



# Advanced Software Engineering

## Project Description

### 2021/2022

Version 1.0

#### Project Team

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## Introduction

- In this project you will design and implement a non-trivial software system. You will practice the concepts you learned during the course.
- Project will be based on agile practices with at least 3 phases
- In each phase we will focus on designing and implementing some requirements.
- In each phase you are required to deliver the following **through blackboard as one zip file**, named with your student IDs as follows: **CS352\_Sprint2\_TAName\_ID1\_ID2\_ID3\_ID4**.

Following such naming is a MUST. The deliverables are:

- Proposed architecture: Should include a subsystem decomposition, and a component diagram showing the interfaces of the different components.
- Proposed class diagram
- sequence diagrams for the **most complex** scenarios. The submitted sequence diagrams should be **1 x the size of the team**, where each team member would be responsible **for submitting one sequence diagram**.
- Check the SDS document with the project description
- Sprint document
  - Meeting minutes for the sprint starting meeting.
  - Meeting minutes for the sprint standup meetings.
  - Meeting minutes for the spring retrospective meeting.
  - Trello board screenshot
- Git repository for the developed source code.
- Zipped copy of the source code
- Check the Sprint document with the project description
- Your project customer (whom you can check requirements with) and coach is your TA.
- For more information about the different sprint terms mentioned above, and the overall agile software development process, please refer to this link  
<https://www.mountangoatsoftware.com/agile/scrum/resources/overview>

## Project Logistics

- 1 Students from the same lab/TA will be divided into groups; each group consists of 3-4 members.
- 2 Your team will register their names with the TA and **you CANNOT change teams** after registration.

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- 3 Academic honesty is assumed. All work submitted must be original and written by your team (Not copied from students, the net, outside sources). Plagiarism will be penalized.
- Soon, you will be our colleague and we will be proud of you.
  - Professional conduct and practice is essential in your career.

## Project Phases:

Phase	Deliverables	Deadline	Mark
Phase 1	Design and implement Phase 1 user stories (mentioned below)		
Phase 2	Design and implement Phase 2 user stories (mentioned below)		

## Project overview

In the current days the transportation technologies are growing rapidly. Therefore, in this project we are going to develop an application that helps users to communicate with car drivers to transport users to any area.

In this project you are required to develop the requested functions w.r.t the SOLID principles and design patterns. You should consider using design patterns to adhere to the SOLID principles.

Your design also should adhere the OOP concepts. So the basic unit in your class should be the “class”.

You should think about an efficient design that will be suitable if the requirements are extended. Also you should think about a portable design to be used in any other user cases.

You are free to choose any programming language that you want. However, The design concepts in the labs will be explained with Java.

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The current functions will be exposed as a normal member functions part of a class. In the next sprint we are going to expose these functions as web services.

## Phase 1 requirements

- 1 The user should be able to register to the system. The user should provide username, mobile number, email (optional), and password. If the user is going to register to the system as a driver so the driving license and national id should be provided. The user should be able to login into the system once the registration is completed. If the user registers as a driver, so the user should be able to login into the system once the admin user verify the registration
- 2 The admin user should be able to verify driver registration. So the admin should be able to list all pending driver registrations and verify any pending driver registration.
- 3 The user should be able to request a ride given a source and a destination. For a simplicity user can enter the source area's name and the destination area's name.
- 4 The driver should be able to add some areas to get notification when any ride is requested and one of these areas is added as the source area. These areas will be called as "favorite areas".
- 5 The driver should be able to list all rides with source area within one of the driver's favorite areas. The driver should be able to suggest a price to this ride and notify the user with this price. Each price suggestions is called an "offer".
- 6 The admin should be able to suspend any driver/user account. By suspending any account the corresponding user shouldn't be able to login into the application.
- 7 The user should be able to rate any driver. The user should provide a star rating to the driver from 1 to 5 (1 worst, 5 Best)
- 8 The driver should be able to list user ratings. All user ratings should be visible to the driver.
- 9 The user should be able to check the average rating for the driver. The driver's information should include the average user rating.

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## Phase 2 requirements

1. You need to expose Phase 1 requirements as a web services, and apply design patterns to those requirements as needed within sprint 1 requirements.
2. The admin should be able to show the events that happened on a specific rides. Therefore, we need to save every action happened on every ride. The possible actions are
  1. Captain put a price to the ride (To show this event, event name, event time, captain name and the price should be printed)
  2. User accepts the captain price (To show this event, event name, event time and user name should be printed)
  3. Captain arrived to user location (To show this event, event name, event time, captain name and user name should be printed)
  4. Captain arrived to user destination (To show this event, event name, event time, captain name and user name should be printed).
3. The admin should be able to add discounts on specific areas, so if any ride is going to that area, a 10% discount should be applied to the ride price. This discount won't affect the price that the captain suggest. The ride price will be added with no discount to the captain balance once completing the ride ,however, the discount will be applied to what the user will pay to this ride.
4. Refactor booking ride logic to add a new way to book a ride. You should do two major refactoring steps
  1. Only the drivers within the ride source area **and available to handle a new request** should be notified. So if a driver is currently handling another ride (the user accept the driver offer, so the driver will handle this ride), so this driver shouldn't be notified.
  2. The user should be able to specify number of passenger in this ride. So the user may be willing to take this ride with another user.

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5. Various discounts will be applied to the ride price. So what the user will pay should pass by some discounts, if the discount should be applied then the ride price (what the user should pay) should be decreased accordingly to the discount. Check the following conditions and apply every discount to the ride price if it matches the condition criteria.
  1. If the ride is the first ride to the user, apply 10% discount.
  2. If the ride destination area is one of the areas added by the admin to apply discounts on, apply 10% discount
  3. If the ride contains two passengers, apply 5% discount.
  4. If the ride date is on a public holiday, apply 5% discount.
  5. If the ride date matches the birth date for the user request the ride. Apply 10% discount (as a happy birthday gift :D )

**Note: You are required to develop all sprint 1 and sprint two requirements as a web services.**

## Evaluation Criteria

1. Properly working functionality as per the sprint requirements.
2. Quality of project configuration (i.e. task management, version control, SDS documentation)
3. Consistency between the various submitted system models.
4. Consistency between the submitted system models, and the working product.
5. Good design and implementation as per the studied principles/patterns within the course.

## Policy Regarding Plagiarism:

**Students have collective ownership and responsibility of their project. Any violation of academic honesty will have severe consequences and punishment for ALL team members.**

١ تشجع الكلية على مناقشة الأفكار و تبادل المعلومات و مناقشات الطلاب حيث يعتبر هذا جوهرها لعملية تعليمية سليمة

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- ٢ ساعد زملاءك على قدر ما تستطيع و حل لهم مشاكلهم في الكود و لكن تبادل الحلول غير مقبول و يعتبر غشا.
- ٣ أى حل ينشابه مع أى حل آخر بدرجة تقطع بأنهما منقولان من نفس المصدر سيعتبر أن صاحبيهما قد قاما بالغش.
- ٤ قد توجد على النت برامج مشابهة لما نكتبه هنا أى نسخ من على النت يعتبر غشا يحاسب عليه صاحبه.
- ٥ إذا لم تكن متأكدا أن فعلا ما يعد غشا فلتسأل المعيد أو أستاذ المادة.
- ٦ فى حالة ثبوت الغش سيأخذ الطالب سالب درجة المسألة ، و فى حالة تكرار الغش سيرسب الطالب فى المقرر.