**Functional Requirements**

1. Once the application is launched, the user must be allowed to choose to either log in using Google account or register an account using on the application or skip login and use the application directly.

1.1. If the user chooses to log in,

1.1.1. New user can register using his Google account.

2.1.1.1. Once registration is complete, the user must be able to log in using his Google account.

1.1.2. Existing user can login using his Google account.

1.1.2.1. Once the user logs in, the application must be able to let the user remain logged in for subsequent launches of the application.

1. During registration, the application must allow users to create a profile by entering their personal information.

2.1. The application must allow the user to enter the details of their First Name, Last Name, Gender, Age and Work Level.

2.1.1. The application must allow the user to choose from 5 different Work Levels: Secondary School, Junior College, Polytechnic, University and Professional Work.

1. Once logged in, the application must request for the user’s permission to access the user’s current location via GPS.

3.1. The application must allow the user to choose to set his location as his current location or enter another location.

3.1.1. If the user chooses his location as his current location, the application must allow the user to choose his preferred maximum distance using a slider with 2km the maximum distance..

3.1.2. If the user chooses to enter another location, the application must allow the user to search for a specific location using the search bar by entering the name or postal code of the location.

3.1.2.1. Then, the application must allow the user to choose his preferred maximum distance using a slider with 2km the maximum distance.

1. The application must display results on the ‘Map’ page regardless of whether the user is logged in.
2. The application must display results on the ‘Map’ page only if the user has granted permission to access his current location.
3. The application must allow the user to filter his display results in the ‘Map’, ‘Locations’ and ‘Jios’ pages by the following, although not all inputs are mandatory:

6.1. Type of location

6.1.1. 3 types of locations to choose from: Cafe, Public Library or any.

6.1.1.1. If the user chooses the ‘Cafe’ option, the application must allow the user to indicate his preferred price range for food and beverages.

6.1.1.1.1. Price range can be indicated by stating the minimum and maximum prices respectively.

6.1.1.2. If the user chooses ‘Library’ , the application will not prompt the user to indicate his preferred price range.

6.2. User’s visiting timing

6.2.1. The application must allow the user to input his start and end time for visiting on that particular day.

6.2.2. Example: Start 9.00am, End 3.00pm.

6.2.3. The application must show results with locations that have opening hours that match the user’s visiting timing.

1. The application must display all available locations as map markers on the ‘Map’ page.

7.1. The application must allow the user to use two fingers to pinch to zoom in or out of the map.

7.2. The application must allow the user to use two fingers to pinch to move around the map.

1. Once the user taps on any of the map markers on the map, the application must display the following information:

8.1. Location Type

8.1.1. 2 types: Cafe, Public Library

8.2. Location’s Full Name

8.3. Location’s Opening Hours

8.3.1. The application must only display locations that are currently opened based on system time.

8.3.2. The application must display the daily opening hours of the location.

8.4. Location’s Price Range (For cafes only)

8.4.1. The application must indicate the location’s price range using either one of the 3 signs: $, $$, $$$

8.5. Location’s Crowdedness Level

8.5.1. The application must indicate the location’s crowdedness level in real time using either one of 3 statuses: Not so busy, A little busy, Busy

8.6. Location’s rating scores, total number of ratings and reviews

8.6.1. When the user wants to leave a rating or review, the application must prompt the user to login before he can do so.

8.6.1.1. If the user is already logged in, the user must be able to:

8.6.1.1.1. Rate overall experience out of 5 stars

8.6.1.1.2. Rate crowdedness level out of 5 stars

8.6.1.1.3. Leave a review (Optional)

8.6.1.2. If the user is not logged in, the application must prompt the user to login.

1. The application must display results on the ‘Locations’ page irregardless of whether the user is logged in.
2. The application must display results on the ‘Locations’ page irregardless of whether the user has granted permission to access his current location.
3. The application must allow the user to sort the display results on the ‘Locations’ page by the following in ascending order:

11.1. Distance from set location

11.1.1. The application must allow the user to sort the display results based on distance from the set location only if the user had granted permission to access his current location.

11.2. Location’s Price Range

11.2.1. The application must allow the user to sort the display results based on the location’s price range only if the user had chosen to filter his search results by cafes.

11.3. Location’s Crowdedness Level

1. The application must display all available locations on the ‘Locations’ page in a list format.

12.1. In each listing, the application must display the following information:

12.1.1. Location’s Full Name

12.1.2. Location’s Distance from Set Location in metres

12.1.3. Location’s Price Range

12.1.3.1. The application must indicate the location’s price range using either one of the 3 signs: $, $$, $$$

12.1.4. Location’s Crowdedness Level

12.1.4.1. The application must indicate the location’s crowdedness level in real time using either one of 3 statuses: Not so busy, A little busy, Busy

1. The application must display results on the ‘Jios’ page only if the user is logged in.
2. The application must display results on the ‘Jios’ page only if the user has granted permission to access his current location.
3. The application must allow the user to sort the display results on the ‘Jios’ page by the following in ascending order:

15.1. Distance from set location

15.1.1. The application must allow the user to sort the display results based on distance from the set location only if the user had granted permission to access his current location.

15.2. Location’s Price Range

15.2.1. The application must allow the user to sort the display results based on the location’s price range only if the user had chosen to filter his search results by cafes.

15.3. Location’s Crowdedness Level

1. The application must display all available locations on the ‘Jios’ page in a list format.

16.1. In each listing, the application must display the following information:

16.1.1. Location’s Full Name

16.1.2. Location’s Distance from Set Location in metres

16.1.3. Location’s Price Range

16.1.3.1. The application must indicate the location’s price range using either one of the 3 signs: $, $$, $$$

16.1.4. Location’s Crowdedness Level

16.1.4.1. The application must indicate the location’s crowdedness level in real time using either one of 3 statuses: Not so busy, A little busy, Busy

16.1.5. Jioer’s Work Timing

16.1.5.1. The application must display the Jioer’s Work Timing.

16.1.6. Jioer’s Short Description

16.1.6.1. The application must display a short description of no more than 100 words.

1. The application must allow the user to create a new ‘Jio’ on the ‘Jios’ page.

17.1. If the user is already logged in,

17.1.1. The user can create a new ‘Jio’ by clicking on the ‘+’ button at the bottom right of the ‘Jios’ page.

17.1.2. The user has to input the following information:

17.1.2.1. Location’s Full Name

17.1.2.2. Jioer’s Work Timing

17.1.2.2.1. The application must allow the user to choose his work timing from a drop-down menu of timings with 1-hour intervals. (e.g. 1.00pm, 2.00pm)

17.1.2.3. Jioer’s Short Description

17.1.2.3.1. The application must allow the user to input a short description of no more than 100 words.

17.1.3. The application must create a new ‘Jio’ listing with the input information (Location’s Full Name, Jioer’s Work Timing, Jioer’s Short Description) and information derived from its own database (Location’s Price Range, Location’s Crowdedness Level).

17.2. If the user is not logged in,

17.2.1. The user cannot click on the ‘+’ button.

17.2.2. The application must prompt the user to log in or sign up.

1. Database implementations
   1. The application must have a user information database which stores the information collected in 2, using their gmail address as key.
   2. The application must have a location information database which stores the information in 4, 5, 6 and 7 using the location name as key.

**Non Functional Requirements**

1. Performance Requirements:

1.1 The developers must troubleshoot any problems faced by users every day.

1.2 The application must be able to support up to 1000 concurrent users.

1.3 The application must be available to users for 24 hours a day.

1.4 The application must allow user to reach their profile page in up to 3 touches.

1. Usability Requirements:

2.1 The application must have visible buttons.

2.2 The application must provide drop-down list for all filters.

2.3 The application must be available in English to accommodate the medium of communication in Singapore.

2.4 The application must be operable with a touch screen.

2.5 The application must be operable with either hands.

2.5.1 User must be able to perform the following functions with one hand.

2.5.2 Search for locations based on what user desires.

2.5.3 Search for ‘Jios’ based on what user desires.

2.5.4 Create a ‘Jio’ based on what user desires.

2.6 The application must alert users to try again if network connection is unavailable.

1. Reliability Requirements:

3.1 The application must provide correct and accurate results for all queries.

3.2 The application must be available to users in 2 hours if there is any failure of the

application.

1. Other Requirements:

3.1 The application must be able to retrieve the following information from Google Places API.

3.1.1 Location’s Full Name

3.1.2 Location’s Crowdedness Level

3.1.3 Location’s Opening Hours

3.1.4 Location’s Price Range

3.1.5 Location’s Address

3.2 The application must be able to process user’s login in Gmail.

3.3 The application must store the following data into databases.

3.3.1 Data from Google Maps API

3.3.2 Data from account creation using application

3.3.3 Data from User Reviews

3.3.4 Data from ‘Jios’

**Data Dictionary**

| **Term** | **Description** |
| --- | --- |
| Map | A page where users can search for places to study or work using Google Maps. |
| Locations | A page where users can search for places to study or work from a list of places. |
| Jios | A page where users can search for people to study or work with from a list of Jioers’ listings. |
| Jio | A listing posted on ‘Jios’ page by a ‘Jioer’. |
| Jioer | A user who is looking for people to study or work with. |
| Map marker | An indication of where the place is on the ‘Map’ |
| Cafe | A small restaurant selling light snacks and drinks. |
| Public Library | A building containing a collection of books and has places for study or work. |
| Co-sharing space | A conducive space for study or work, includes community centres, collaboration hubs and social spaces |
| Set location | A user can set his location based on his current location or a specific location. |
| Price range | Range of prices of food and beverages sold at the cafes |
| Crowdedness level | Measures how packed the place is in real-time |