CS251: Intro to Software Engineering

Second Semester Prpject – v1.0

Due Date & Submission Link: To Be Announced by FCAI

Cairo University, Faculty of Computers and Information

Objectives

This project aims to:

1- Learn about software design and how to move from requirements to design.
2- Learn how to develop class diagrams and sequence diagrams for a system.
3- Learn how to transform design models to code
4- Learn how to document code using Java doc
5- Learn how to use GitHub as a repository for your system

Setup

1- This is a team project that requires that will require each team to work together closely and independently and will need self-learning and self-discipline. هذا المشروع هو مسك الختام للمقرر ويتطلب قدرا كبيرا من التعلم الذاتى والبحث وتنظيم الوقت والتعاون الجيد مع أعضاء الفريق.
2- This project will be done in groups of **up to 5 students** from the same lab.
3- The group will submit together **one combined solution on the site decided by FCAI**.
4- The entire group is responsible of helping any weak member to be able to do his/her task by his/herself, by providing the necessary support, knowledge, hands-on demos, etc.
5- Only submit original work. Any copied work will be severely penalized.
6- مسؤولية الفريق تضامنية عن عمله و أى غش من أى فرد سيكون مسؤولية الجميع و يخصم منهم مثل الدرجة
7- You have two options for this project as listed below. **You choose ONE OPTION ONLY.**

Option 1

Task 1 – System Design

Project Phase 2: System Design

Complete the attached Software Design Specifications Document. Remove the red comments.

Task 1: Class Diagram

1- **Read** carefully the GoFo project description attached with this project.
2- **Read** the sample SRS given with this assignment. Use it as basis for your design and coding.
3- **Read** carefully the Software Design Specifications template given with this assignment. Read the instructions in red very carefully.
4- **Identify** all the important classes in the system
5- **Divide** these classes into packages or subsystems, each one includes the related classes.
6- **Decide** the responsibility of each class and what role it plays.
7- **Design the attributes and operations** of each class. For each attribute decide the type and visibility. For operations, decide the name, parameters and return type.
8- **Design the relations** between classes (inheritance, association, aggregation, composition). For each relation, decide the direction and multiplicity and give it a label.
9- **Read again,** the Software Design Specifications template given with this assignment.
10- **Finally, draw a complete class diagram** for the system, divided into packages or systems. **Use a tool for drawing.**

Task 2: Sequence Diagrams

Sequence diagrams help developers understand how a system works and how a use case is implemented using the classes and methods in the class diagram.

1- **Select** the most important **six** use cases in the use case diagram. (suggested: register user, add a playground, book a playground for a specific time slot, view playing hours, approve playground, create a team)
2- **Design** a detailed sequence diagram for each one of them.
3- **Read again,** the Software Design Specifications template given with this assignment.

Task 3: User Interface Design

An important part of your system is user experience design. no matter how brilliant your software design is and how excellent your code is, if the end-user العميل الذى يدفع مرتبك بتمامه فهو سيدك و أنت خدامه does not have good experience using your system, it will not be successful. In this task, your will design mockups or wireframes. These are prototypes for a the screens of the program. **Your task is to provide designs (mockups) for all the screens of GoFo app.** You can use tools like Mocups (https://moqups.com/). These resources will help you:

1- How to use Moqups https://www.youtube.com/watch?v=glijkZFo4AY
2- UX/UI designer/developer job https://www.youtube.com/watch?v=cYWnVH0x44c

Task 2 - Development

Project Phase 3: Implementation

In this phase of the project, we will implement a small part of the system in Java. The purpose is to learn transferring model to code, good quality code. Your task will be:

1- **Read** the Corona Store example under acadox on how to model and develop a system.
2- **Implement** the parts of your design related to (1) registering a user (playground owner or player) and entering verification code or expiry of the registeration, (2) logging in, (3) creating a profile for the owner and adding a playground and its available times and price, (4) booking a time slot on the playground, (5) approving a playground by administrator, (6) viewing playgrounds and filtering them and (7) creating a team and sending them email.
3- You will implement the necessary domain classes and control classes needed for these functionalities.
4- **Implement a UI (Console-based or GUI) for this task.** Write a Main class to run your implementation.

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Task 3 – Hosting and Documentation

Project Phase 5: Hosting and Documentation

This is **not an independent phase.** It is a set of supporting processes to do along with development activities.

1- **Create a private repo on GitHub and use it** to develop the code **by doing multiple commits.** Learn how to check-in and check-out code from the repo. Repo must be **private** to avoid stealing your work.
2- **Add https://github.com/mramly** as a collaborator on your project. Write project link in SDS.
3- **Document** the all classes and functions using JavaDoc and **generate HTML documentation.**

Task 4 – Screenshots and Video

This **not an independent phase.** It is a set of activities to verify the ownership of your project.

1- **Take screenshots** from your program operation which explain how it works and add them to the SDS report.
2- **Make a video 3~5** min explaining the components of your system and how it works.
3- **Add the screenshots and the link to the video** to your SDS.

Option 2

You will do ALL the items under option 1 + Develop SRS and use case model and tables for the following problem.

Our system Go Meeting (**GoMe**) is a **booking system for meeting rooms**. Anyone can register himself on the system and create a profile. He can see the meeting rooms near to him or in a specific area or all of them.

Meeting room owner. This is the person / company who wants to register his room. He first registers himself on the system and creates a profile, with his name, ID and password, email, phone and default location. Then he requests registering a meeting room and adds its name, its location, its capacity, the available facilities and booking hours, the price per hour and the cancellation period. A room is not active until approved by the administrator who may check if information given is true.

The administrator has the right to delete a room or suspend it. This is usually the case if the owner does some fraudulent activities like double booking or if the meeting room gets a lot of complaints from the users. Then the administrator can activate it again or delete it completely.

The owner can set and change the hours available for booking for his meeting room. He can view his bookings. And he can check the money in his eWallet.

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An eWallet is an electronic payment system used to allow users to pay for the bookings they make and allow ground owners collect their money. It is externally connected with a service like Fawry that allows users to add money to their eWallet and ground owners to take the money from it. Any user can check the money in his eWallet or transfer some of it to another eWallet. Adding money to the eWallet happens outside the system boundary.

User. This is a person who is interested in booking a meeting room. He registers with the system and creates a profile as described above. He can display the rooms near to him or in a specific location on specific dates. He can filter them by the hours and date he selects. He can book a time slot of 1 or more hours if available and not booked. Booking includes (1) Checking available meeting rooms and time slots (2) Selecting the free time slot(s) he wants (3) Calculating the total price (4) Paying the amount from his eWallet to the eWallet of the owner (5) The system updates the status of the booked slot(s) so no one else can book it, and optionally (6) The user can send invitation to his group members via email. To make this last step easy, he can create his favorite meeting group and store their names and emails. Then he can select the entire group. Or he can enter individual names and emails or select the group and then modify some members. A user can also cancel a booking if within the cancellation period.

Deliverables and Assessment

1- **Submission link will be announced by FCAI administration. YOU will submit via the link provided by the faculty NOT the doctor.**

2- **You will upload one zip file containing:**

- A pdf file containing your design (SDS) document, code listing, screen shots, links to video and GitHub repo.
- A directory with your **implementation** and **documentation**. Add a Readme.txt file explaining the files included and the tools used to develop the program.

Policy Regarding Plagiarism:

1. تشجع الكلية على مناقشة الأفكار و تبادل المعلومات و مناقشات الطلاب حيث يعتبر هذا جوهريا لعملية تعليمية سليمة
2. ساعد زملاءك على قدر ما تستطيع و حل لهم مشاكلهم فى الكود و لكن تبادل الحلول غير مقبول و يعتبر غشا.
3. أى حل يتشابه مع أى حل آخر بدرجة تقطع بأنهما منقولان من نفس المصدر سيعتبر أن صاحبيهما قد قاما بالغش.
4. قد توجد على النت برامج مشابهة لما نكتبه هنا أى نسخ من على النت يعتبر غشا يحاسب عليه صاحبه.
5. إذا لم تكن متأكدا أن فعلا ما يعد غشا فلتسأل المعيد أو أستاذ المادة.
6. فى حالة ثبوت الغش سيأخذ الطالب سالب درجة المسألة ، و فى حالة تكرار الغش سيرسب الطالب فى المقرر.