Carpark Locating System

MANUAL LOCATION INPUT

SEARCH RADIUS

TOTAL SLOTS

CARPARK SLOT AVAILABILITY

SLOT TYPE

OBTAIN CARPARK DETAILS

SEARCH & FILTER

PINPOINT CAR LOCATION ON MAP

VIEW MAP

OBTAIN DIRECTIONS

FAVORITE CARPARKS

User

Carpark APIs

Google Maps API

<<EXTEND>>

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Use Case Diagram

User Case ID	01		
Use Case Name	Input manually location		
Created By	Joshua	Last Updated by	Ethan
Date Created	03/02/2024	Date Last Updated	08/02/2024
Actor	User,Google Maps API		
Description	This use case allows the user to manually input a location		
Preconditions	User must be able to press on the search bar		
Postconditions	User must be able to click the enter button		
Priority			
Frequency of Use			
Flow of Events	1. User press on search bar 2. User keys in his/her desired location 3. System start to Search and Filter		
Alternative Flows			
Exceptions			
Includes	-		
Special Requirements			
Assumptions			
Notes and Issues			

User Case ID	02		
Use Case Name	Search & Filter		
Created By	Joshua	Last Updated by	Ethan
Date Created	03/02/2024	Date Last Updated	08/02/2024
Actor	User		
Description	This use case is used to show carparks based on location, distance, and availability, with optional toggling of filtering by price		
Preconditions	• User connected to a network with internet access		
Postconditions	• Carpark results displayed • Map display updated		
Priority			
Frequency of Use			
Flow of Events	1. User opens app 2. System show map with selected search radius 3. System start search 4. System filters show final outcomes based on search radius 5. System show outcomes on map		
Alternative Flows			
Exceptions			
Includes	View Map, Preferred Search Radius		
Special Requirements			
Assumptions			
Notes and Issues			

User Case ID	03
Use Case Name	Pinpoint Car Location on Map

Created By	Joshua	Last Updated by	Ethan
Date Created	03/02/2024	Date Last Updated	08/02/2024

Actor	User
Description	Users can point their car's location on the map
Preconditions	User will pin location as car location
Postconditions	• Car location displayed on map • Car location can be unpinned by user
Priority	
Frequency of Use	
Flow of Events	1. User arrives at the carpark 2. User presses pin car location button 3. System ask for carpark slot details 4. User enters parking slot details 5. System then marks car location and slot details
Alternative Flows	
Exceptions	
Includes	-
Special Requirements	
Assumptions	
Notes and Issues	

User Case ID	04		
Use Case Name	Search Radius		
Created By	Joshua	Last Updated by	Ethan
Date Created	03/02/2024	Date Last Updated	08/02/2024
Actor	User		
Description	Users can set his desired search radius such as within 1km or 5km from his location to find an available parking spot		
Preconditions	User navigates to change search radius		
Postconditions	User input the search radius he wants		
Priority			
Frequency of Use			
Flow of Events	1. System displays search results based his/her filters 2. User click on the filter icon 3. User set new desired search radius 4. System show current results according to the new search radius		
Alternative Flows			
Exceptions			
Includes	-		
Special Requirements			
Assumptions			
Notes and Issues			

User Case ID	05		
Use Case Name	View Map		
Created By	Joshua	Last Updated by	Ethan
Date Created	03/02/2024	Date Last Updated	08/02/2024
Actor	User, Google Maps API		
Description	Display of carpark locations within the map.		
Preconditions	User open the application		
Postconditions	1. Display the parking lots closest to the user's location. 2. Display the number of parking spaces available in those surrounding lots.		
Priority			
Frequency of Use			
Flow of Events	1. User open the application 2. System start to Search & Filter 3. System show results on map		
Alternative Flows			
Exceptions			
Includes	NIL		
Special Requirements			
Assumptions			
Notes and Issues			

User Case ID	06		
Use Case Name	Favorite Carparks		
Created By	Joshua	Last Updated by	Ethan
Date Created	03/02/2024	Date Last Updated	08/02/2024
Actor	User		
Description	Bookmarks allow users to view the parking lots they have selected.		
Preconditions	• Users selected their favorite icon in certain parking lots. • Users hit the menu's favorite option.		
Postconditions	• • Favorite parking spaces • • The favorites list is visible		
Priority			
Frequency of Use			
Flow of Events	1. Press the parking bubble. 2. Press the star icon. 3. The parking lot is saved as a preferred		
Alternative Flows			
Exceptions			
Includes	-		
Special Requirements			
Assumptions			
Notes and Issues			

User Case ID	07		
Use Case Name	Show Directions to Carpark		
Created By	Joshua	Last Updated by	Ethan
Date Created	03/02/2024	Date Last Updated	08/02/2024
Actor	Google Maps API		
Description	Obtains the directions to the selected parking lot using the Google Maps API.		
Preconditions	User clicks on the carpark that he has chosen.		
Postconditions	The directions to the selected parking lot are displayed on the map.		
Priority			
Frequency of Use			
Flow of Events	1. Press the "Go Here!" button. 2. Google API uses current location to retrieve pertinent directions to the parking lot.		
Alternative Flows			
Exceptions			
Includes	Calculate Total Travelling Time and Total Distance		
Special Requirements			
Assumptions			
Notes and Issues			

User Case ID	08		
Use Case Name	Carpark Slot Availability		
Created By	Joshua	Last Updated by	Ethan
Date Created	03/02/2024	Date Last Updated	08/02/2024
Actor	Carpark APIs		
Description	For each carpark in the API, the parking lot availability is provided by the parking APIs.		
Preconditions	System starts to do Search & Filter.		
Postconditions	The user interface would show the quantity of parking spaces that are available in the chosen carpark.		
Priority			
Frequency of Use			
Flow of Events	1. Search and Filter starts Obtain Parking Information 2. The Carpark API obtains the availability of parking slots.		
Alternative Flows			
Exceptions			
Includes			
Special Requirements			
Assumptions			
Notes and Issues			

User Case ID	09		
Use Case Name	Show The Carpark Details		
Created By	Joshua	Last Updated by	Ethan
Date Created	03/02/2024	Date Last Updated	08/02/2024
Actor	Carpark APIs		
Description	The carpark details are obtained by the Carpark APIs		
Preconditions	User clicks on the carpark		
Postconditions	The carpark details are then trawled by the Carpark APIs		
Priority			
Frequency of Use			
Flow of Events	1. System start to Search & Filter 2. Carpark API obtains relevant carpark details 3. Show the various color of carpark bubble on map based on availability 4. User clicks on carpark bubble 5. System shows carpark details		
Alternative Flows			
Exceptions			
Includes	Type of slots available, Availability, Total Number of Slots		
Special Requirements			
Assumptions			
Notes and Issues			

User Case ID	10		
Use Case Name	Total Slots		
Created By	Joshua	Last Updated by	Ethan
Date Created	03/02/2024	Date Last Updated	08/02/2024
Actor	Carpark APIs		
Description	The entire capacity of the parking lot can be obtained via the parking APIs.		
Preconditions	System starts to do the Search & Filter.		
Postconditions	Entering the search term would yield information about the parking lot. The total capacity of the parking lot is one of these details.		
Priority			
Frequency of Use			
Flow of Events	1. When you entered the search query, information about the parking lot was displayed. Among these details is the total capacity of the parking lot.		
Alternative Flows			
Exceptions			
Includes			
Special Requirements			
Assumptions			
Notes and Issues			

User Case ID	11		
Use Case Name	Slot Type		
Created By	Joshua	Last Updated by	Ethan
Date Created	03/02/2024	Date Last Updated	08/02/2024
Actor	Carpark APIs		
Description	Depending on the kind of vehicle, a car park has three main types of parking spaces: cars, motorcycles, and lorries/trucks..		
Preconditions	System starts to do Search & Filter.		
Postconditions	The user interface would display the availability of the car park type results.		
Priority			
Frequency of Use			
Flow of Events	1. Search and Filter starts Obtain Parking Information 2. Slot type is retrieved via Parking API		
Alternative Flows			
Exceptions			
Includes			
Special Requirements			
Assumptions			
Notes and Issues			