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| Use Case Name: | View Map |

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| Actor: | User |
| Preconditions: | 1. The user has a mobile phone 2. The app is installed on the mobile phone 3. The app is launched |
| Postconditions: | 1. App is considered launched, and map is visible and interactive |
| Flow of Events: | 1. Launch application 2. Check if map data is downloaded and cached. If not, download and cache map. 3. If at least 1 day since last application launch, redownload and cache map data. 4. Request location data of user. |
| Alternative Flows: | 1. If location setting for the device is disabled, or if the application is prevented from accessing user location, app will pop up a request for location data. 2. If user denies request, exit application. 3. If user accepts request, continue |
| Exceptions: | No map data available (Map not downloaded and user not connected to internet) |

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| Use Case Name: | Set Destination |

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| Actor: | User |
| Preconditions: | App is launched. |
| Postconditions: | Car parks near to the destination are displayed. |
| Flow of Events: | 1. The user types the name of the destination in the search bar 2. A query result is displayed, showing destinations containing the keyword as typed by the user. 3. The user selects the destination by tapping. |
| Alternative Flows: | 1. The user makes a typo. 2. The user corrects the typo. 3. The user continues on back to step 1 of the flow of events. |
| Exceptions: | Location set is not a street. |

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| Use Case Name: | Query Car Parks |

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| Actor: | User |
| Preconditions: | App is launched. |
| Postconditions: | List of car parks matching the query is displayed |
| Flow of Events: | 1. User inputs the destination. 2. The application identifies the specific carpark in the database 3. The application gives feedback ift the action is successful or not.. |
| Alternative Flows: |  |
| Exceptions: | Not a single car park matched the query |

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| --- | --- |
| Use Case Name: | Search Car Park by Name/Code |

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| Actor: | User |
| Preconditions: | Application is launched, car park name or code is available on the API. Map is available. |
| Postconditions: | Searched car park is shown to the user on the map. |
| Flow of Events: | 1. User input the name or code of the car park. 2. The application looks for the name or code of the car park in the API. 3. The application shows the car park to the user on the map. |
| Alternative Flows: | 1. If user enters invalid name or code of the car park. 2. The search function will try to match with the similar names and code for user to select. |
| Exceptions: | No API data available. |

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| Use Case Name: | Show Directions |

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| Actor: | N/A |
| Preconditions: | The directions from user’s current location to the car park is found. |
| Postconditions: | The route to the car park is shown on the map. |
| Flow of Events: | 1. The route is shown on the map as a colored line. 2. The user can optionally choose to show estimated driving time and detailed directions information. |
| Alternative Flows: | N/A |
| Exceptions: | No API data available |

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| --- | --- |
| Use Case Name: | Find Directions |

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| Actor: | N/A |
| Preconditions: | The user’s location is determined and the destination car park location is set. |
| Postconditions: | A route from the user’s current location to the car park is found. |
| Flow of Events: | 1. The application obtains the directions through querying Google Maps API 2. The directions are stored and wait to be displayed later. |
| Alternative Flows: | N/A |
| Exceptions: | No Internet connection.  Access to Google Maps API has failed. |

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| Use Case Name: | Get Nearest Car Parks |

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| Actor: | User |
| Preconditions: | The user location is determined. API of car park is available.. |
| Postconditions: | Nearest car parks will be shown on the map. |
| Flow of Events: | 1. Application displays all the nearest car park available on the map. 2. User is allowed to select the car park they want to park at. |
| Alternative Flows: | N/A |
| Exceptions: | API not available |

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| Use Case Name: | Display All Car Parks |

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| Actor: | N/A |
| Preconditions: | User has checked the ‘display all car parks’ checkbox |
| Postconditions: | All the car parks are displayed on the map |
| Flow of Events: | 1. Application fetches all the car parks in the database 2. All carpark locations are shown on the map with a pointer |
| Alternative Flows: | N/A |
| Exceptions: | No Internet connection.  Access to API failed. |

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| Use Case Name: | Save Destination and Directions |

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| Actor: | User |
| Preconditions: | The route is displayed on the map. |
| Postconditions: | Saved directions is added into the favorites section |
| Flow of Events: | 1. User clicks Save route button 2. User sets up time and days for notification 3. Route is added into the database |
| Alternative Flows: | 1. The user does not enter valid timing information before saving a route. 2. An error message pops up. 3. The application requests the user to allow it to access files on the mobile device. 4. Once granted access, the application will continue onto Step 3. Otherwise, application will not save the route, and warn the user that the route has not been saved. |
| Exceptions: | Out of storage space.  No permissions granted to application to save or load data. |

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| Use Case Name: | Load Destination and Directions |

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| Actor: | User |
| Preconditions: | User has opened Favorite routes |
| Postconditions: | Route is loaded for the user and displayed on the map |
| Flow of Events: | 1. User opens Favorite routes window 2. Selects route from saved routes 3. Route is loaded to the screen |
| Alternative Flows: | N/A |
| Exceptions: | No saved routes exist |

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| Use Case Name: | Rate Car Park |

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| Actor: | User |
| Preconditions: | User is viewing car park details. |
| Postconditions: | Car park's rating is updated |
| Flow of Events: | 1. The user gives a rating and comment to the carpark. 2. The car park's new average rate is recalculated 3. New average rating is displayed |
| Alternative Flows: | 1. No rating is provided. 2. Error message pops up. 3. The application requests the user to allow it to access files on the mobile device. 4. Once granted access, the application will continue onto Step 3. Otherwise, application will not save the route, and warn the user that the route has not been saved. |
| Exceptions: | Out of storage  No permissions granted to application to save or load data. |