
Term Project – Phase 1

INTRODUCTION

- In this project you will collect the requirements, design, and implement a non-trivial software system. You will practice the concepts you learned during the course.
- Your project customer (whom you can check requirements with) and coach is your TA.

PROJECT DETAILS

Apply the Object-Oriented concepts that you've learned (Abstraction, Encapsulation, Polymorphism, Interfaces, ...etc.) to design a **Parking Garage application** and implement it using an object-oriented programming language. This application manages a parking space for a configurable maximum number of vehicles. Each parking space (slot) defined with a dimension (width and depth) The application must handle the following functions:

- Each **vehicle** shall be identified by a **model name**, **unique identification number**, **Model year** and **vehicle dimensions** (vehicle width and depth).
- **Park-in** function that marks the **arrival time** of a vehicle **if** there is an **available slot**. The application shall capture such time **automatically** from the system.
- During the park-in function the application shall **pick a free slot** based on the **active slot configuration**. There are two configurations (i) **first come first served slots** i.e., the park-in function will use the first free slot available from the parking garage slots. (ii) **best-fit approach** where you need to find the slot with the minimum dimension to hold the vehicle.
- **Park-out** function that marks the **departure time** of a vehicle from the garage. The application shall capture such time **automatically** from the system.
- **Calculate the parking fees** during the park-out based on the time-of-stay with an **hourly rate of 5 EGP**.
- **Calculate the total income** as well as **the total number of vehicles** that used the parking garage **at any given point in time**.
- **Display the available parking slots**
- Enrich your application with the capability to **handle a set of exceptions** that can happen during user interaction and through any other calculations. The **displayed error message for exceptional behavior** should be descriptive.

PHASE 1 DELIVERABLES

- A software requirements specification document. You must use the attached template that is published on blackboard “CS251-SoftwareRequirementsSpecifications-SRS-Template-v1.0”
- A software design specification document. You must use the attached template that is published on blackboard “CS251-SoftwareDesignSpecifications-SDS-Template-v1.0”
- The source for the Implementation of the features: Display the available parking slots, and Park-in function

GRADING CRITERIA

- The correctness of the features.
- The correctness of your application’s design as per the explained object-oriented concepts from a software engineering perspective.
- The consistency between the system’s analysis, system’s design and its implementation.
- Applying Java code style and comments.

General Guidelines

- Applying standard code style and comments is essential.
- ***You should use the object-oriented concepts that you learned, in both the lectures and the labs, as needed.***

Delivery Notes

- **The project Phase 1 submission is due on 8 May 11:59 pm**
- Submission needs to be done through the course’s Blackboard only.
- This is a group project of 4 members (at most). If you submit as a group of more than four members, ALL the group members will get 0.
- You **cannot change teams** throughout all the phases of the project.
- ALL students should work and fully understand everything in the submitted solution.
- No late submission is allowed.
- Submission will be on blackboard. It is your duty to ensure that your submission was properly uploaded to blackboard after you finish submitting it. If your submission was not uploaded properly while marking, you will not receive a grade for the assignment.
- No submission through e-mails.

- You need to create ONE folder, that put **all the required documents and source code** in that folder. Each MS Word file must include the names and IDs of all team members. All documents needs to be submitted as **MS Word** files. You will put those two files **(the Word file and the source code file)** in a folder named CS251_ProjectPhase1_GroupNumber_firstStudID_SecondStudID_ThirdStudID_FouthStud ID and compress them to a .zip file with the same folder name. The compressed file would be the file to be delivered.
- **Failing to abide by the naming conventions of the file or failing to submit the files as per the requested extension, would result in a ZERO for both team members.**
- **In case of cheating you will get a negative grade whether you give your solution to someone, take the solution from someone/internet, or even send it to someone for any reason.**