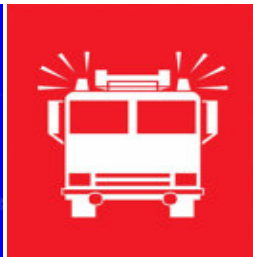




# Driver & Vehicle Registration System



## Prepared By:

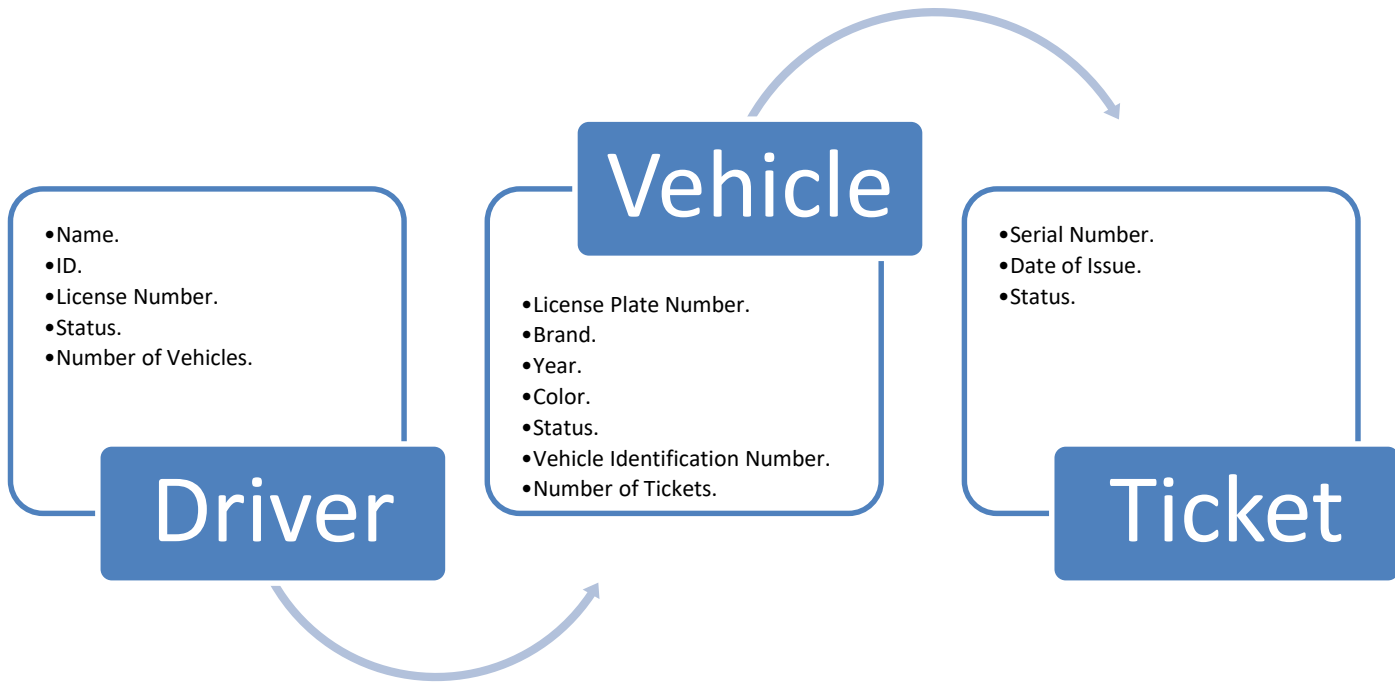
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# Project Design



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## Project Usage

The “Driver & Vehicle Registration System” project facilitates the process of registration of any mean of transportation like public ,governmental or private cars and busses and refers it to a certain driver. That project also improves the process of ticket assignment to a specific driver who breaks the traffic rules like exceeding the permitted limit, illegal parking and cutting traffic.

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# Project Difficulties

- Using circular reference class pointers or only forward ones.
  - Using vector or maps of each class.
  - Designing of classes.
  - Divide & conquer concept.(i.e.: each function has its own file.)
  - Global file which includes all functions and classes.
  - Pointers & Dynamic allocation.
  - Linking the work of each one of us correctly together.
-

# User Manual

## Driver and Vehicle Registration System

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### MAIN MENU

Please choose a command:[1-11]

=====	
-Register a new driver	1
-Edit an existing driver	2
-Register a new vehicle	3
-Edit an existing vehicle	4
-Add ticket to vehicle	5
-Clear ticket on vehicle	6
-Display a driver's information	7
-Display a vehicle's information	8
-Display a ticket's information	9
-Reset system	10
-Quit system	11
=====	

Your Choice:

---

## Main Menu:

When the program starts, the “Main Menu “ appears which allows you to choose any option of the program.

- To register a new driver, press “1”.
  - To edit an existing driver, press “2”.
  - To register a new vehicle , press “3”.
  - To edit an existing vehicle , press “4”.
  - To add ticket to vehicle , press “5”.
  - To clear ticket on vehicle , press “6”.
  - To display a driver’s information, press “7”.
  - To display a vehicle’s information , press “8”.
  - To display a ticket’s information , press “9”.
  - To reset system , press “10”.
  - To quit the program , press “11”.
-

## Driver Registration:

- After pressing “1” in the main menu, enter the name and the ID number (14 numbers) of the new Driver.

```
=====
                        Your Choice: 1
=====
Please enter the Driver's name: gasser
Please enter the Driver's ID [14 numerics long]: 1234567890123
Invalid length or ID used before, please re-enter: 12345678910123
=====
Driver's name:                GASSER
Driver's ID number:           12345678910123
Driver's license number:      2246496098
Number of Vehicles owned by driver: 0
Driver's status:              ACTIVE
=====
New driver has been succesfully registered!
=====
```

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## Driver Editing:

- After pressing “2” in the main menu, choose the way you want to search by for a driver (License no. or ID) .If found, select what information you want to edit. If not, choose if you want to search again or return to the “Main Menu”.

```
=====
                        Your Choice: 2
=====
-Search by driver's license number          1
-Search by driver's ID number              2
=====
Your Choice: 2
=====
Please enter the driver's ID: 12345678910123
=====
Driver's name:                GASSER
Driver's ID number:           12345678910123
Driver's license number:      3702240298
Number of Vehicles owned by driver: 0
Driver's status:              ACTIVE
=====
-Edit driver's Name            1
-Edit driver's ID              2
-Edit driver's status          3
-Return to main menu           4
=====
```

# Vehicle Registration:

•After pressing “3” in the main menu, choose the way you want to search by for the owner driver (License no. or ID).Then choose the type of the vehicle, then enter the information of the vehicle.

```
=====
Your Choice: 3
=====
-Search by driver's license number          1
-Search by driver's ID number              2
=====
Your Choice: 2
=====
Please enter the driver's ID: 12345678910123
=====
Please choose the type of vehicle
-Public Vehicle          1
-Governmental Vehicle    2
-Private Vehicle         3
=====
Your Choice: 2
=====
Please Enter the VIN [17 alphanumerics long]: gov12345678945612
=====
Please enter the vehicle's brand: bus
Please Enter the vehicle's year model [4 numerics long]: 2005
=====
Driver's name:                G
Driver's ID number:           12345678910123
Driver's license number:      0265855460
Number of Vehicles owned by driver: 1
Driver's status:              ACTIVE
=====
Vehicle's type:                GOVERNMENTAL
Vehicle's brand:               BUS
Vehicle's year model:          2005
Vehicle's plate number:        GOU8370CS
Vehicle's VIN:                 GOU12345678945612
Vehicle's status:              In Use
Outstanding tickets on vehicle: 0
=====
Vehicle has been successfully registered!
=====
```

# Vehicle Editing:

•After pressing “4” in the main menu, choose the way you want to search by for a vehicle (License plate no. or VIN) .If found, select what information you want to edit. If not, choose if you want to search again or return to the “Main Menu”.

```

=====
Your Choice: 4
=====
-Search by vehicle's license plate number      1
-Search by VIN                                2
=====
Your Choice: 1
=====
Please enter vehicle's license plate number: gov594wjk
=====
Vehicle's type:                                GOVERNMENTAL
Vehicle's brand:                               BUS
Vehicle's year model:                         2005
Vehicle's plate number:                       GOU594WJK
Vehicle's VIN:                                GOU12345678945612
Vehicle's status:                             In Use
Outstanding tickets on vehicle:                0
=====
-Edit VIN                                     1
-Edit vehicle's owner                        2
-Edit vehicle's brand                        3
-Edit vehicle's year model                   4
-Edit vehicle's status                       5
-Edit vehicle's color                       6
-Return to main menu                         7
=====
Your Choice: 3
=====
Vehicle's current brand: BUS
Enter vehicle's new brand: bus2
=====
Vehicle's brand has been successfully changed!
=====
```

---



# Ticket Registration:

•After pressing “5” in the main menu, choose the way you want to search by for required vehicle (License plate no. or VIN).Then choose the type of the ticket.

```
=====
Your Choice: 5
=====
-Search by vehicle's license plate number      1
-Search by VIN                                2
=====
Your Choice: 1
=====
Please enter vehicle's license plate number: 12345678945612301
=====
Search returned no results!
=====
Search again or return to main menu?
-Search 1
-Return 2
=====
Your Choice: 1
=====
-Search by vehicle's license plate number      1
-Search by VIN                                2
=====
Your Choice: 2
=====
Please enter VIN: 12345678945612301
=====
Please choose type of ticket
-Illegal Parking Ticket      1
-Speeding Ticket             2
-Cutting Traffic Ticket      3
=====
Your Choice: 3
=====
Vehicle's type:      GOVERNMENTAL
Vehicle's brand:     BUS
Vehicle's year model: 2005
Vehicle's plate number: GOU115REH
Vehicle's VIN:       12345678945612301
Vehicle's status:    In Use
Outstanding tickets on vehicle: 1
=====
Ticket's type:      CUTTING TRAFFIC
Ticket's date of issue: 25/12/13
Ticket's serial number: C-JALOHS
Ticket's status:    OUTSTANDING
=====
Ticket has been successfully added to vehicle!
=====
```



## Ticket Editing:

- After pressing “6” in the main menu, enter the ticket’s serial number. If it’s outstanding, choose if you want to mark it as paid or not.

```

=====
Your Choice: 6
=====
Please Enter the ticket's serial number: c-jalohs
=====
Ticket's type:                CUTTING TRAFFIC
Ticket's date of issue:      25/12/13
Ticket's serial number:      C-JALOHS
Ticket's status:             OUTSTANDING
=====
Current Ticket is still outstanding, mark as paid?
-Yes      1
-No       2
=====
Your Choice: 1
=====
Ticket has been successfully mark as paid!
=====
```

---

## Display:

- To display a driver's information, press "7", then choose the way you want to search by for him (License no. or ID).

```
=====
Your Choice: 7
=====
-Search by driver's license number          1
-Search by driver's ID number              2
=====
Your Choice: 2
=====
Please enter the driver's ID: 12345678910123
=====
Driver's name:                             GASSER
Driver's ID number:                        12345678910123
Driver's license number:                   3226395913
Number of Vehicles owned by driver:        1
Driver's status:                           ACTIVE
=====
Vehicle's type:                             GOVERNMENTAL
Vehicle's brand:                             BUS
Vehicle's year model:                       2005
Vehicle's plate number:                     GOU115REH
Vehicle's VIN:                             12345678945612301
Vehicle's status:                           In Use
Outstanding tickets on vehicle:             0
=====
Ticket's type:                             CUTTING TRAFFIC
Ticket's date of issue:                     25/12/13
Ticket's serial number:                     C-JALOHS
Ticket's status:                           PAID
=====
```

- To display a vehicle's information, press "8", then choose the way you want to search by for it (License plate no. or VIN).

```
=====
Your Choice: 8
=====
-Search by vehicle's license plate number    1
-Search by VIN                              2
=====
Your Choice: 2
=====
Please enter VIN: 12345678945612301
=====
Vehicle's type:                             GOVERNMENTAL
Vehicle's brand:                             BUS
Vehicle's year model:                       2005
Vehicle's plate number:                     GOU115REH
Vehicle's VIN:                             12345678945612301
Vehicle's status:                           In Use
Outstanding tickets on vehicle:             0
=====
Ticket's type:                             CUTTING TRAFFIC
Ticket's date of issue:                     25/12/13
Ticket's serial number:                     C-JALOHS
Ticket's status:                           PAID
=====
Vehicle has no tickets
=====
```

- To display a ticket's information, press "9", then enter its serial number.

```
=====
Your Choice: 9
=====
Please Enter the ticket's serial number: c-jalohs
=====
Ticket's type:                CUTTING TRAFFIC
Ticket's date of issue:       25/12/13
Ticket's serial number:       C-JALOHS
Ticket's status:              PAID
=====
Vehicle's type:                GOVERNMENTAL
Vehicle's brand:              BUS
Vehicle's year model:         2005
Vehicle's plate number:       GOU115REH
Vehicle's VIN:                12345678945612301
Vehicle's status:             In Use
Outstanding tickets on vehicle: 0
=====
Driver's name:                GASSER
Driver's ID number:           12345678910123
Driver's license number:      3226395913
Number of Vehicles owned by driver: 1
Driver's status:              ACTIVE
=====
```

---

## Reset:

- After pressing “10” in the main menu, ensure if you want to reset the database or not.

```

=====
Your Choice: 10
=====
Resetting system will erase current database, are you sure you want to reset?
-Yes      1
-No       2
=====
Your Choice: 1
=====
System has been successfully reset!
=====

```

## Quit:

- After pressing “10” in the main menu, the program will be ended automatically.

```

=====
Your Choice: 11
=====
The Program has been closed
=====

```

# Project Structure

## •Main Classes:

- Driver
  - Vehicle
  - Ticket
- 

## •Sub Classes:

- Private, inherits from class Vehicle.
  - Governmental, inherits from class Vehicle.
  - Public, inherits from class Vehicle.
  - IllegalParkingTicket, inherits from class Ticket.
  - SpeedingTicket , inherits from class Ticket.
  - CuttingTrafficTicket , inherits from class Ticket.
- 

## •Main Data Structures:

- Vector “driver\_vec” of type Driver in which all drivers are included.
  - Vector “vehicle\_vec” of type Vehicle in which all vehicles are included.
  - Vector “ticket\_vec” of type Ticket in which all tickets are included.
  - Set “used\_num” of type String in which all the used numbers generated from “RandomGenerator” function are stored.
-

## •Main Functions:

- void RegDriver(), used in registration of drivers.
  - void EditDriver(), used in editing information of a specific driver, used SearchDriver() function to get the required driver.
  - void RegVehicle(), used **“Polymorphism”** in creating different objects of vehicles with one parent, i.e. v\_ptr=new Public().
  - void EditVehicle(), used in editing information of a specific vehicle, used SearchVehicle() function to get the required vehicle.
  - void AddTicket(), used **“Polymorphism”** in creating different objects of tickets with one parent, i.e. t\_ptr=new Public t\_ptr=new illegalParkingTicket()().
  - void EditTicket() (), used in editing information of a specific ticket, used SearchTicket() function to get the required ticket.
  - void DisplayDriver(), used in displaying information of a certain driver.
  - void DisplayVehicle(), used in displaying information of a certain driver.
  - void DisplayTicket(), used in displaying information of a certain driver.
  - void ResetSystem(), used in resetting the system.
-

## •Helper Functions:

- Ticket \* SearchTicket(), returns pointer of type Ticket used in searching for and editing tickets.
- Driver \* SearchDriver(), returns pointer of type Driver used in searching for and editing drivers.
- Vehicle \* SearchVehicle() , returns pointer of type Vehicle used in searching for and editing vehicles.
- void LoadDatabase(), allows loading of database from an external file.
- void SaveDatabase(), allows saving the data to an external file.
- void ClearMemory(), deletes all pointers before closing the program to free memory.
- void\* SearchVehicle(Driver \*input), used in searching for and displaying vehicles of the fetched driver.
- void\* SearchTicket(Vehicle \*input), used in searching for and displaying tickets of the fetched vehicle.
- string RandomGenerator(int mode, int type), generates a random numbers, characters or numbers and characters. The generated string is used in registration of new driver's or vehicle's license number or new ticket's serial number. Mode is the object(Driver (1), Vehicle (2), Ticket (3)) and Type is the type of the object.





- `bool checkifused(string input)`, used in `RandomGenerator()` function to check if the given string is used or not.

- `string capitalizer(string input)`, capitalizes the given string.

- `void MENU()`, displays “Main Menu” for the user to choose any of its options.

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