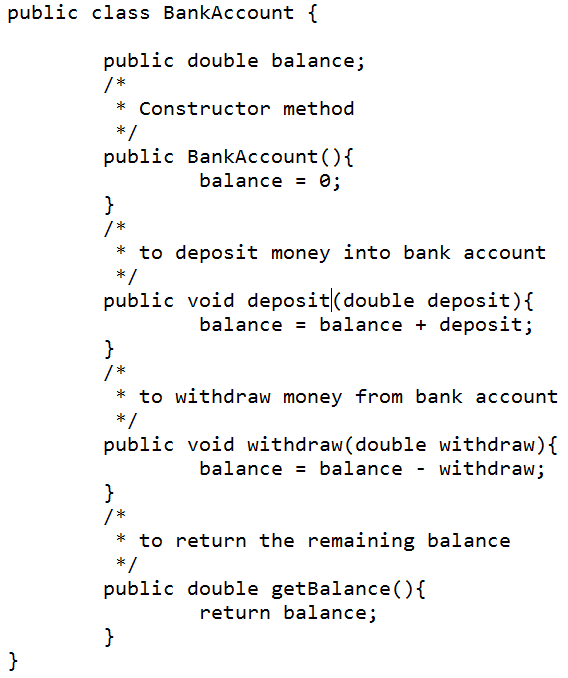
This is correctly code: myRect = new Rectangle();

**Exercise 3:** Fix the Rectangle program shown in Exercise 2, and show the output of this program.

**Answer** (please show your output here)



**Exercise 4.** BankAccount Class is provided below.



Write a BankAccountTester class whose main method constructs a bank account, deposits $1,000, withdraws $500, withdraws another $400, and then prints the remaining balance. Submit your source code and show the output of your program here.

**Exercise 5.** **(Optional, this is a challenge question… just for fun ^\_^)**

Implement class Car with the following properties. A car has a certain fuel efficiency (measured in km/litters) and a certain amount of fuel in the gas tank. The efficiency is specified in the constructor, and the initial fuel level is 0. Supply a method drive that simulates driving the car for a certain distance, reducing the amount of gasoline in the fuel tank. Also supply method getGasInTank, returning the current amount of gasoline in the fuel tank, and addGas, to add gasoline to the fuel tank. Sample usage:

Car myCar = new Car(20); // 20 kilometers per litter

myCar.addGas(40); // Add gasoline 40 litters

myCar.drive(100); // Drive 100 kilometers

double gasLeft = myCar.getGasInTank();

// get gas remaining in tank

You may assume that the drive method is never called with a distance that consumes more than the available gas. And write a CarTester class that tests all methods.

***Hint:***

Example of constructor and three methods:

public Car (double efficiency)

public void drive(double distance)

public double getGasInTank()

public void addGas(double litter)