CT2: CSE 203 - Object-Oriented Programming I: Java

Time: 30 min **Mark: 20**

Name: **ID:**

Question 1: **[12]**

Define a class and name it as "**AirCooler**". Add the following inside the class.

1. Define instance variables ***brand, type, temp, isOn***
2. Add a parameterized **constructor** which will take 2 parameters for brand and type. Inside the constructor initializes the respective attributes with the parameters passed to the constructor.
3. Add the following methods.
    a. *public void turnOn(int **acTemp**)*
    – Inside the method, set the ***isOn*** to ***true*** and ***temp*** to ***acTemp***. Here ***isOn*** and ***temp*** are the instance variables whereas ***acTemp*** the value of the parameters passed to the method.
    b. *public boolean isRunning()*
    – the method should return the ***isOn*** attribute.
    c. *public void turnOff()*
    – Inside the method, set the ***isOn*** to ***false*** and ***temp*** to ***0***. Here ***isOn*** and ***temp*** are the instance variables.
    d. *public void display()*
    – if ***isOn*** is ***true***, print "Running at ***temp*** temperature" where ***isOn*** and ***temp*** are the instance variables. Otherwise print the value of ***brand*** and ***type*** instance variables.

Question 2: **[8]**

Define a class and name it as "**House**". Define the **main** method inside the class. Inside the main, do the following.

1. Create an object of **AirCooler** class and pass ***brand***=your name, ***type***="Window AC". Store the reference to a variable name ***myAc***.
2. Call the **turnOn(…)** method using the ***myAc*** variable and pass ***acTemp* = 14 + id%15** where **id** is the last 2 digits of your registration number.
3. Call the ***isRunning***() method using the ***myAC*** variable and print the output of this method call.
4. Call the **display(…)** method using the ***myAc***.
    - What is the output of this method?

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Question 1: **[12]**

Define a class and name it as "**Fan**". Add the following inside the class.

1. Define instance variables ***manufacturer, category, speed, isOn, maxSpeed***
2. Add a parameterized **constructor** which will take 3 parameters for **manufacturer**, **category**, and **maxSpeed** and initializes the respective attributes.
3. Add the following methods.
    a. *public void turnOn(int **fanSpeed**)*
    – Inside the method, set the ***isOn*** to *true*. Also set ***speed*** to ***fanSpeed*** if ***fanSpeed*** is less or equal to ***maxSpeed***, otherwise set to ***maxSpeed***. Here ***isOn, speed*** and ***maxSpeed*** are the instance variables whereas ***fanSpeed*** is the value of the parameters passed to the method.
    b. *public void increaseSpeed(int amt)*
    – increase the ***speed*** by ***amt*** amount. If ***speed*** become greater than ***maxSpeed***, reset it to ***maxSpeed***.
    c. *public void decreaseSpeed(int amt)*
    – decrease the ***speed*** by ***amt*** amount. If ***speed*** become less than ***0***, reset it to 0.
    d. *public void display()*
    – inside the method, print the value of all three attributes.

Question 2: **[8]**

Define a class and name it as "**Room**". Define the **main** method inside the class. Inside the main, do the following.

1. Create an object of **Fan** class ***manufacturer***="Walton", ***category*** ="Ceiling" and ***maxSpeed*** = 20. Store the reference to a variable name ***myFan***.
2. Call the ***turnOn*(…)** method using the ***myFan*** variable and pass **10 + id%10,** where id is the last digits of your registration number***,*** as the parameter of the method.
3. Call ***increaseSpeed(..)***using ***myFan*** variable and pass the first digit of your registration number as the parameter of the method.
4. Call the **display(…)** method using the ***myFan***.
    - What is the output of this method?