

# UCS 2201 FPSD Project Final Project

**Project: Cab hailing software**



## TEAM MEMBERS:

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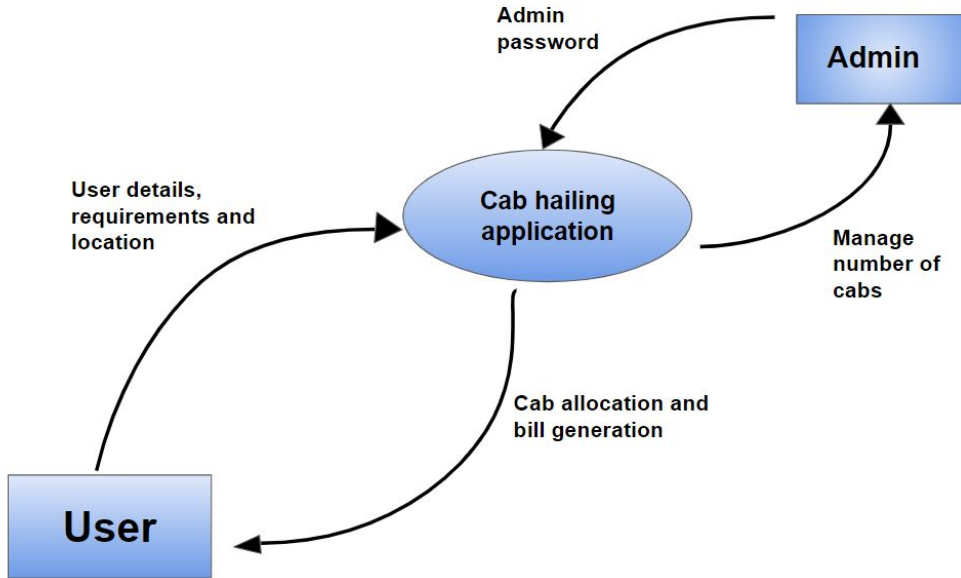


# Problem Statement

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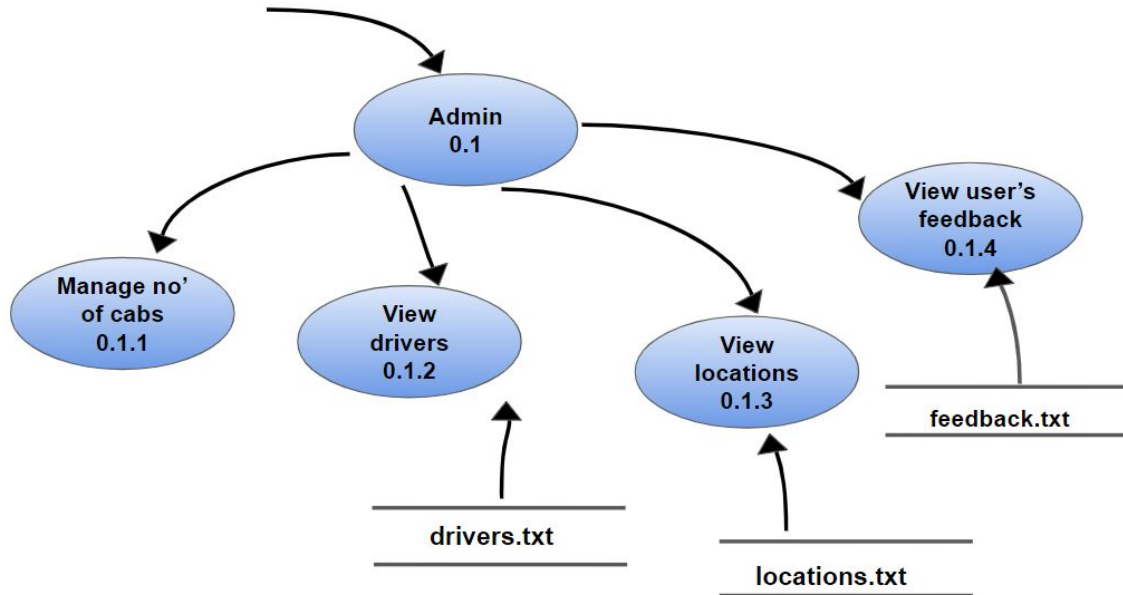
To develop a software system for assigning cabs for customers based on their requests and locations. The customers are charged a fixed base fare plus fare based on the distance travelled. During peak demand time, a surge fee also will be charged. Apart from this, if the customer books the vehicle in advance, advance booking fees will be charged. If the customer cancels the ride for some reason, a cancellation fee will be charged.

# DATA FLOW DIAGRAM



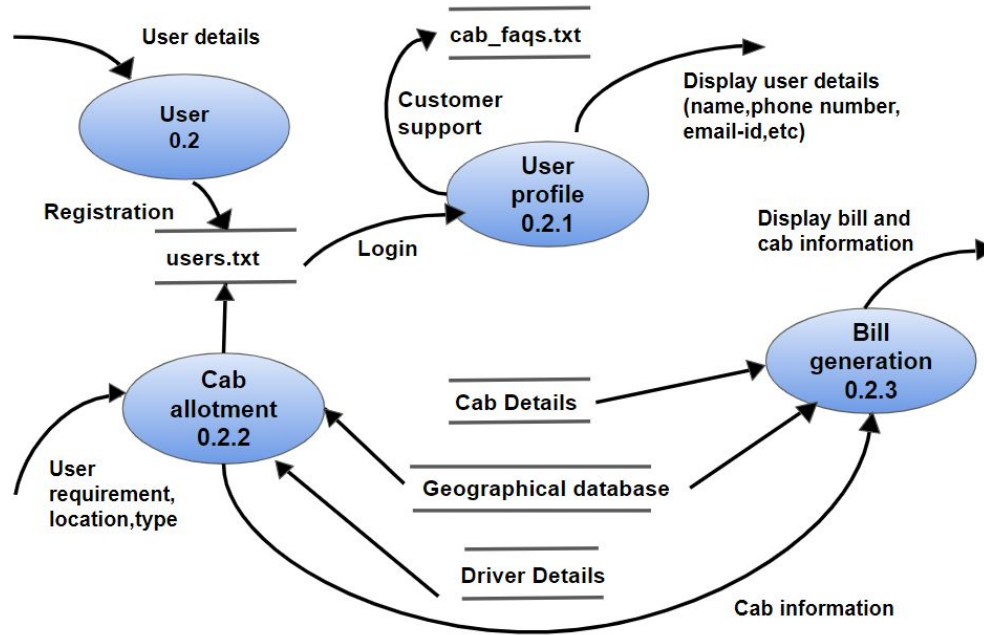
**CONTEXT  
DIAGRAM**

# DATA FLOW DIAGRAM



**LEVEL 1 DATA  
FLOW  
DIAGRAM**

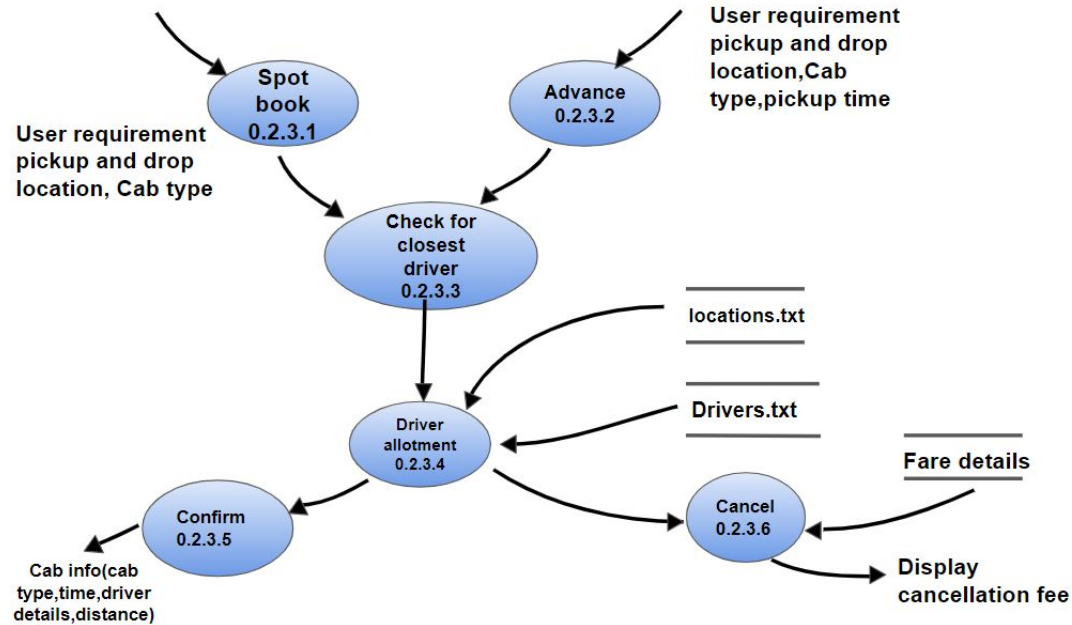
# DATA FLOW DIAGRAM



## LEVEL 1 DATA FLOW DIAGRAM



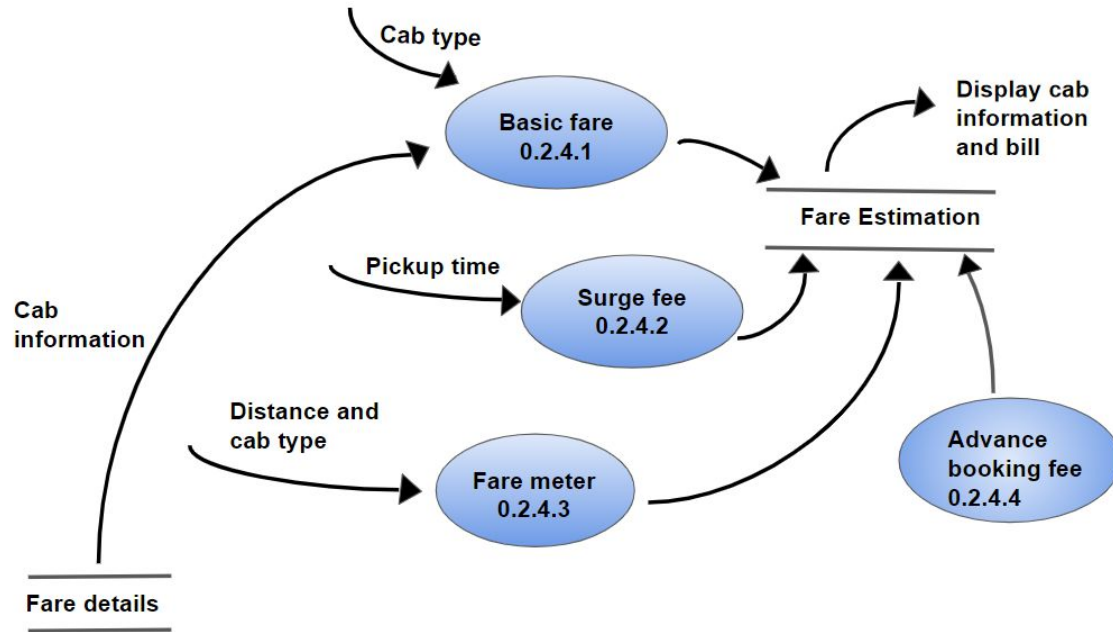
# DATA FLOW DIAGRAM



## LEVEL 2 DATA FLOW DIAGRAM



# DATA FLOW DIAGRAM

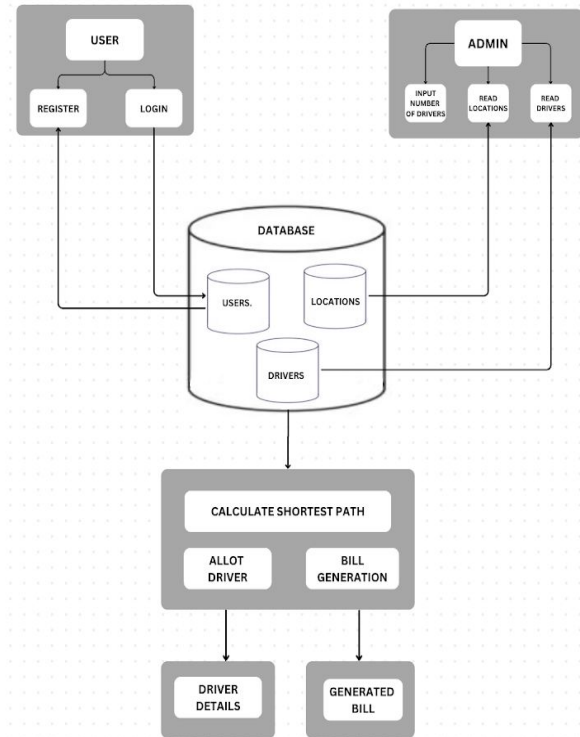


## LEVEL 2 DATA FLOW DIAGRAM

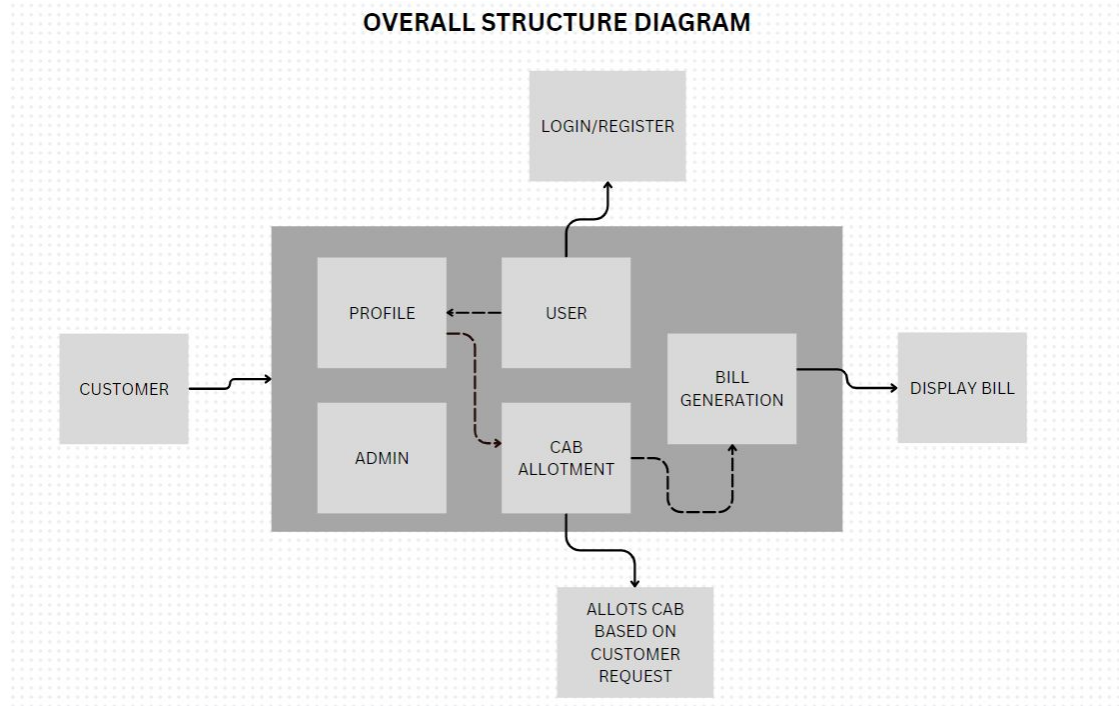




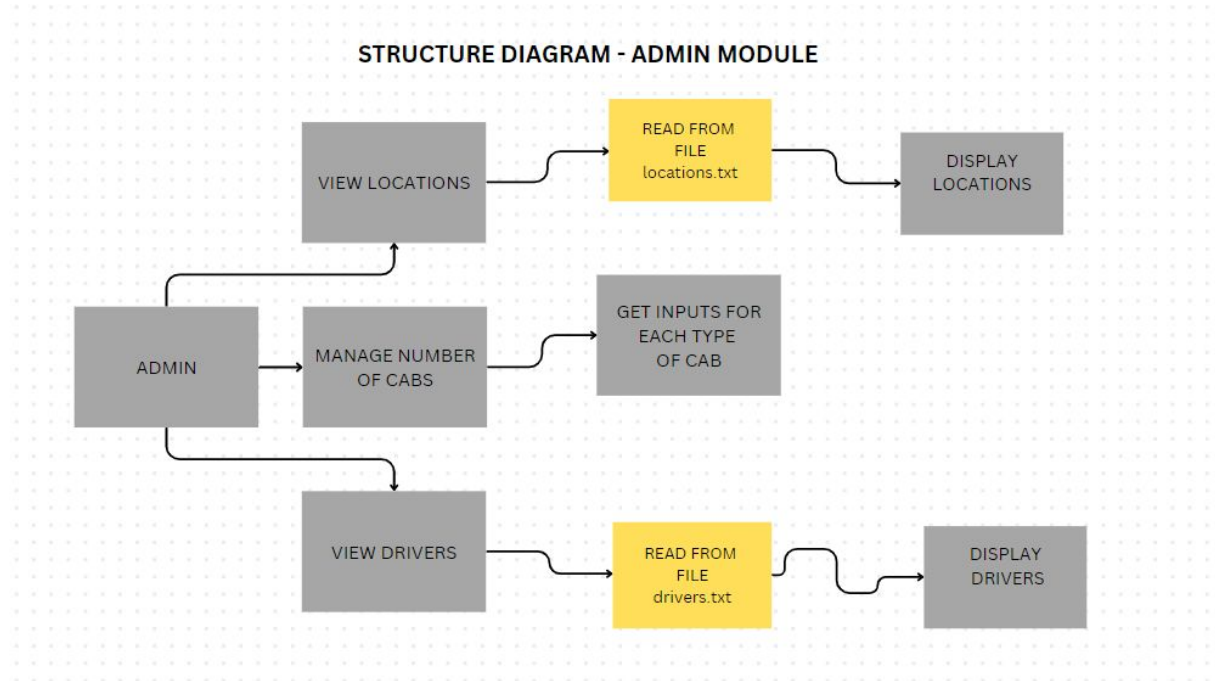
# OVERALL ARCHITECTURE DIAGRAM



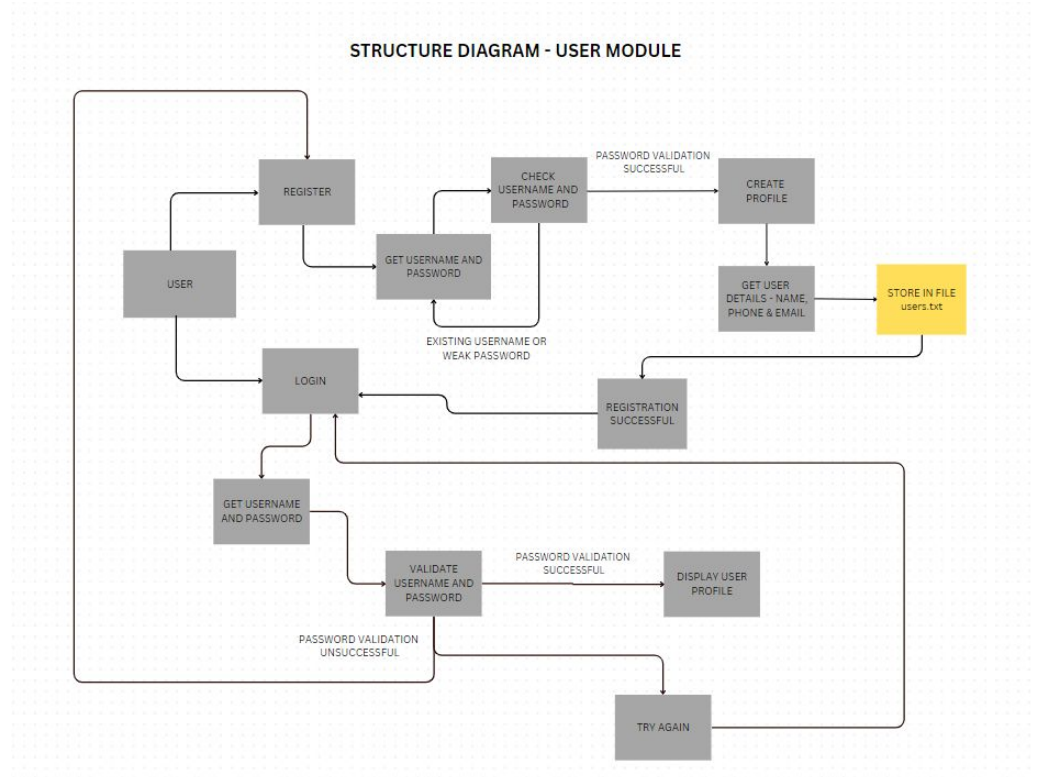
# OVERALL STRUCTURE DIAGRAM



# STRUCTURE DIAGRAM - ADMIN MODULE

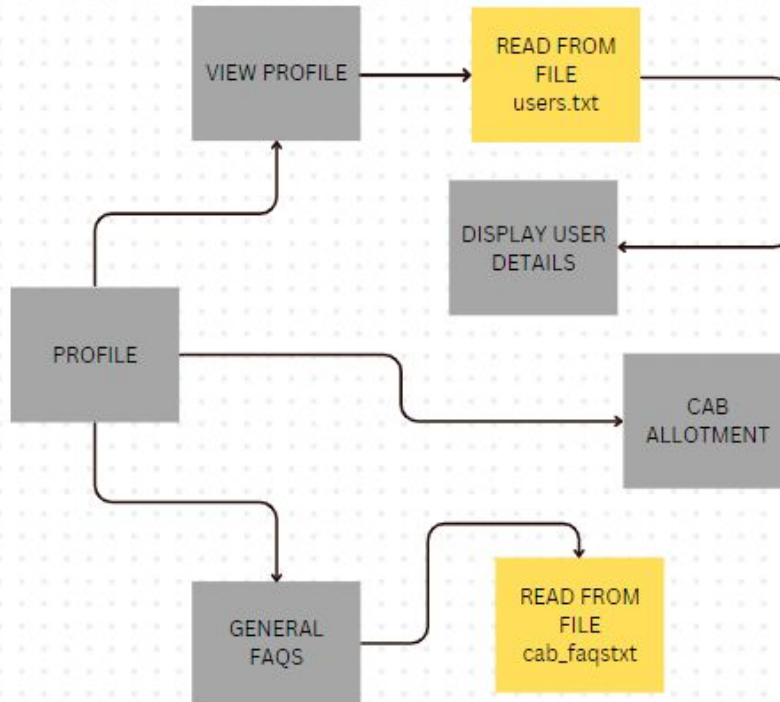


# STRUCTURE DIAGRAM - USER MODULE

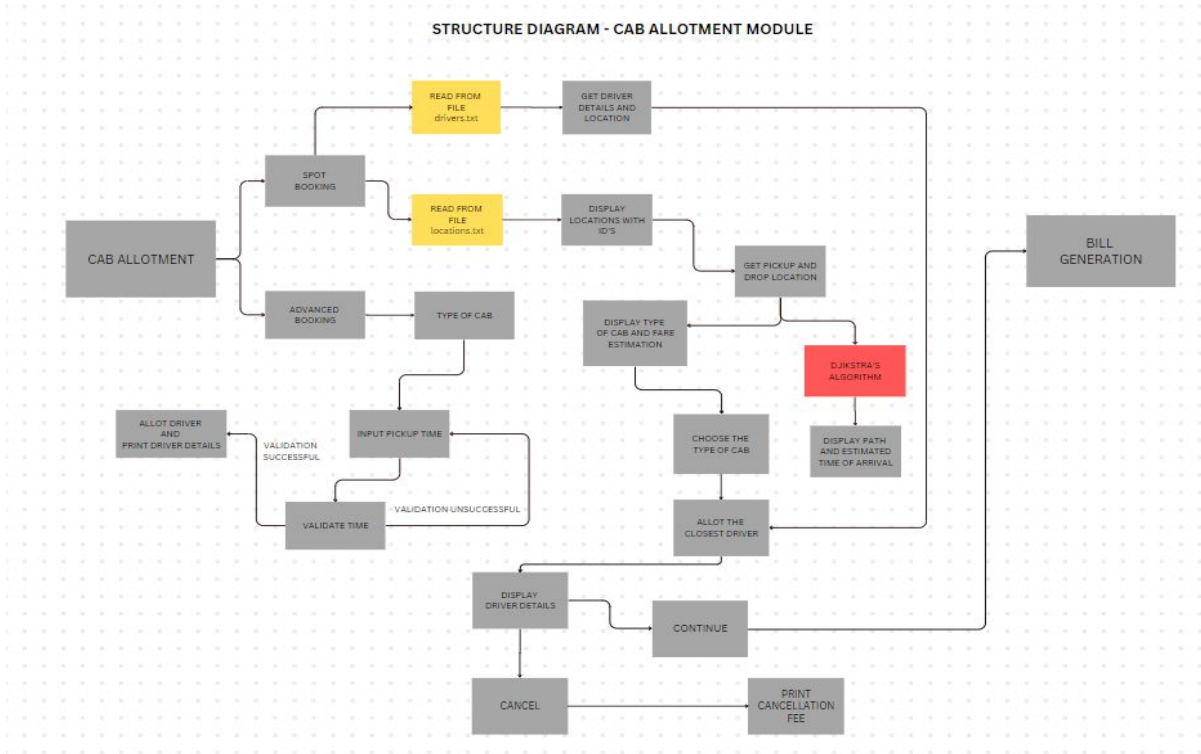


# STRUCTURE DIAGRAM - PROFILE MODULE

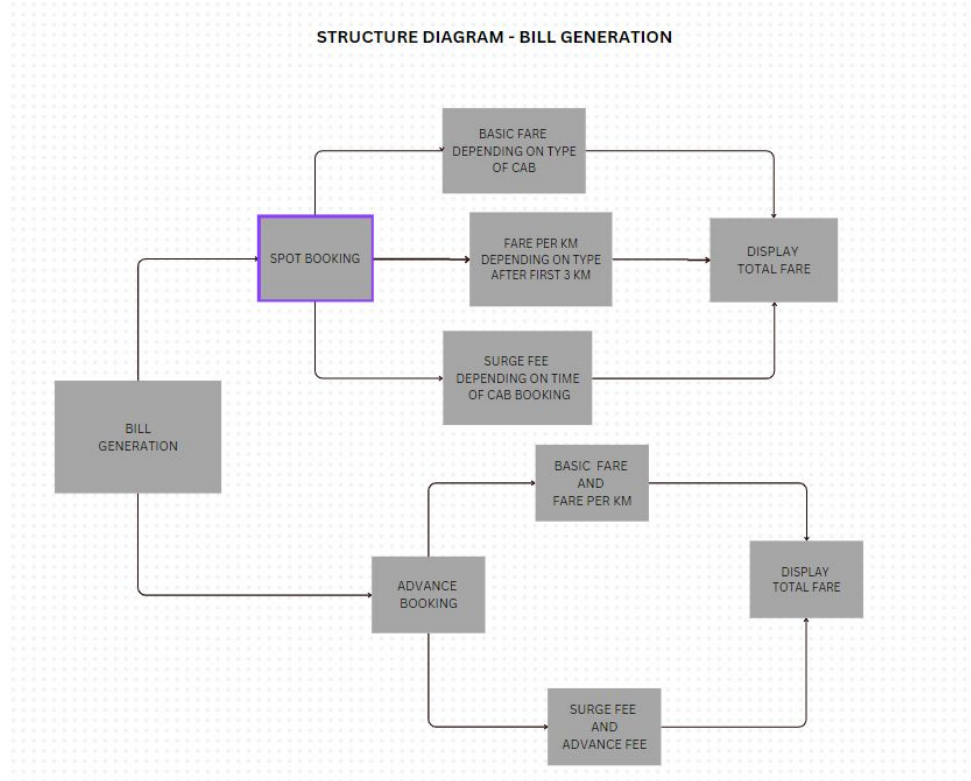
STRUCTURE DIAGRAM - PROFILE MODULE



# STRUCTURE DIAGRAM - CAB ALLOTMENT MODULE



# STRUCTURE DIAGRAM - BILL GENERATION



# TEST CASES - ADMIN MODULE

```
Menu:
1. Admin
2. User
3. Exit

Enter your choice: 1
You selected Admin.

Enter password: *****

-----Welcome Admin-----

1. Manage number of cabs
2. View locations
3. View drivers
4. Exit
Enter your choice: 1
Available cabs:
Enter the number of Mini: 2
Enter the number of Sedan: 3
Enter the number of SUV: 4
Enter the number of Autos: 5
Enter the number of Bikes: 6
```

```
1. Manage number of cabs
2. View locations
3. View drivers
4. Exit
Enter your choice: 2

Locations:
0. Velachery
1. Thoraipakkam
2. Sholinganallur
3. Guindy
4. Madipakkam
5. Ashok_Nagar
6. T_Nagar
7. Anna_Nagar
8. Saidapet
9. Porur
10. Medavakkam
11. Kilpauk
12. Nungambakkam
13. Vadapalani
14. Tambaram
15. Chromepet
16. Pallavaram
17. Egmore
18. Royapettah
19. Besant_Nagar
20. Mylapore
21. Triplicane
22. Marina_Beach
23. Kelambakkam
24. Adyar
```

```
Redirecting...
1. Manage number of cabs
2. View locations
3. View drivers
4. Exit
Enter your choice: 3

Drivers:
0. Sangeetha (mini)
1. Rajesh (mini)
2. Sangeetha (mini)
3. Arjun (mini)
4. Nithya (mini)
5. Karthik (mini)
6. Priya (mini)
7. Rahul (mini)
8. Deepa (mini)
9. Sanjay (mini)
10. Meena (mini)
```



# TEST CASES - USER MODULE

```
Enter your choice: 2
You selected User.

-----Welcome to User Portal!-----

1. Register
2. Login

Enter your choice: 1

Enter username: varshini
Username already exists. Please choose a different one.

Enter username: samarth
```

```
Enter username: samarth

Enter password: *****
Password should be at least 8 characters long.

Enter password: *****
Password should contain at least one uppercase letter.

Enter password: *****
Password should contain at least one lowercase letter.

Enter password: *****
Password should contain at least one special character.

Enter password: *****
Confirm password: *****
Passwords do not match. Please re-enter password.

Enter password: *****
Confirm password: *****

Registration successful!!
```

# TEST CASES - USER MODULE

```
-----Profile Details-----  
  
Enter the details for your profile  
  
Enter your first name: Samarth  
Enter your last name: V  
Enter phone number: 903413442a  
Invalid phone number. Please enter a valid one.  
Enter phone number: 9094925012  
Enter email: samarthgmail.com  
  
Invalid email. Please enter a valid one.  
Enter email: samarth@gmail.com  
Details stored successfully.
```

```
1. Register  
2. Login  
  
Enter your choice: 2  
  
Enter username: ganesh  
Enter password: *****  
Invalid username or password.  
  
1. Try again  
2. Register  
  
Enter your choice: 1  
  
Enter username: jasgalfh  
Enter password: *****  
Invalid username or password.  
  
1. Try again  
2. Register  
  
Enter your choice: 1  
4  
Enter username:sjfbjkas  
Enter password: *****  
Too many failed attempts. Locking out for 30 seconds.  
27
```

# TEST CASES - PROFILE MODULE

---

```
-----Welcome to VIVAR-----
```

```
1. View Profile
2. Update Profile
3. Cab Allotment
4. Cab FAQ
5. Exit:
Enter your choice: 1
```

```
-----Your Details-----
```

```
Name: Samarth V
Phone Number: 9094925012
Email: samarth@gmail.com
```

```
Redirecting to Menu...
```

```
1. View Profile
2. Update Profile
3. Cab Allotment
4. Cab FAQ
5. Exit:
Enter your choice: 2
Select the detail you want to change:
1. First Name
2. Last Name
3. Phone Number
4. Email
Enter your choice: 2
Enter new Last Name: M
Profile updated successfully!
```

# TEST CASES - PROFILE MODULE

---

```
1. View Profile
2. Update Profile
3. Cab Allotment
4. Cab FAQ
5. Exit:
Enter your choice: 2
Select the detail you want to change:
1. First Name
2. Last Name
3. Phone Number
4. Email
Enter your choice: 3
Enter new Phone Number: 7317351712
Profile updated successfully!
```

```
1. View Profile
2. Update Profile
3. Cab Allotment
4. Cab FAQ
5. Exit:
Enter your choice: 1

-----Your Details-----
Name: Samarthh M
Phone Number: 7317351712
Email: samarth@gmail.com
```

# TEST CASES - CAB ALLOTMENT MODULE

```
Locations:
0. Velachery
1. Thoraipakkam
2. Sholinganallur
3. Guindy
4. Madipakkam
5. Ashok_Nagar
6. T_Nagar
7. Anna_Nagar
8. Saidapet
9. Porur
10. Medavakkam
11. Kilpauk
12. Nungambakkam
13. Vadapalani
14. Tambaram
15. Chromepet
16. Pallavaram
17. Egmore
18. Royapettah
19. Besant_Nagar
20. Mylapore
21. Triplicane
22. Marina_Beach
23. Kelambakkam
24. Adyar
```

```
Menu:
1. Spot Booking
2. Advance Booking
3. Exit
Enter your choice: 1
```

```
Enter the cab type (0-4): 0

Available cab type (mini, sedan, suv, bike, auto): mini

Note : The cab type and number should match
Available cab type (mini, sedan, suv, bike,auto): bike

Estimated cost: 20.00

Confirm allotting the cab? (y/n): y
```

```
Shortest Path:

Shortest path details:
Pickup Location: Madipakkam
Drop Location: Ashok_Nagar
Distance: 8 km
Path: Madipakkam -> Ashok_Nagar

Allot Cab:
Cab of type 'bike' allotted successfully.
Driver Details:
Driver ID: 64
Driver Name: Shalini
Phone Number: 9876543273
Car Number: IN64MX3456
Car Type: bike
Estimated Time of Cab Arrival: 9.38 minutes
Rating: 4.5

1.Cancel the booking!
2.Continue

Enter the choice:1

Cancellation Fee: Rs 6.00

-----BILL-----

Final Price: Rs 6.00

-----THANK YOU FOR BOOKING-----
```

# TEST CASES - CAB ALLOTMENT MODULE

```
1.Cancel the booking!
```

```
2.Continue
```

```
Enter the choice:2
```

```
-----BILL-----
```

```
Surge Fee: 0.0%
```

```
Final Price: Rs 35.00
```

```
-----THANK YOU FOR BOOKING-----
```

```
What would you like to do?
```

```
1. Cancel cab booking
```

```
2. Reselect cab type
```

```
Enter your choice (1-2): 2
```

```
Re-directing!!
```

```
Enter pickup location ID: 4
```

```
Enter drop location ID: 16
```

```
Available Cab Types:
```

```
0. Bike - Fare Rate: 95.00
```

```
1. Auto - Fare Rate: 185.00
```

```
2. SUV - Fare Rate: 747.50
```

```
3. Mini - Fare Rate: 382.50
```

```
4. Sedan - Fare Rate: 462.50
```

```
Enter the cab type (0-4): 2
```

```
Available cab type (mini, sedan, suv, bike, auto): sub
```

```
Note : The cab type and number should match
```

```
Available cab type (mini, sedan, suv, bike,auto):
```

```
suv
```

```
Estimated cost: 747.00
```

```
Confirm allotting the cab? (y/n): n
```

```
What would you like to do?
```

```
1. Cancel cab booking
```

```
2. Reselect cab type
```

```
Enter your choice (1-2): 1
```

```
Your cab has been cancelled!.
```

```
-----BILL-----
```

```
Surge Fee: 0.0%
```

```
Cancellation fee : Nil
```

```
Final Price: Rs 0
```

```
-----THANK YOU FOR BOOKING-----
```

# TEST CASES - CAB ALLOTMENT MODULE

Menu:

1. Spot Booking
  2. Advance Booking
  3. Exit
- Enter your choice: 2

Enter pickup location ID (0-24): 4  
Enter drop location ID (0-24): 5  
Current IST time: 20:12:30  
\*\*\*NOTE THAT THE BOOKING TIME SHOULD LAY WITHIN THE RANGE OF 2 TO 10 HOURS ON THE HOUR BOOKING\*\*\*  
Enter booking time (railway timings, HH:MM format): 23:00

Locations:

0. Velachery
1. Thoraipakkam
2. Sholinganallur
3. Guindy
4. Madipakkam
5. Ashok\_Nagar
6. T\_Nagar
7. Anna\_Nagar
8. Saidapet
9. Porur
10. Medavakkam
11. Kilpauk
12. Nungambakkam
13. Vadapalani
14. Tambaram
15. Chromepet
16. Pallavaram
17. Egmore
18. Royapettah
19. Besant\_Nagar
20. Mylapore
21. Triplicane
22. Marina\_Beach
23. Kelambakkam
24. Adyar



# TEST CASES - CAB ALLOTMENT MODULE

```
Available Cab Types:
0. Bike - Fare Rate: 20.00
1. Auto - Fare Rate: 35.00
2. SUV - Fare Rate: 132.50
3. Mini - Fare Rate: 67.50
4. Sedan - Fare Rate: 87.50
Enter the cab type (0-4): 2

Available cab choices: 1 for auto, 2 for suv,
3 for mini, 4 for sedan
Enter the cab type: suv

Estimated cost: 132.00

Advance Booking Fee: 26.40

Confirm allotting the cab? (y/n): n
Cab allotment cancelled
```

```
Confirm allotting the cab? (y/n): n
Cab allotment cancelled.
What would you like to do?
1. Cancel cab booking
2. Reselect cab type
Enter your choice (1-2): 1

Cancellation Fee: Rs 39.60
Cab booking cancelled.
Exiting...
```

```
Confirm allotting the cab? (y/n): y
Please Enter cab type for confirmation:SUV
```

Shortest Path:

Shortest path details:

Pickup Location: Madipakkam

Drop Location: Ashok\_Nagar

Distance: 8 km

Path: Madipakkam -> Ashok\_Nagar

Driver assigned: Prakash

Phone number: 9432109876

Car plate number: TN15CD7890

-----THE

BILL-----

Final Price: Rs 158.40

-----THAN

K YOU FOR CHOOSING VIVAR: )-----

-----



# TEST CASES - CAB ALLOTMENT MODULE

```
What would you like to do?  
1. Cancel cab booking  
2. Reselect cab type  
Enter your choice (1-2): 2
```

```
Re-directing!!
```

```
Available Cab Types:  
0. Bike - Fare Rate: 20.00  
1. Auto - Fare Rate: 35.00  
2. SUV - Fare Rate: 132.50  
3. Mini - Fare Rate: 67.50  
4. Sedan - Fare Rate: 87.50  
Enter the cab type (0-4): 4
```

```
Available cab choices: 1 for auto, 2 for suv, 3 for mini, 4 for sedan  
Enter the cab type: sedan
```

```
Estimated cost: 87.00
```

```
Advance Booking Fee: 17.40
```

```
Please Enter cab type for confirmation:Sedan
```

```
Shortest Path:
```

```
Shortest path details:
```

```
Pickup Location: Madipakkam
```

```
Drop Location: Ashok_Nagar
```

```
Distance: 8 km
```

```
Path: Madipakkam -> Ashok_Nagar
```

```
Driver assigned: RajeshGupta
```

```
Phone number: 7432109876
```

```
Car plate number: TN05IJ7890
```

```
-----THE BILL-----
```

```
Final Price: Rs 104.40
```

```
-----THANK YOU FOR CHOOSING VIVAR: )-----
```

# LIMITATIONS

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## USER AND PROFILE MODULE

1. **Lack of Input Validation:** The code does not perform extensive input validation for user inputs, such as sanitizing inputs to prevent security vulnerabilities like SQL injection or cross-site scripting (XSS) attacks. A robust software system would implement comprehensive input validation to ensure data integrity and security.
2. **Security Considerations:** While the code includes masking the password input during registration and login, it does not employ additional security measures like hashing and salting passwords for secure storage.
3. **Data Persistence :** The code uses a simple file-based approach for storing user data instead of more sophisticated and reliable persistence mechanisms, such as databases or cloud storage solutions.
4. **Scalability:** efficient data structures, algorithms, and database optimizations would be implemented to handle large user bases and high traffic loads effectively.

# LIMITATIONS

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## SPOT BOOKING MODULE

1. **Fixed Locations:** The code assumes a fixed set of 25 locations (0-24) in the graph. The user can choose pickup and drop locations only within this fixed set.
2. **Availability of Drivers:** The code assumes that the availability of drivers for each cab type is fixed and not dynamically updated. The availability is determined by the numDrivers variables in the Graph structure.

## ADVANCE BOOKING MODULE

1. **Driver allotment:-** The Driver for advance booking is allotted randomly based on the cab type. This is done,because we didn't consider the driver's side of the software. So, the driver can't accept the customer's advance booking request. And hence, the bookings are done randomly.
2. **Fixed Locations:** The code assumes a fixed set of 25 locations (0-24) in the graph. The user can choose pickup and drop locations only within this fixed set.