The Explanation of My Codes, Including Folder Structures, Main Class, and code related things are explained in CODE_OVERVIEW.pdf

Program Output

When started, the program will ask the user to input how many Slots to be created.

If user's inputs are invalid, the program will keep asking the user to input valid number.

Valid Slots Example

After user input a valid number, the program will continue and display how many available slots.

Check-In (Parking) Output

```
D:\Code\NET\ParkingLotApp\ParkingLotApp\bin\Debug\net5.0\ParkingLotApp.exe

Please Pick Your Choices (1 - 4)
1. Check-In
2. Check-Out
3. Reports
4. Exit

1
Checking In...

Type Your Option (park / back)
Park
Back

park
Parking The Vehicle
Please Type The Registration Number example ('a1234XXX','ab2345yyy')
 Type 'back' to go back

B1234XYZ
Please Type Of Vehicle example ('motor','mobil')
 Type 'back' to go back

Mobil
Please Type the Colour  example ('putih','hitam')
 Type 'back' to go back

Putih
Your Vehicle: B-1234-XYZ Mobil Putih
Allocated slot number : 1

Type Your Option (park / back)
Park
Back
```

During park, it doesn't need to type the literal "-" while typing Registration Number and also case insensitive, then the program will ask the type of vehicle, it only accept "motor" or "mobil" (case insensitive), after the user hit enter, the program will ask to write the colour of the vehicle, then the vehicle will be allocated to slot available from number 1.

I added the code to concat everything that have been inputted and add the "-" for the strings and save it.

Another Example Output

```
Your Vehicle: B-777-DEF Mobil Red
Allocated slot number : 4

Type Your Option (park / back)
Park
Back

park
Parking The Vehicle
Please Type The Registration Number example ('a1234XXX','ab2345yyy')
 Type 'back' to go back

b2701xxx
Please Type Of Vehicle example ('motor','mobil')
 Type 'back' to go back

mobil
Please Type the Colour  example ('putih','hitam')
 Type 'back' to go back

biru
Your Vehicle: B-2701-XXX Mobil Biru
Allocated slot number : 5

Type Your Option (park / back)
Park
Back

park
Parking The Vehicle
Please Type The Registration Number example ('a1234XXX','ab2345yyy')
 Type 'back' to go back

b3141zzz
Please Type Of Vehicle example ('motor','mobil')
 Type 'back' to go back

motor
Please Type the Colour  example ('putih','hitam')
 Type 'back' to go back

hitam
Your Vehicle: B-3141-ZZZ Motor Hitam
Allocated slot number : 6                          ▮
```

The Output if The Parking Lot is full / No Slot Available

```
hitam
Your Vehicle: B-3141-ZZZ Motor Hitam
Allocated slot number : 6

Type Your Option (park / back)
Park
Back

park
Parking The Vehicle
Please Type The Registration Number example ('a1234XXX','ab2345yyy')
 Type 'back' to go back

ba1234xyz
Please Type Of Vehicle example ('motor','mobil')
 Type 'back' to go back

motor
Please Type the Colour  example ('putih','hitam')
 Type 'back' to go back

hitam
Your Vehicle: BA-1234-XYZ Motor Hitam
Sorry, parking lot is full

Type Your Option (park / back)
Park
Back
```

The Result after Parking process

```
Type Your Option (park / back)
Park
Back

back
Going Back

--- Welcome to WaterFall Parking ---
-- Available Slots : 0 --

Please Pick Your Choices (1 - 4)
1. Check-In
2. Check-Out
3. Reports
4. Exit
```

The message about Available Slots now updated to be 0.

Check-Out Output

```
--- Welcome to WaterFall Parking ---
-- Available Slots : 0 --

Please Pick Your Choices (1 - 4)
1. Check-In
2. Check-Out
3. Reports
4. Exit

2
Checking Out..

Please Type The Slot (1 - 6)
-- Type 'back' To Go Back --
```

The Program will display available Slot Number dynamically, since we already created 6 in the beginning, then it will show 1 – 6, I will show the other output if we created different slots later.

```
Please Type The Slot (1 - 6)
-- Type 'back' To Go Back --

4
Slot number 4 is free
Please Type The Slot (1 - 6)
-- Type 'back' To Go Back --

back
Going Back...

--- Welcome to WaterFall Parking ---
-- Available Slots : 1 --

Please Pick Your Choices (1 - 4)
1. Check-In
2. Check-Out
3. Reports
4. Exit
```

When the user input valid number it will free the slot in the parking lot.

Simple Validation When Checkout

```
Please Type The Slot (1 - 6)
-- Type 'back' To Go Back --

7
Invalid Slot Number

Please Type The Slot (1 - 6)
-- Type 'back' To Go Back --

0
Invalid Slot Number

Please Type The Slot (1 - 6)
-- Type 'back' To Go Back --

asd
Input string was not in a correct format.
--- Welcome to WaterFall Parking ---
-- Available Slots : 0 --

Please Pick Your Choices (1 - 4)
1. Check-In
2. Check-Out
3. Reports
4. Exit
```

I added some simple validation if user type invalid slot number, it will ask the user to retry and re-inputted another valid value.

Reports Menu Output

```
--- Welcome to WaterFall Parking ---
-- Available Slots : 1 --

Please Pick Your Choices (1 - 4)
1. Check-In
2. Check-Out
3. Reports
4. Exit

3
Reports..


 Pick Your Option (1 - 7)
1. Status
2. Type Of Vehicle : Motor
3. Type Of Vehcile : Mobil
4. Odd Plates
5. Even Plates
6. Search The Slot by Plate No
7. Search Vehicle by Colour
8. Back To Main Menu
```

In The Reports Menu, there are several options that user can choose

Status output

```
1
Parking Lot Status

Slot -- Registration No -- Type -- Colour
1 B-1234-XYZ Mobil Putih
2 B-9999-XYZ Motor Putih
3 D-0001-HIJ Mobil Hitam
4 Empty Slot
5 B-2701-XXX Mobil Biru
6 B-3141-ZZZ Motor Hitam

 Pick Your Option (1 - 7)
1. Status
2. Type Of Vehicle : Motor
3. Type Of Vehcile : Mobil
4. Odd Plates
5. Even Plates
6. Search The Slot by Plate No
7. Search Vehicle by Colour
8. Back To Main Menu
```

As displayed in the pic, if the user type "1" (Status) it will show the current status of the lot, and I added features to show empty Slot with the value "Empty Slot".

There are Empty Slot, so let's park B-333-SSS Putih Mobil

```
park
Parking The Vehicle
Please Type The Registration Number example ('a1234XXX','ab2345yyy')
 Type 'back' to go back

b333sss
Please Type Of Vehicle example ('motor','mobil')
 Type 'back' to go back

mobil
Please Type the Colour  example ('putih','hitam')
 Type 'back' to go back

putih
Your Vehicle: B-333-SSS Mobil Putih
Allocated slot number : 4

Type Your Option (park / back)
Park
Back

back
Going Back

--- Welcome to WaterFall Parking ---
-- Available Slots : 0 --

Please Pick Your Choices (1 - 4)
1. Check-In
2. Check-Out
3. Reports
4. Exit
```

The available slots updated to 0 because we park another car, let's see if the user try to park another car while the available slots are 0.

```
Your Vehicle: A-1212-GGG Mobil Putih
Sorry, parking lot is full

Type Your Option (park / back)
Park
Back
```

The program will not park the vehicle since the slots are 0 / full.

Updated Parking Lot Status

```
 Pick Your Option (1 - 7)
1. Status
2. Type Of Vehicle : Motor
3. Type Of Vehcile : Mobil
4. Odd Plates
5. Even Plates
6. Search The Slot by Plate No
7. Search Vehicle by Colour
8. Back To Main Menu

1
Parking Lot Status

Slot -- Registration No -- Type -- Colour
1 B-1234-XYZ Mobil Putih
2 B-9999-XYZ Motor Putih
3 D-0001-HIJ Mobil Hitam
4 B-333-SSS Mobil Putih
5 B-2701-XXX Mobil Biru
6 B-3141-ZZZ Motor Hitam

 Pick Your Option (1 - 7)
1. Status
2. Type Of Vehicle : Motor
3. Type Of Vehcile : Mobil
4. Odd Plates
5. Even Plates
6. Search The Slot by Plate No
7. Search Vehicle by Colour
8. Back To Main Menu
```

As the new car has parked, the car automatically parked in the empty slot by checking 1 by 1 sequentially and park when it found empty slot.

Type Of Vehicles Output

```
Slot -- Registration No -- Type -- Colour
1 B-1234-XYZ Mobil Putih
2 B-9999-XYZ Motor Putih
3 D-0001-HIJ Mobil Hitam
4 B-333-SSS Mobil Putih
5 B-2701-XXX Mobil Biru
6 B-3141-ZZZ Motor Hitam
```

This is current Parking Lot Status

Motor Count:

```
 Pick Your Option (1 - 7)
1. Status
2. Type Of Vehicle : Motor
3. Type Of Vehcile : Mobil
4. Odd Plates
5. Even Plates
6. Search The Slot by Plate No
7. Search Vehicle by Colour
8. Back To Main Menu

2
Total Motor :
2
```

There are 2 Motor in the parking lot, as we can see it on our own via previous Parking Lot Status Image.

Mobil Count:

```
 Pick Your Option (1 - 7)
1. Status
2. Type Of Vehicle : Motor
3. Type Of Vehcile : Mobil
4. Odd Plates
5. Even Plates
6. Search The Slot by Plate No
7. Search Vehicle by Colour
8. Back To Main Menu

3
Total Mobil :
4
```

There are 4 Mobil parked in the parking lot.

Find Odd Numbered Plates

Referring to current parking lot status, we can compare it if the program does not work properly.

The program will list the plate numbers with Odd Numbered Digits.

Find Even Numbered Plates

Similar to finding odd numbered plates, the even numbered program works just fine.

Search The Slot Of Parked Car Via Plate Number Output

```
 Pick Your Option (1 - 7)
1. Status
2. Type Of Vehicle : Motor
3. Type Of Vehcile : Mobil
4. Odd Plates
5. Even Plates
6. Search The Slot by Plate No
7. Search Vehicle by Colour
8. Back To Main Menu

6
Search Slot Number by Plates :
Please Type The Plate No example ('a-1234-xxx', 'AB-2345-YYY')
_
```

The Program will ask the user to input the Plate No they want to search, and please do match the correct plate including literal "-" to match the parked vehicle.

```
Search Slot Number by Plates :
Please Type The Plate No example ('a-1234-xxx', 'AB-2345-YYY')
asdhjashdjkashjkdashkd
### Plate Number is Too Long Or Too Short (Max 12 Digits) ###

Please Type The Plate No example ('a-1234-xxx', 'AB-2345-YYY')

### Plate Number is Too Long Or Too Short (Max 12 Digits) ###

Please Type The Plate No example ('a-1234-xxx', 'AB-2345-YYY')
_
```

If The user try to put longer letters or literal null in the input, the program will keep asking the user to re-input.

Vehicle Found Output

```
Search Slot Number by Plates :
Please Type The Plate No example ('a-1234-xxx', 'AB-2345-YYY')
B-3141-ZZZ
Vehicle is on Slot No : 6
```

If the user input the plate number correctly, and the vehicle with the plate number are same with the user's input then the program will show on what Slot No the vehicle is parked at.

Vehicle Not Found Output

```
Search Slot Number by Plates :
Please Type The Plate No example ('a-1234-xxx', 'AB-2345-YYY')
Z-1111-AAA
Vehicle Not Found
```

The program will show "Vehicle Not Found" If user's input isn't same as parked vehicles.

Search Vehicles By Colour

```
 Pick Your Option (1 - 7)
1. Status
2. Type Of Vehicle : Motor
3. Type Of Vehcile : Mobil
4. Odd Plates
5. Even Plates
6. Search The Slot by Plate No
7. Search Vehicle by Colour
8. Back To Main Menu

7
Seaching Vehicle By Colour :
Please Type The Colour Of Vehicle example ('Putih', 'hitam' , 'Biru muda')
```

Still in the Records Menu, User can type 7 to open Search Vehicles by Colour Menu. User will be asked to input Colour they want to search and it's case insesitive.

```
Seaching Vehicle By Colour :
Please Type The Colour Of Vehicle example ('Putih', 'hitam' , 'Biru muda')

### The Colour Is Not Valid, Is It A Real Colour's Name ? ###

Please Type The Colour Of Vehicle example ('Putih', 'hitam' , 'Biru muda')
ashdjkashjkdhasjkdhasjkdhsajkdha
### The Colour Is Not Valid, Is It A Real Colour's Name ? ###

Please Type The Colour Of Vehicle example ('Putih', 'hitam' , 'Biru muda')
```

The Validation is like previous program, I put a simple validation if the user's input is literal null or if the input is too long, then the program will keep asking the user to input a correct one.

Vehicle Found

```
Please Type The Colour Of Vehicle example ('Putih', 'hitam' , 'Biru muda')
PUtIh
Vehicle With Colour PUTIH
B-1234-XYZ, B-9999-XYZ, B-333-SSS,
```

Vehicle Not Found

```
Please Type The Colour Of Vehicle example ('Putih', 'hitam' , 'Biru muda')
Ungu
Vehicle With Colour UNGU
Vehicle Not Found
```

Going Back To Main Menu

```
 Pick Your Option (1 - 7)
1. Status
2. Type Of Vehicle : Motor
3. Type Of Vehcile : Mobil
4. Odd Plates
5. Even Plates
6. Search The Slot by Plate No
7. Search Vehicle by Colour
8. Back To Main Menu

8
Back To Main Menu...
--- Welcome to WaterFall Parking ---
-- Available Slots : 0 --

Please Pick Your Choices (1 - 4)
1. Check-In
2. Check-Out
3. Reports
4. Exit

```

User can just type 8 while in Reports Menu, it will redirect user to main menu where user can Check-in, Check-out, Open A Reports Menu, or Exit (Close The Program).

Closing/ Exit The Program

```
Please Pick Your Choices (1 - 4)
1. Check-In
2. Check-Out
3. Reports
4. Exit

4
Exit The Program...

D:\Code\NET\ParkingLotApp\ParkingLotApp\bin\Debug\net5.0\ParkingLotApp.exe
 (process 7748) exited with code 0.
To automatically close the console when debugging stops, enable Tools->Opt
ions->Debugging->Automatically close the console when debugging stops.
Press any key to close this window . . ._
```