Faculty of Computer & Information Sciences
Ain Shams University
Subject: (CSW251)
Object-Oriented Programming
Year: (2nd year) undergraduate

Examiners: Dr. Sherin Moussa
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Offering Dept.: Computer Science
Academic year: 2nd term 2019-2020

Research Topic (3)
Title: Sports Game Ticket Reservation Mini System

Research Description

1. **Research short description/general objectives**

   The objective of this Research Project is to apply the learnt Object-Oriented Programming Concepts in a software application, fulfilling the course intended learning outcomes (ILOs).

2. **Guidance to Submission**

   - It is an **individual work**, any attempt for plagiarism / cheating will be subjected to failing the course.

   - The submitted project should be implemented using Java code.

   - Submit **only** running code.

   - Your program should contain only one package named "gameticket_package".

   - Put all your solution code in one .java file.

   - One .java file can consist of multiple classes with only one of them is public.

   - The only public class in the file must be the class that contains the main function and it must be named as "GameTicket", which will be the name of the .java file.

   - You can find the .java file at this path …/src/gameticket_package/ GameTicket.java

   - **ALL** the following concepts **must be applied** by your design and **MUST** highlight them by **making comments on the different pieces of code satisfying them**:
     1. **Inheritance tree(s)**
     2. **Polymorphism & Overloading**
     3. **Overriding**
     4. **Abstract class(es)**
     5. **Interface(s)**
     6. **Final data member(s)**
     7. **Final method(s)**

8. **Static data member(s)**

9. **Static method(s)**

10. **Exception handling (Both Java defined exception(s) and your own defined exception object(s))**

11. **Different Access modifiers should be used throughout the project as needed.**

12. **Calculated data members**

13. **Apply at least one of the SOLID object-oriented design principles**

- **MUST** Generate Project Documentation using JavaDoc utility. To generate a Javadoc for a single .java file that contains multiple classes, all classes should be declared public. So, when you finish your code, please follow these steps:
  - Declare all classes public "even though it will cause an error **"**.
  - Generate the Javadoc files.
  - Undo the declaration you made such that your code contains a single public class as illustrated above.
- You can find the Javadoc folder at this path …/dist/javadoc

3. **Research Phases/Requirements**

Design and Implement a mini project with the following description:

Sports Game Ticket Reservation System is an application that helps sports' fans to reserve their places in their favorite games (national or international).

The System includes:
- A Game has a unique generated code, location (stadium name), date, number of seats in each category …etc.
- A Seat has a number and price depending on its location whether in 1st category, 2nd Category or 3rd Category.
- A ticket has game code, seat category, price, … etc.
- The fans using this application can do the following functionalities:
  - Check the seats availability.
  - Reserve a ticket.
  - Cancel a reservation (accepted only before the game date by at least 3 days).
  - Make a bet for the game result.
  - Upgrade his seat category.

Note: You can add any extra information or functionalities to support your design.

4. **Research Deliverables**

   One .java file for all your code and **One .Zip file** for the JavaDoc folder.

   NOTE: It is **YOUR OWN RESPONSIBILITY** to check that both .java and .Zip files are not corrupted (by downloading them after you upload them to the system and try to re-open them) before your final submission. Any corrupted files will not be accepted and will not be re-submitted, and you will be subjected to failing the course.

5. **Research References**

   You are free to use any external resources as a guide for your project, but you need to mention them in your JavaDoc comments.

   With My Best Wishes,
   Dr. Sherin Moussa
   Dr. Sally Saad