



**CSCI 5308**

**Advanced Topics in Software Development**

**Parking Pool (Group2)**

**User Scenarios**

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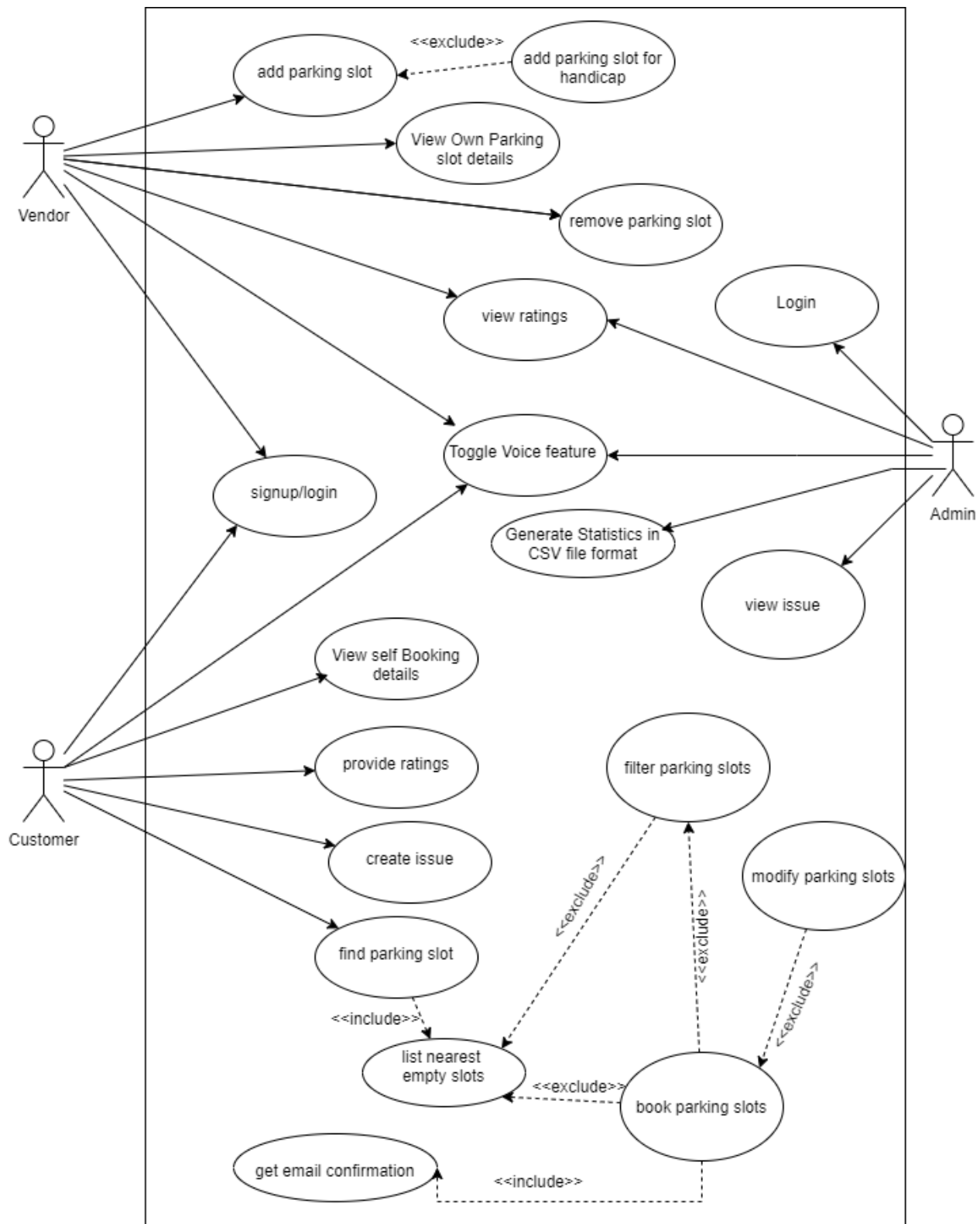
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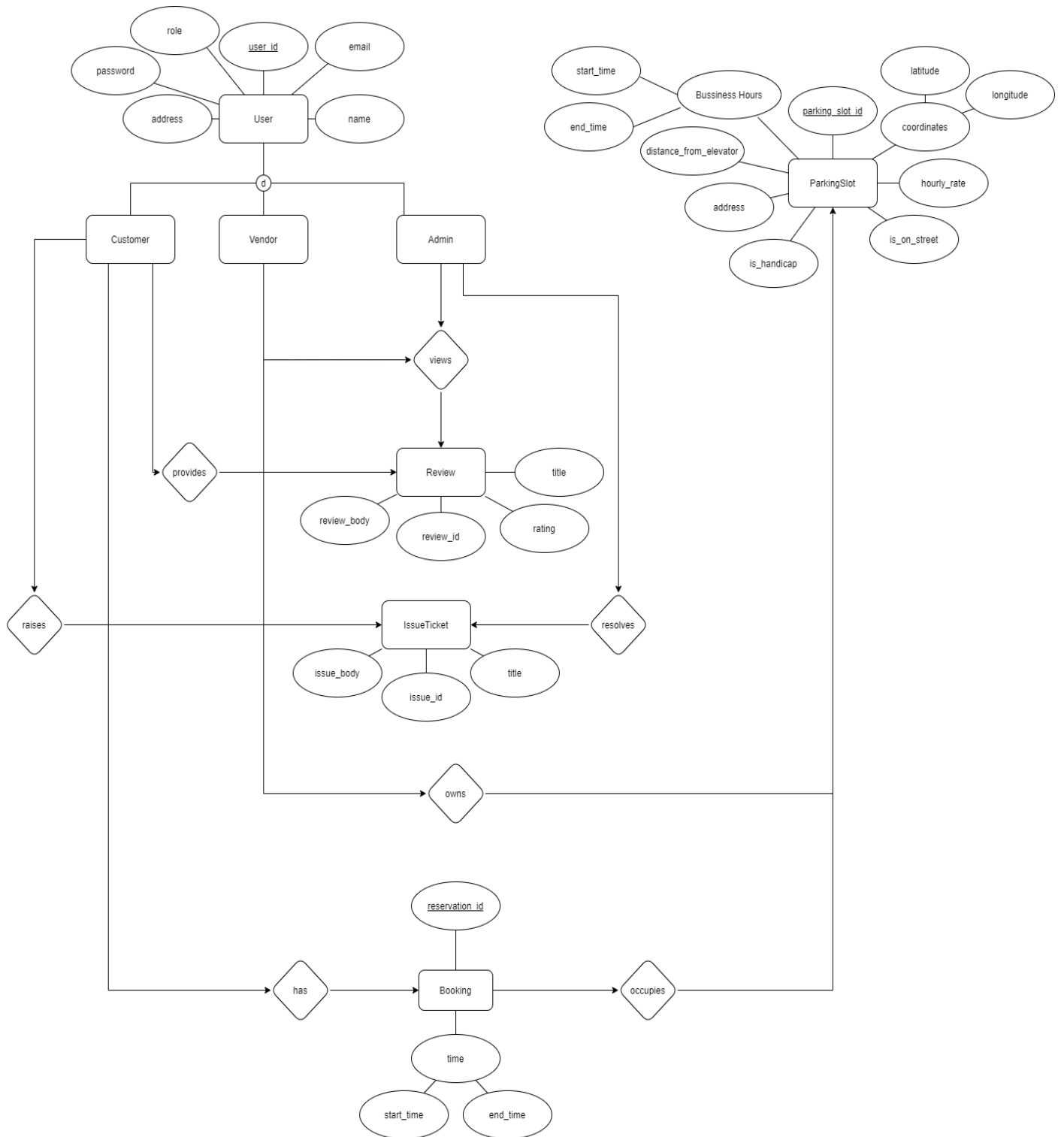
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## 1. Use-Case Diagram:



## 2. Extended Entity Relationship Diagram



### 3. Features

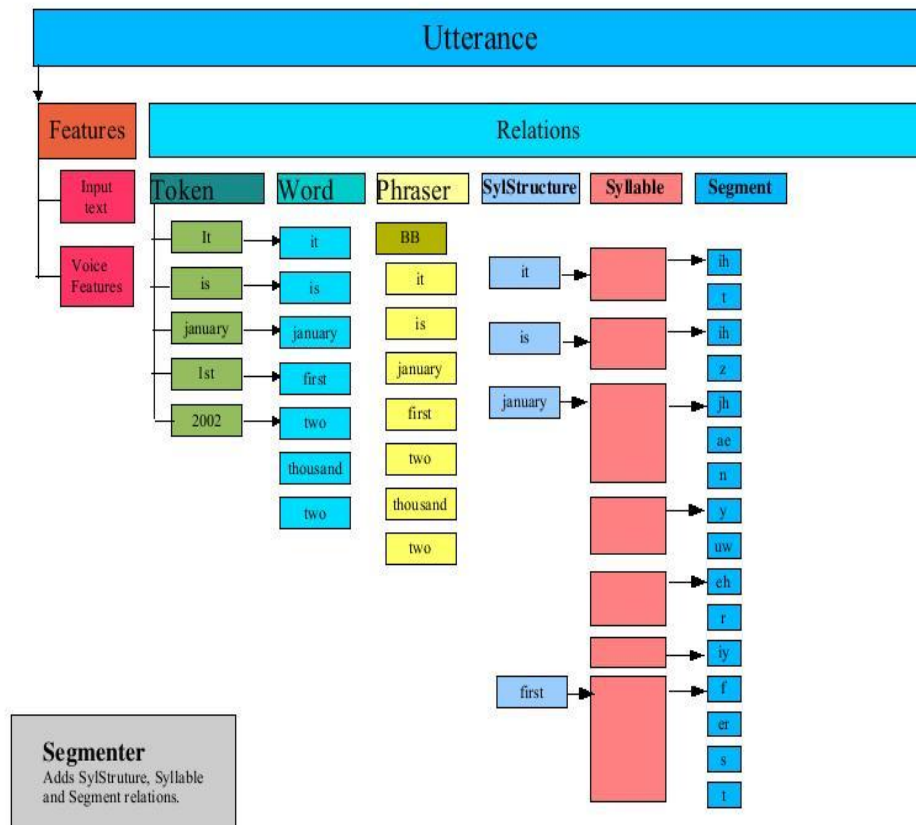
#### 3.1 Text to speech

**Description:** The console text will be converted into audio. Users will have the option, to turn on and off this feature.

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#### HOW DOES IT WORK?

Text is broken up into one or more Utterances, processed by a series of Utterance Processors, and finally output as audio. Figure 1 shows the actual working flow of Text to speech using the sentence “It is January 1<sup>st</sup> 2002”.



**Figure 1: Text to speech**

As shown in figure 1, first the sentence will be converted into tokens, afterward, the tokens will be transferred to words (e.g. Tokens “1st” and “2002” will become “first”, “two thousand two” respectively). Then sequentially words will be converted to phrases, SylStructure, Syllable, and segments. Those segments will become audio.

#### Screenshot:

```
Do you want to turn the Voice Synthesizer on? Yes or No:
yes
Synthesizer will stay on!
Please enter the numbers given below to perform the following action:
1: SignUp
2: Login
Enter your command:
```

Here when user enters the system, he is asked to select an option to have an audio feature. If user selects yes then all the written text will be spoken out during the working time of user.

### 3.2 SignUp

**Description:** Users can sign-up into the application with their name, email, role, address, and password. If the user already exists with the same role, then you cannot sign-up to the system. You will directly be asked for login details.

#### Business Logic:

- We used MD5 algorithm to Hash the password. Hash code of the password will be stored in the database.

#### Screenshots:

```
Please enter the numbers given below to perform the following action:
1: SignUp
2: Login
Enter your command:
1
Please enter your name:
sam
Please enter your email:
sam@gmail.com
Please enter 'c' for customer role, enter 'v' for vendor role :
c
Please Enter your address:
sam palace
Please Enter your password:
Please Reenter your password:
Thank you, for registration. Now you can log in to the system.
```

Here users need to enter signup details. If the user already exists with the same role then he could not sign up to the system. But if a user is new then he will be signed up and redirected to the login option.

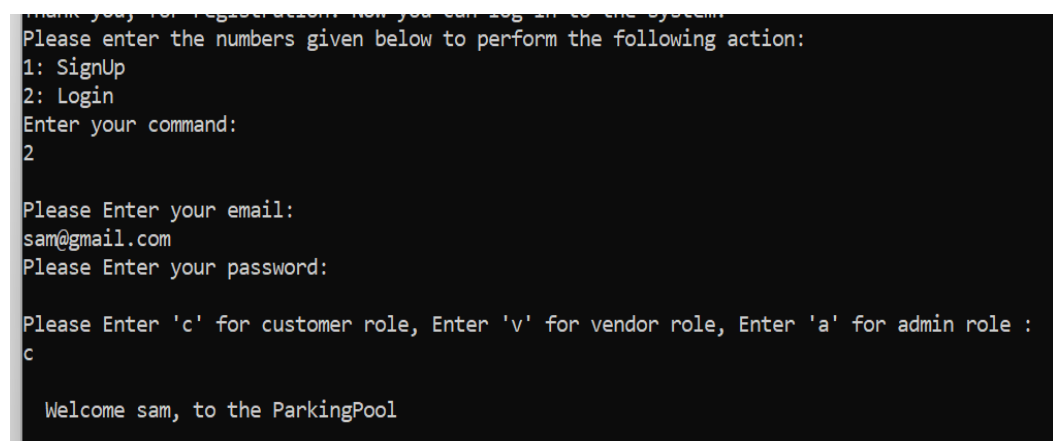
### 3.3 Login

**Description:** Users can Login to the System with their email, password, and role.

**Business Logic:**

- Each entered password will be converted to the Hash code using MD5 Algorithm, and that hash code will be compared with database password column.

**Screenshot:**



```
Thank you, for registration! Now you can log in to the system.
Please enter the numbers given below to perform the following action:
1: SignUp
2: Login
Enter your command:
2

Please Enter your email:
sam@gmail.com
Please Enter your password:

Please Enter 'c' for customer role, Enter 'v' for vendor role, Enter 'a' for admin role :
c

Welcome sam, to the ParkingPool
```

Here user can login to the system with specific role, and based on role User will get appropriate options.

### 3.4 Analytics

**Description:** As an outcome, this feature generates CSV file of Analytics. That CSV file contains parking slot details with total hours of use and total revenue generated till time.

**Business Logic:**

- As a part of business logic this feature works with whole booking and parking slot tables. Based on the parking slot (each slot) we fetch all booking details and compute “total revenue” and “total hours of use”.
- Based on latitude and longitude values we will generate a Google map link. And display it in the analytics.csv file.

## Screenshot:

```
Welcome Admin, to the ParkingPool

Enter the following number to access the corresponding item:
1. Show Analysis of the data for ParkingPool
2. Generate a Spreadsheet for the analytics
3. Exit ParkingPool
2

Please Enter folder Path:
C:\G_drive\asdc
```

	A	B	C	D	E	F
1	Parking_slot_id	Address	Location_link	Revenue_generated	Total_Hours_of_use	
2		1 fgdghfhgfs	https://www.google.com/maps/@44.54645538330078,-62.57567596435547,15z	0	0	
3		2 6225 University Ave, Halifax, NS B3H 4R2	https://www.google.com/maps/@44.6374007,-63.5933855,15z	90.64999866	7	
4		4 5214, Gerrish Street	https://www.google.com/maps/@44.655886,-63.5869577,15z	16.33333333	1.166666667	
5		5 Killam Memorial Library	https://www.google.com/maps/@44.6374007,-63.5933855,15z	0	0	
6		8 Studley House	https://www.google.com/maps/@44.6375052,-63.5940718,15z	14	1	
7						
8						

Here System will ask the admin about the folder path where the admin wants to save his analytics file. Then the system will generate an Analytics.csv file on that path as shown in the second screenshot.

### 3.5 Add Parking slot

**Description:** The parking owner can add a slot with required details like address, longitude, latitude, hourly rate.

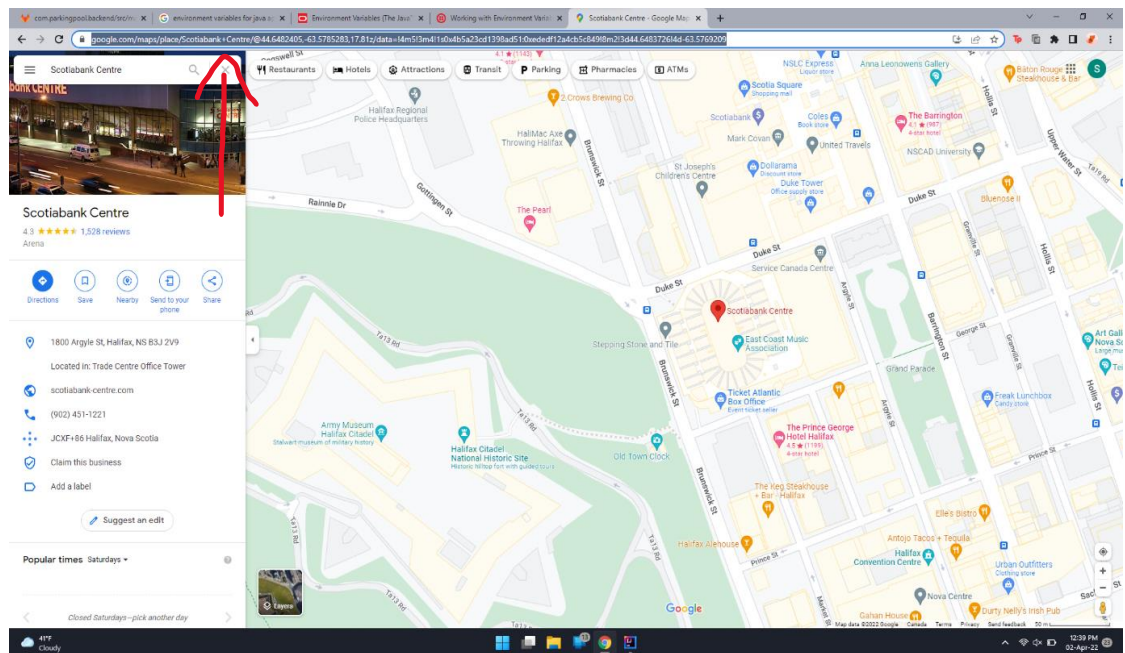
#### Business Logic:

- Here if slot already exists, then user will be redirected to update parking slot option automatically.
- User can add a parking slot for handicap users too.

## Screenshot:

```
Run: ParkingPool
Please Enter your password:
Please Enter 'c' for customer role, Enter 'v' for vendor role, Enter 'a' for admin role :
Welcome User1, to the ParkingPool
Enter the following numbers to access the corresponding item:
1: Add Parking Slot.
2: View My Parking Slots.
3: Exit ParkingPool.
Enter your command:
Enter Google Map URL of the location:
https://www.google.com/maps/place/Scotiabank+Centre/@44.6482405,-63.5785283,17.81z/data=!4m5!3m4!1s0x4b5a23cd11398a051:0xede0f12a4c05c849!8m2!3d44.6483726!4d-63.5769209
```

Here user needs to add Google map URL and other details to add the parking slot. Our system will automatically fetch all the required data from the provided Google Maps URL and stored in the database.



Here user needs to add the above Google map link while entering the parking slot.

### 3.6 Remove Parking slot

**Description:** The parking owners can delete their own parking slots.

**Business Logic:**

- Here as a part of business logic, the User can not remove others' parking slot and if he tries to delete others' slots then a warning message will be displayed.



### Screenshot:

```
*** My Parking Slots ***
1. Delete a Parking Slot.
2. View Reviews.
3. Go back.
Enter your command:
1
Enter the Parking Slot ID you want to delete:
9
The Parking Slot has been deleted successfully!

*** My Parking Slots ***
1. Delete a Parking Slot.
2. View Reviews.
3. Go back.
Enter your command:
|
```

After the Parking Slots have been listed, you end up on the above menu. The user can select to Delete a particular Parking Slot where they will be asked to enter the Parking Slot ID.

### 3.7 Find a Parking slot

**Description:** As a customer, the user can fetch the nearby locations of the Parking Slots and various filters can be applied over it. The filters include sorting by rate, distance from elevator etc.

#### Business Logic:

- To find the nearby slots, we make use of the Euclidean distance algorithm to compute the distance between the user's current location and other parking slot locations.
- There is one more filter "filter according to rate", we display available parking slots from the most affordable to the most expensive.

## Screenshot:

```
Enter your Command:
1
Enter the Google Maps URL of the location you want to find nearby parking locations to:
https://www.google.com/maps/place/Scotiabank+Centre/@44.6482405,-63.5785283,17.81z/data=!4m5!3m4!1s0x4b5a23cd1398ad51:0xededf12a4cb5c849!8m2!3d44.6483726!4d-63.5769209
Enter the date (yyyy-mm-dd) you want to find the Parking Slot for:
2023-06-03
Enter the time (hh:mm:ss) you want to book your slot for:
06:00:00
Enter the time (hh:mm:ss) you want to end your booking:
06:00:00
Do you require the Parking Slot to be handicapped accessible? Yes or No:
1
-----
Parking Slot ID: 9
Distance from Elevator (0 if no elevator): 0
Address: Scotiabank Centre
If the Parking is on Street: Yes
If the Parking is for handicap: No
Hourly Rate: 14.0
Longitude: 44.6482405
Latitude: -63.5785283
Start Time: 06:00:00
End Time: 06:00:00
Google Maps: https://www.google.com/maps/search/?api=1&query=Scotiabank+Centre
-----
Parking Slot ID: 4
Distance from Elevator (0 if no elevator): 0
Address: 5214, Gerrish Street
If the Parking is on Street: No
If the Parking is for handicap: No
Hourly Rate: 14.0
Longitude: 44.655886
Latitude: -63.5869577
Start Time: 06:00:00
End Time: 21:00:00
Google Maps: https://www.google.com/maps/search/?api=1&query=5214,+6Gerrish+Street
-----
```

As shown in the above screenshot, User needs to enter his current location, date and time period, based on that user will get information of convenient parking slot details.

```
Enter the following numbers to access the corresponding item:
1. Book a Parking Slot from above
2. Write a review.
3. Sort according to rate
4. Sort according to distance from elevator.
5. Go Back
Enter your command:
```

User can also have the above options for parking slots.

### 3.8 Google Map parser

**Description:** This will parse the address and coordinates (latitude, longitude) of a location by using the location's Google map URL. Moreover, the URL given out as output while fetching the Parking Slots is also generated dynamically.

**Business Logic:**

- Here we are performing string regex operations to fetch data from the provided Google Map URL.
- While giving out the URL dynamically, we make use of the Google Map's Search Query API [2].

### 3.9 Book parking slot

**Description:** Users can book a convenient parking slot and on successful booking user will get email notification.

**Business Logic:**

- The details of the selected parking slot are fetched from the "Find Parking Slot" feature and the corresponding user details are fetched from User module.
- Booking reference ID is generated and assigned to every booking.
- The details of user and parking slot along with the booking time and date are stored in database.
- The user is notified of successful booking via email.

### 3.10 Email notification

**Description:** This project has the feature to send a notification to the user through email. The emails will be sent from the project's email address – [parkingpoolasdc@gmail.com](mailto:parkingpoolasdc@gmail.com).

**Business Logic:**

- This feature is implemented using the SMTP protocol.
- All the other modules/features can utilize this feature to send notifications to the user.

## Booking Confirmed with Parking Pool



parkingpoolasdc@gma... 15 Mar  
to me ▾



Dear user,

Your Parking has been confirmed for date: 2022-03-16 from 10:40:00 to 10:50:00

### 3.11 Modify booking date

**Description:** The user can modify the date of an existing booking through this feature.

**Business Logic:**

- Once the booking date is successfully changed in the backend, the user is notified on the application as well as through email.

### 3.12 Modify booking time

**Description:** This feature provides the user with the capability to change their booking timings as per their convenience.

**Business Logic:**

- User has the option to modify both the start time of booking and the end time of booking.
- The user is notified once their modification is successfully completed in the back-end.

### 3.13 Cancel booking

**Description:** The user has the option to cancel a previously made booking.

**Business Logic:**

- On selecting this option, the booking is deleted from the back-end and the user is notified of this update.

```

Enter the following numbers to access the corresponding item:
1. Delete a Booking.
2. Go Back
Enter your command:
1
Enter the booking ID you want to delete:
20_726
Booking cancelled Successfully

```

### 3.14 Display bookings

**Description:** This feature provides the capability to search the bookings and display the bookings that match the search criteria.

**Business Logic:**

- The search in the database can be done on the basis of any key; for example, user name, vendor name, dates etc.
- The bookings matching the search criteria are returned from the database and are displayed to the user.

```

2. View My Bookings
3: Exit ParkingPool.
Enter your command:
2
-----
*** Upcoming Bookings ***
-----
There are no bookings
-----

-----
*** Past Bookings ***
-----
Booking ID: 20_726
Booking Date: 2022-04-10
Start Time: 12:30:00
End Time: 13:30:00
Parking Slot Location: https://www.google.com/maps/search/?api=1&query=fqdghfhqfs
-----

```

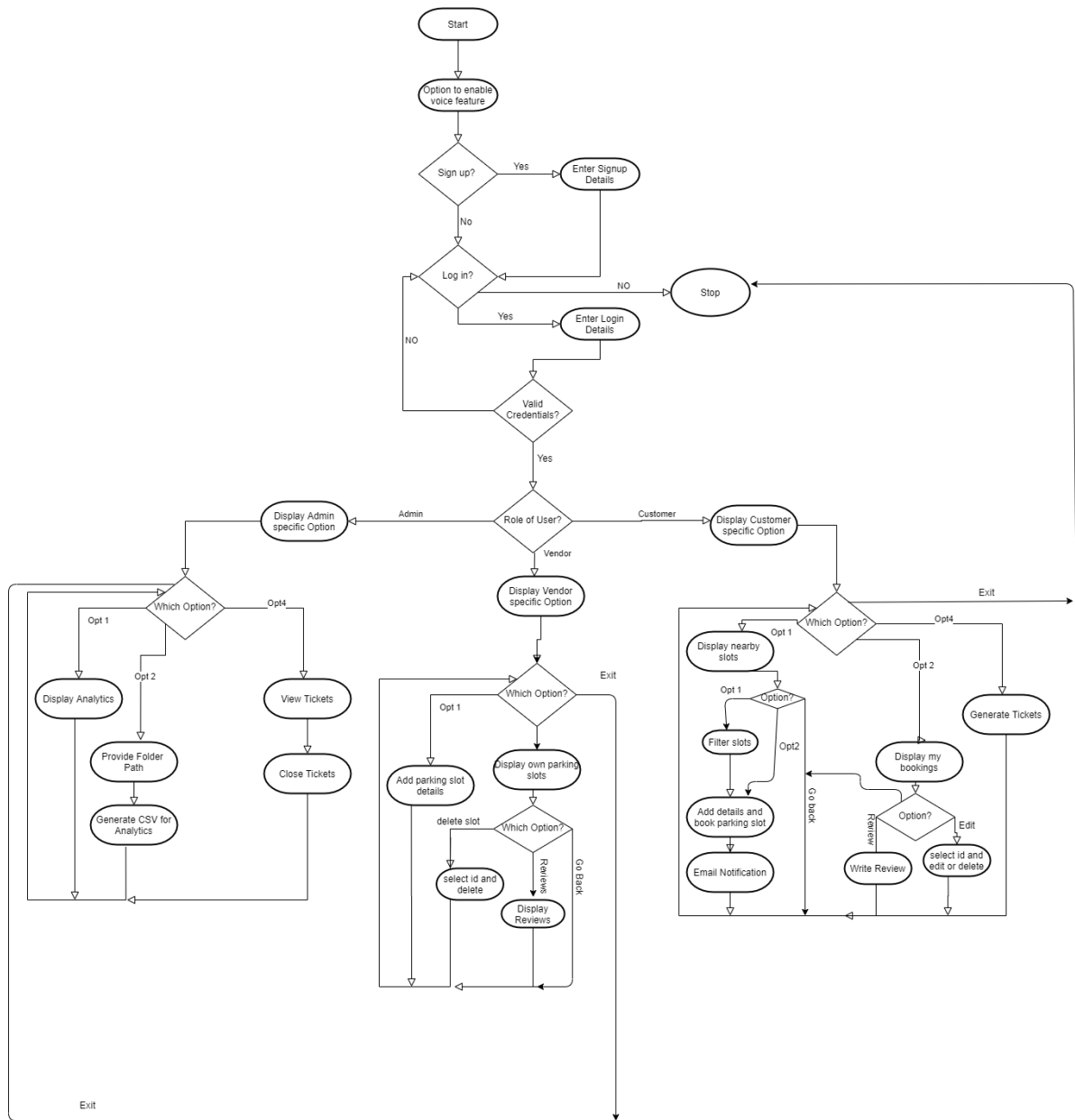
### 3.15 Ratings

**Description:** Customers can provide ratings for their booking, and those ratings can be seen by other users.

### 3.16 Ticketing service

**Description:** This feature enables customer to raise a ticket for unsatisfactory parking services. Admin can view those tickets and take appropriate action.

## 4. Superficial Project flow



## References:

- [1] Freetts.sourceforge.io. 2022. *FreeTTS 1.2.3 - A speech synthesizer written entirely in the Java(TM) programming language*. [online] Available at: <https://freetts.sourceforge.io/> [Accessed 5 April 2022].
  
- [2] Google Developers. 2022. *Google Maps Platform Documentation* / Google Developers. [online] Available at: <https://developers.google.com/maps/documentation> [Accessed 5 April 2022].