Module Code: M251-M257

Module Title: Object Oriented programming with JAVA

Take Home Exam- THE (Spring 2019/20)

Release Date: Firday, May 01, 2020 12:00 AM
Cut-Off Date: Friday, May 08, 2020 12:00 AM
Duration time: 7 days
Total Marks: 100

Contents

This THE covers the first 5 sessions. It consists of a four-question project. Please solve all questions. You must submit your source files well commented in a Java project. Also you must submit a single word file containing:

- A copy and paste of all java code.
- Snapshots of your project output.
- If your code does not completely work, attach some description to explain the status of the code and the runs.

You have two submission links on your LMS page:
- The THE turnitin submission link to upload the word file.
- The THE submission link to upload a zipped folder of your Java project.

Your THE will not be marked if not all the required files are submitted on the two submission link, 50% will be deduct in this case.
Turnitin reports will be generated, so write your own codes.

Plagiarism Warning:

As per AOU rules and regulations, all students are required to submit their own THE work and avoid plagiarism. The AOU has implemented sophisticated techniques for plagiarism detection. You must provide all references in case you use and quote another person's work in your THE. You will be penalized for any act of plagiarism as per the AOU's rules and regulations.

Declaration of No Plagiarism by Student (to be signed and submitted by student with THE work):

I hereby declare that this submitted THE work is a result of my own efforts and I have not plagiarized any other person's work. I have provided all references of information that I have used and quoted in my THE work.

Name of Student:………………………………..

Signature:…………………………………………...

Date:………………………………………………………

Question One:[8 marks]

Video game is a game that uses the interaction with the user interface through the images produced by the video device. Define a class to implement video games. Each video game has a date of release and a name. In this class, implement a constructor and appropriate accessor and mutator methods. Redefine the method **toString** in this class to concatenate all fields in this class and return it as string. (8 marks)

Question Two:[24 marks]

Define the following three derived classes to represent the different categories of gaming platforms:

- **PC** game: is a type of video game played on a personal computer or a laptop. PC games are downloadable from some digital stores. (8 marks)
- **Console** game: is a video game in which users use a special console to play. For example, Nintendo Wii, Sony PlayStation, Xbox Console etc. Game consoles have a special controller or joystick for playing games. (8 marks)
- **Mobile** game: is a video game in which users use smartphones. Mobile games run over a specific operating system. (8 marks)

In each class, implement constructors and appropriate accessor and mutator methods.
Redefine the method **toString** in each class to concatenate all fields in each class and return it as string.

Question Three:[33 marks]

Games aim to entertain players.

- Define a class to implement a **player** that includes the player name and a list of his/her favorite games. (9 marks)
- This class should also include:
  - A method to modify the operating system name of a specific mobile game name. (8 marks)
  - A method to reload a console game of a specific name as PC game which is downloadable from a certain digital store in the list of games. (9 marks)
  - A method to find and return the total number of games of each category (PC, Console and Mobile games). (7 marks)

In this class, implement constructor and appropriate accessor and mutator methods.
Redefine the method **toString** in this class to concatenate all fields in the class and return it as string.

Question Four:[35 marks]

Design and implement a test class to do the following:

a) Add the following data: (18 marks)

Player: Ali

- PC game: Name: Counter Strike   Release date: 12/09/2003   Store: Steam
- Console game: Name: Fortnite   Release date: 25/07/2017   Console name: PS4
- Console game: Name: Overwatch   Release date: 24/05/2016   Console name: PS4
- PC game: Name: Call of Duty MW   Release date: 25/10/2019   Store: Blizzard
- Mobile game: Name: Bupg   Release date: 23/03/2017   OS: Andriod
- PC game: Name: Minecarft   Release date: 17/05/2009   Store: Microsoft

Player: Rami

- Mobile game: Name: Clash of Clans Release date: 02/08/2012   OS: IOS
- Mobile game: Name: Clash Royal   Release date: 04/01/2016   OS: Android
- Mobile game: Name: Dragon City   Release date: 05/08/2012   OS: Android

Player: Sami

- Console game: Name: Call of Duty MW   Release date: 25/10/2019   Console name: Steam
- Mobile game: Name: Bupg   Release date: 23/03/2017   OS: Andriod
- PC game: Name: Geometry Dash   Release date: 13/08/2013   Store: Microsoft

b) Write and call a method to print a full report showing a list of players and the details of their favorite games (PC, Console and Mobile). (4 marks)

c) Write and call a method to print for each player, the total number of games of each category (PC, Console and Mobile games). (8 marks)

d) Ali started to play Overwatch on PC and stopped using the console to play it. Call your method in Question 3 to update his list of favorite games as required. Re-store Overwatch as PC game. (2 marks)

e) Dragon city is available on IOS mobiles, Rami switched to play this game on his IOS mobile. Update the name of the operating system in his list using your method in Question 3. (2 marks)

f) Call your method in (b) to print a full report showing a list of players and the updated details of their games list. (1 mark)

The output using the above data:

Player: Ali

PC game: Name: Counter Strike	Release date: 12/09/2003	Store: Steam
Console game: Name: Fortnite	Release date: 25/07/2017	Console name: PS4
Console game: Name: Overwatch	Release date: 24/05/2016	Console name: PS4
PC game: Name: Call of Duty MW	Release date: 25/10/2019	Store: Blizzard
Mobile game: Name: Bupg	Release date: 23/03/2017	OS: Andriod
PC game: Name: Minecarft	Release date: 17/05/2009	Store: Microsoft

Player: Rami

Mobile game: Name: Clash of Clans	Release date: 02/08/2012	OS: IOS
Mobile game: Name: Clash Royal	Release date: 04/01/2016	OS: Android
Mobile game: Name: Dragon City	Release date: 05/08/2012	OS: Android

Player: Sami

Console game: Name: Call of Duty MW	Release date: 25/10/2019	Console name: Steam
Mobile game: Name: Bupg	Release date: 23/03/2017	OS: Andriod
PC game: Name: Geometry Dash	Release date: 13/08/2013	Store: Microsoft

Player	PC game	Console game	Mobile game
Ali	2	3	1

| Rami | 0 | 0 | 3 |
| Sami | 1 | 1 | 1 |

Player: Ali

PC game: Name: Counter Strike	Release date: 12/09/2003	Store: Steam
Console game: Name: Fortnite	Release date: 25/07/2017	Console name: PS4
PC game: Name: Overwatch	Release date: 24/05/2016	Store: Steam
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Console game: Name: Call of Duty MW	Release date: 25/10/2019	Console name: Steam
Mobile game: Name: Bupg	Release date: 23/03/2017	OS: Andriod
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End of Assessment