Cairo University  
Faculty of Computers and Artificial Intelligent

**CS251**

**Software Engineering I**

Project Name

Software Design

Team Names

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# Team

|  |  |  |  |
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# Document Purpose and Audience

**What is this document?**

This document shows the System’s models (Class Diagram and Sequence Diagram) .

**Who is excepted to read it?**

The project Manager and the customer.

# 

# System Models

## I. Class diagrams

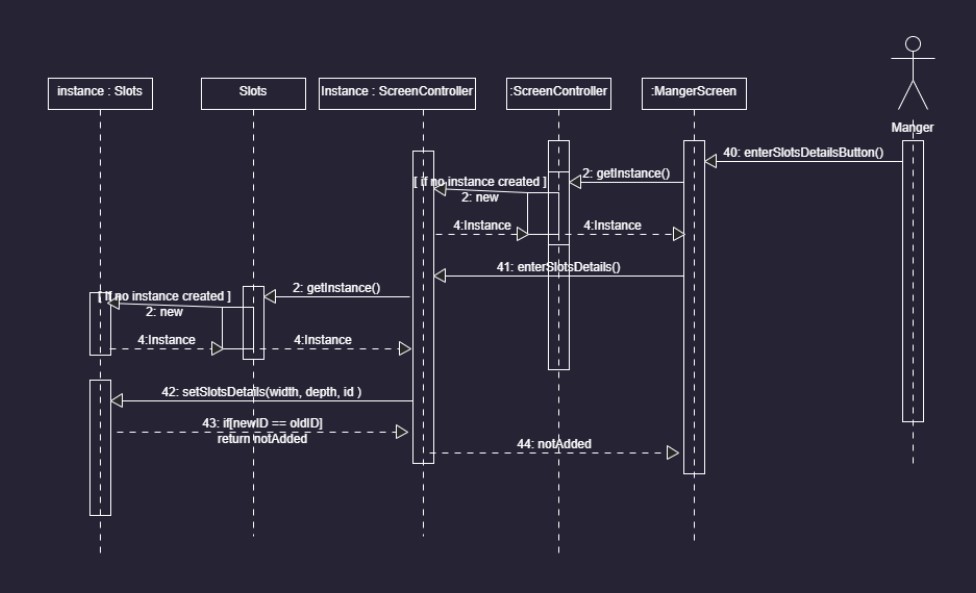
| **Class ID** | **Class Name** | **Description & Responsibility** |
| --- | --- | --- |
| 1 | GarageMachine | It is a class of the machine that the driver will communicate with it by enter his car`s info to enter to the garage , press leave button to show him the cost and the drive pay it and leave , And have a variable called pay , Return Change to show him if there are rest of the money or not ,Return money to return to him the rest of money |
| 2 | MachineController | It is a class that control the machine by a constrictor and sending the info to the system to and receiving the suitable slot ,if the driver pass leave button the machine controller use function leave and  Check to calculate the cost of the parking and show it to the driver and GetInstance to able singleton method to create an only one object |
| 3 | MangerScreen | It is a class that the manger communicate with to show the manger all things of the garage ,if the manger press the show income button it sent to the controller to show the income if the manger press show number of the vehicle button it sent to the controller to show the number of vehicle , if the manger want to see the available slots he press on the button of showAvalSlots and sent to the controller to show the free slots , if the manger wants to add a slots details he press the slots details button |
| 4 | ScreenController | It is a class that control the manger screen , show the manger the total income that the garage earn in a point of time,  showNumOfVehicle is a function that show the manger the number of the vehicle in a point of time ,ShowAvlSlots is a function that show the manger the available slots in the garage , ShowMassage show the manger if there are a problem with the driver in the payment and enterSlotsDetails is enter the info that taken form manger to the database and add a slot to the garage and GetInstance to able singleton method to create an only one object |
| 5 | Slots | It is a class receive the request of the driver and call the function of park in ,search for freeSlots in the garage then call function of getAvailslots to send the available slot to the machine, setSlotsDetails to save the details of the slot in the database , ClearPlaces to be the slot free when the driver park out and GetInstance to able singleton method to create an only one object |
| 6 | Slot | This class has a function setAvail to set the slot available when the car leave get the information of the driver`s vehicle by three functions[Getwid(),GetDep(),GetId()],and then search for the suitable slot to the vehicle then call function ifAvail() to show if it found it or not |
| 7 | vehicleCard | It is a class to collection all data about the vehicle ,create form and fill the form by the model , carNum , model year , the car`s width , the car`s depth and slot id ,getSlotId to get the id of the available slot and getTimein to get the time of the park in to calculate the cost |
| 8 | ParkingMang | It is a class to manage the garage , when the driver enter to the garage the parkingMang call function add car and pass to it the entry time , when the driver park out the class call function remove car to remove the this car info from the system and made there slot available and decrease the number of the cars by 1 and calculate the taken time,addCar to add car to the system, removeCar to remove car from the system , the function of addIncome to add the new income to the total income , function get income to show the total income and function GetNumOfVehicle to count the number of vehicle in the garage In any point of time , GetInstance to able singleton method to create an only one object |
| 9 | ParkingMethod | In this class take a car`s info and the manger select form two configurations |
| 10 | FirstComeMethod | this class show the configuration that show the driver the first free slot available from the parking garage slots and it inherit from the function of ParkingMethod |
| 11 | BestFitMethod | This class show the other configuration that show best-fit approach where you need to find the slot with the minimum dimension to hold the vehicle and it inherit from the function of ParkingMethod |

### Important Algorithm

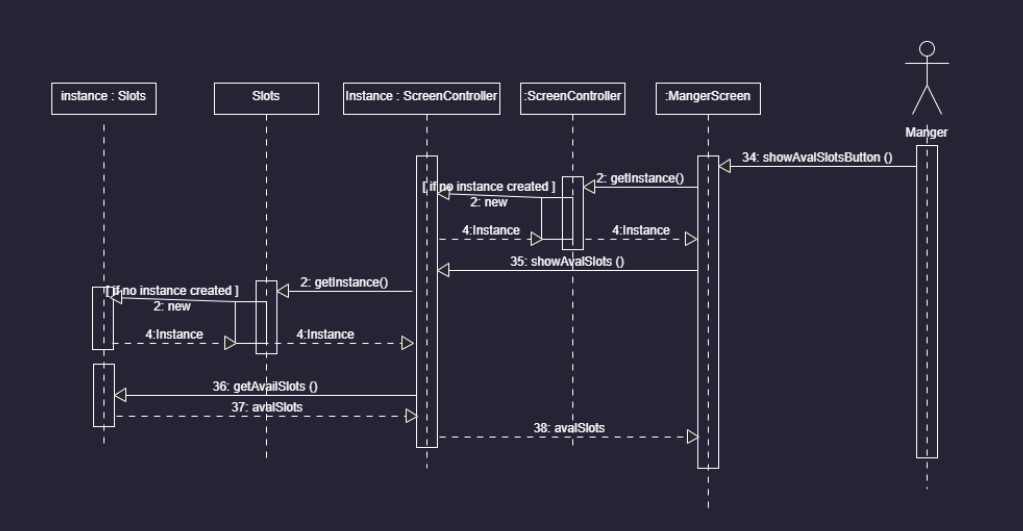
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## II. Sequence diagrams

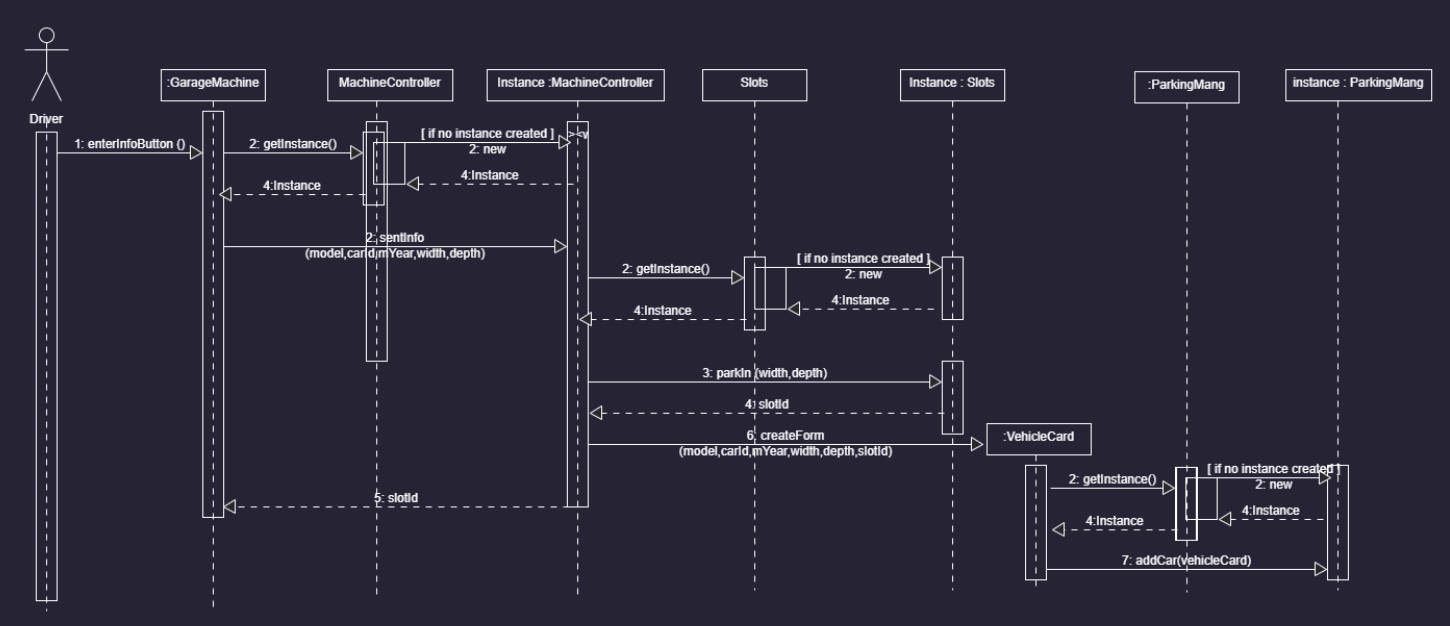
Enter Slots Details Sequence Diagram

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Get Available slots Sequence Diagram



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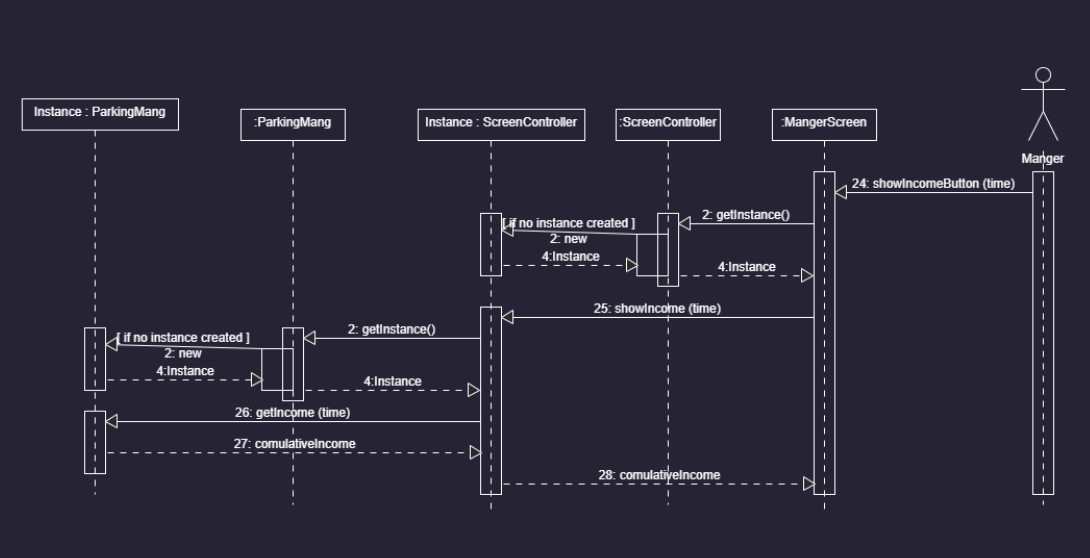
Park-in Sequence Diagram

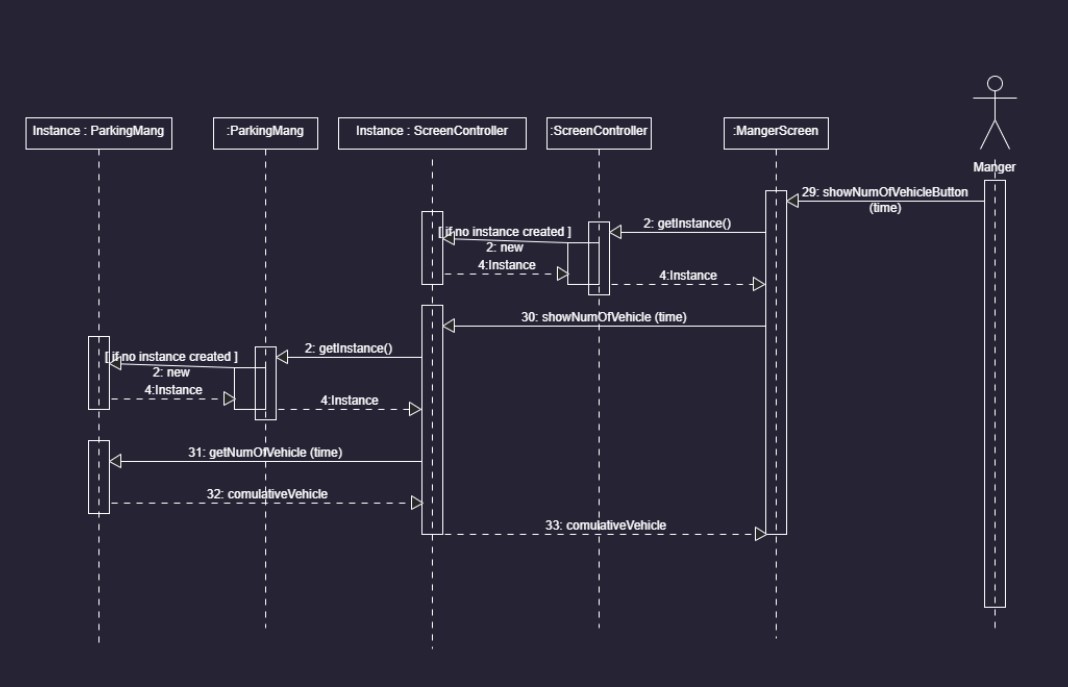
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### Park-out Sequence Diagram

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Show Income Sequence Diagram



Show number of vehicles Sequence Diagram 

### 

### Class - Sequence Usage Table

| * **Class Name** | **Sequence Diagrams** | **Overall used methods** |
| --- | --- | --- |
| GarageMachine | 1,8,14,16,20 | EnterInfoButton , leaveButton , pay ,ReturnMoney , ReturnChange |
| MachineController | 9,15 | Getinstance , SentInfo , leave , check |
| slots | 2,3,10,36 | GetInstance , Parkin , freeSlot , GetAvalSlots , setSlotsDetails , clearPlaces |
| VehicleCard | 6,21,17 | createForm , getSlotID , getTimeIn |
| ParkingMang | 7,11, 22,23,26,31 | AddCar , parkOut, RemoveCar , AddIncome , GetIncome ,GetNumOfVehicle , Getinstance |
| ScreenController | 18,25,30,35,41 | ShowMassage , ShowIncome , ShowNumOfVehicle , ShowAvalSlots , enterslotDatiles , Getinstance |
| MangerScreen | 19,24,29,34,40 | ShowMangerPopUp , ShowIncomeButton , ShowNumOfVehicleButton , ShowAvalSlotsButton , EnterslotDatilesButton |

# Ownership Report

|  |  |
| --- | --- |
| **Item** | **Owners** |
| Class Diagram | *Joeshwoa George*  *Mira Ehab*  *Osama Ibrahim* |
| Class Table | *Mostafa Mohamed* |
| Sequence Diagram | *Joeshwoa George*  *Mira Ehab*  *Osama Ibrahim* |
| Sequence Table | *Mostafa Mohamed* |

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# 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.**

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.