

## COM 102 – OBJECT ORIENTED PROGRAMMING POSTLAB #2

**Academic Year:** Spring 2016

**Due Date and Hour:** March 21,2016 - Monday, 11:59 pm (Submission)

**Course Instructor:** Assoc. Prof. Dr. I. Furkan INCE

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### Create a Java Program

Create a class called “ActivityRoom” that includes three instance variables – a *number of people* inside the room (type int), a *capacity* (type int) of the activity room, an *cumulative age of people* (type int) who inside of the room currently. **( 6 points)**

Then do the following tasks.

- Draw a UML class diagram for the class **and** its Test class. **(10+2 points)**
- Write a constructor that initializes the three instance variables with meaningful values. **(6 points)**
- Write set and get methods for each instance variable. Do the validity check, also. (e.g. number of people inside the room cannot take negative values or bigger values than the room capacity, and room capacity should be between 5 and 15, cumulative age of people is greater than 0 and age of the person must be greater than 12. You need to check this conditions. Also, think about the other possible validity checking cases.) **(10 points)**
- Write an acceptAPerson method that permit a person entering the room. This method checks the availability of the room. Do the validity checking ( That is, if the room is not full, and his/her age is greater than or equal to 12, then the person can enter the room.) **(10 points)**
- Write a leaveFromRoom method that permit a person leaving the room. This method decreases the number of people inside the room and decreases the cumulative age.

(Assume that, you will give ages of the people inside when you are coding test class.) ( **10 points**)

- Write a isRoomFull method that returns true if the room is full, or false otherwise. **(5 points)**
- Write a calculateAverageAgeOfPeople method that calculates average age of the people in the room at that moment **(10 points)**
- Write a displayActivityRoomInformation method that displays the number of people in the room currently, average age of people doing activity and total capacity of the room. **( Hint : You can call toString method inside this method )(10 points)**
- Write a test application named ActivityRoomTest that demonstrates capabilities of class ActivityRoom's. You **can** use the following scenario :  
(Let's assume that the capacity of the activity room is 5) **(21 points)**
  - Create an activity room.
  - Accept a person whose age 20
  - Display activity room information
  - Accept another person whose age 55 if it is possible
  - Accept another person whose age 45 if it is possible
  - Accept another person whose age 23 if it is possible
  - Accept another person whose age 10 if it is possible
  - Accept another person whose age 32 if it is possible
  - Display activity room information
  - Calculate average age of people
  - Display activity room information
  - Accept one more person whose age is 30 if it is possible. (In this case, you should show a message saying that "the room is full, you should wait for entering the room")
  - A person whose age is 23 leaves the room.
  - Calculate average age of the people inside the room.
  - Display activity room information
  - Accept the person whose age is 30.
  - Calculate average age of the people.
  - Display activity room information

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**Good Luck.**

## **NOTES & SUBMISSION RULES :**

1. You are **required to add comment properly**.(It will be graded)
2. You are **strongly advised** to obey the good programming practices ( like naming conventions, indentations, commenting your codes and so on.) Using good programming practices is graded.
3. You are **required** to send your source code within a zipped file named :  
**COM102\_StudentNumber\_YourName\_PostLabX.zip**  
(e.g., COM102\_011XXXX\_ArzumKarataş\_PostLab2.zip  
COM102\_011XXXX\_FeyzaGalip\_PostLab2.zip)
4. **Be sure whether you attached your work to the e-mail or not**, because it is your responsibility to sending the work on time and in proper format.
5. You are required to **work alone**. Teamwork is **NOT** allowed and **cheating is strictly punished!**
6. You should **submit** your homework to the address following by **e-mail** on time.  
(to [com102.2016gediz@gmail.com](mailto:com102.2016gediz@gmail.com))
7. **Late submissions** will be graded by using the formula  $100 - 10*d^2$  where **d** is the number of **late** submission **days**.