**Requirements Specification Document**

**Skip the Lines**

**Puzzled Software Solutions**

**October 15, 2019**

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# Revision History

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| --- | --- | --- | --- |
| **Name** | **Date** | **Reason for Changes** | **Version** |
| James | Oct 5 2019 | Initial document creation from RD 1.0 | 0.0 |
| James | Oct 7 2019 | Worked on modifications based on TA feedback and client RD 1.1 | 0.1 |
| **<REDACTED>** | Oct 7 2019 | Made modifications based client feedback for RD1.1 including sections: Glossary of Terms, 1.0, 2.1, 2.2, 2.5, 2.6, 3, 3.1.2, 4.3  Listed potential Use Cases (at the end of the document) and created an example of one. | 0.2 |
| **<REDACTED>** | Oct 8 2019 | Added UX/UI and Koogle Account to the Glossary of Terms | 0.3 |
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| Puzzles Software Solutions | Oct 15 2019 | Proofreading, editing, finalizing use cases. | 1.0 |

# 1 Introduction

## 1.1 Purpose

Skip the Lines is an application that will provide each of its customers with the ability to make a reservation at a restaurant as well as provide an estimation of wait times for nearby restaurants. The consequent aim of these services is to reduce the size of lineups among all affected restaurants, cut customers wait-times in line at a restaurant, and assist restaurant owners to better allocate resources such as food supply. This Requirements Specification Document describes a subsystem of Skip the Lines where every aspect is included except the administrator user class features.

## 1.2 Project Scope

The features of Skip the Lines are to be implemented as an extension of Koogle Maps, one of Koogle’s existing services. This integration is essential in providing Skip the Lines's main feature: letting each Koogle user make a table reservation at a restaurant listed on Koogle Maps. Skip the Lines features are expected to reduce wait times among affected restaurants, provide a high accuracy wait-time estimations, reduce the frequency and size of lineups outside restaurants and reduce the amount of time restaurants must spend to coordinate reservations.

## 1.3 Glossary of Terms

|  |  |
| --- | --- |
| **Customer** | A user that is looking for a restaurant to dine at. |
| **Device Location Detection** | The mechanisms for which a device uses to detect its own geographical location. |
| **End Time** | The time that a group’s session with a table ends. |
| **Group** | A collection of one or more customers that eat together at a table. |
| **Koogle Account** | Provides Koogle-wide access to Koogle products such as Kmail, using the same username and password. |
| **Koogle Maps** | A web mapping service that offers satellite imagery, aerial photography, street maps, 360° panoramic views of streets, real-time traffic conditions, and route planning for traveling by foot, car, bicycle and air, or public transportation. |
| **Open Table** | An online reservation service that allows a user to find and book a table at a desired restaurant. |
| **PII** | Personal Identifiable Information is any data that could potentially identify a specific individual. |
| **Reservation** | A request made by a customer to hold a table for a group where the group’s size and the start time are both specified by the customer. |
| **Reservation Hold Time** | The amount of time a reservation is held after the reservation's start time before it is cancelled. This will be specified by each restaurant. |
| **Restaurant** | An establishment where people go to eat meals that are cooked and served on the premises. |
| **Start Time** | The time that a group’s session with a table begins. |
| **Table** | A table in a restaurant that can hold one group of customers at a time. |
| **UI** | User Interface involves the look and feel, or the presentation and interactivity of the system. |
| **UX** | User Experience is the process of enriching customer satisfaction by improving the ease of use provided in the interaction between the customer and the system. |
| **Wait Queue** | A first in first out list of all the groups waiting for an available table at a given restaurant. |
| **Wait Time** | The amount of time a group has to wait before receiving a table at a given restaurant. |

## 1.4 References

“Koogle's Website”, Home. [Online]. Available: https://skipthelines.vernonliu.com/. [Accessed: 26-Sep-2019].

“OpenTable”, Find your table for any occasion. [Online]. Available: https://www.opentable.ca [Accessed: 28-Sep-2019].

“RFP”, RFP. [Online]. Available: https://skipthelines.vernonliu.com/rfp.html/. [Accessed: 15-Oct-2019].

“RD 1.1”, RD 1.1. [Online]. Available: https://skipthelines.vernonliu.com/rd.html. [Accessed: 15-Oct-2019].

## 1.5 Overview

Requirements Specification Document (RSD) 1.0 aims to provide clarification on the aspects of Skip the Lines, such as UI/UX interface features, functional, and non-functional requirements. Included in the System Features section are use case diagrams for each feature. The RSD will outline what has been proposed by the client in consideration of the Request for Proposal (RFP) and Requirements Document (RD) 1.1 documents on Koogle’s website and various client meetings. This document contains an overall description, list of system features, external interface requirements and other non-functional requirements.

# 2 Overall Description

## 2.1 Product Perspective

Currently, Koogle doesn’t have a system for reserving a table at a restaurant. Although resources exist for measuring restaurant quality and reservation capabilities, there is not a service that provides real-time estimations of wait times. Koogle wants Skip the Lines to provide such real-time estimates along with an integrated table reservation request system. This system will hold tables for a customer and notify that customer when a table becomes available. There is an application called OpenTable which allows a customer to make a reservation at a restaurant. Skip the Lines will implement the functionality of OpenTable with the addition of features such as: integration into Koogle Maps, real-time wait estimates, and notifications for when a restaurant has a table available. Skip the Lines will be a new system integrated into Koogle Maps.

## 2.2 Product Features

The main feature of Skip the Lines will allow a customer to make table reservations at nearby restaurants. In addition, a customer can select a certain area in Skip the Lines, all registered restaurants in that area will be listed with the wait time of a table.

## 2.3 User Classes and Characteristics

The three user classes in order of their importance to be satisfied by Skip the Lines are: customer, restaurant, and Koogle administrator.

* *Customer*

A customer is any person with a phone, a tablet or a computer and an internet connection who has a Koogle account. Through the customer interface, customers can view each nearby restaurant, view each restaurant's respective wait time estimate, and make a reservation at each restaurant. Customers are expected to have the lowest level of technical expertise and are the most important class to satisfy.

* *Restaurant*

The restaurant class is representative of a dining establishment that is registered with Skip the Lines. Skip the Lines will provide a restaurant interface which will allow each restaurant to specify their corresponding reservation hold time and view their corresponding wait queue. With respect to the customer class, restaurants will have a slightly higher level of technical expertise and are less important to satisfy.

* *Koogle Administrator*

This user class represents an employee of Koogle who has full access to Koogle’s database and the administrative menus of Skip the Lines. This user has the highest level of technical expertise and is a representative of Koogle.

## 2.4 Operating Environment

Skip the Lines will run on mobile mobile phones through Koogle Maps, and web browsers through the Koogle Maps website for customers and restaurants, and administrators will have a dedicated web interface for managing the service. The web interface for administrators is not part of the scope of this document.

Skip the Lines will operate on the following browsers: Internet Explorer 11+, Edge Browser 44.18362.267.0+, Chrome 77.0.3865.90+ , Opera 2019+ and Firefox 69.0.1+.

Skip the Lines will operate on the following mobile operating systems: iOS 11+ and Android 7+.

## 2.5 Design and Implementation Constraints

The following design and implementation constraints highlight the issues that will limit the options available:

* Skip the Lines requires a registered restaurant to have a tablet device.
* Skip the Lines requires a registered restaurant to have access to the internet.
* Any PII must be securely stored in Koogle’s encrypted MySQL 8.0 database.
* The completed software must be maintained by Puzzled Software Solutions.
* Skip the Lines will be hosted on Koogle’s Ubuntu Server 18.04.3 LTS servers and MySQL 8.0 database systems.

## 2.6 Assumptions and dependencies

In order for Skip the Lines to excel, the following assumptions about the environment are made:

* Each Skip the Lines user has a smart device or computer with a mobile browser.
* Each Skip the Lines user must have an internet connection.
* Koogle Servers and Databases will host Skip the Lines system, details outlined in section 2.5 Design and Implementation Constraints.
* The Puzzled Software Solutions team will have access to Koogle Servers in order to test, deliver, and maintain the Skip the Lines software.

# 3 System Features

With respect to the three user classes, Skip the Lines will have the following features:

* Customer
  + Check wait times for a restaurant.
  + Reserve a table at a restaurant.
  + Pre-order food while creating a reservation (Requires customer payment information to be on file).
* Restaurant
  + Create an account with Skip the Lines
  + Remove account from the Skip the Lines system.
  + View each customer in the restaurant's respective wait queue.
  + Add or remove a customer from their respective wait queue.
  + For each customer in their respective wait queue, a restaurant can view that customer's pre-ordered food.
* Administrator
  + This document does not cover the scope of administrator use of Skip the Lines.

**Use Case Diagram:**

The following use case diagram shows how all the use cases and actors interact with each other.

Customer

Restaurant owner

Browse wait-times

Remove customer

Add customer

Delete account

Food preferences

Book reservation

Pre-order food

Cancel reservation

Create account

View reservation list

View pre-ordered food

Skip the Lines System

Include

Extend

Restaurant employee

## 3.1 Customer Interface System

This feature facilitates the ability for a customer to access services in Skip the Lines.

|  |
| --- |
| **Use Case: Browse restaurant wait times** |
| **ID:** UC-1 |
| **Brief description:** A customer views a restaurant’s wait time estimates. |
| **Actor(s):** Customer |
| **Preconditions:**   1. The customer must have a Koogle account and access to Koogle Maps. |
| **Main flow:**   1. The customer logs in to their Koogle account. 2. Through Koogle Maps, the customer selects the Skip the Lines link for a specific restaurant. 3. The wait time estimate for the restaurant is displayed to the customer. |
| **Postconditions:**   1. The customer knows the wait time estimate for the restaurant. |
| **Alternative flow(s):** None |

|  |
| --- |
| **Use Case: Select food preferences** |
| **ID:** UC-2 |
| **Brief description:** A customer sets their food preferences for their Koogle account. |
| **Actor(s):** Customer |
| **Preconditions:**   1. The customer must have a Koogle account. |
| **Main flow:**   1. The customer logs in to their Koogle account. 2. While the customer’s food preferences are invalid 2.1 The customer is prompted to enter their food preferences. 2.2 The customer’s food preferences are validated. 3. The customer’s food preferences are saved to their Koogle account. |
| **Postconditions:**   1. The food preferences saved in the customer’s Koogle account reflect the customer’s desired food preferences. |
| **Alternative flow(s):** None. |

### 

### 3.1.1 Description and Priority

The Customer Interface system is a high priority feature that allows a customer to access to Skip the Lines. The customer must be able to have access to each restaurants information. A customer with a Koogle account must be able to have access to the reservation service and receive related notifications.

### 3.1.2 Functional Requirement

REQ-3.1-1: A customer must be able to check the current wait time estimation for each registered restaurant.

REQ-3.1-2: A customer must have the ability to specify a location when searching for restaurants.

REQ-3.1-3: A customer must be able to see every restaurant listed in the area they selected.

REQ-3.1-4: A customer must have the option to have their location be automatically detected through device location detection.

REQ-3.1-5: A customer must be able to select up to 5 food style preferences.

## 3.2 Reservation Booking System

This feature facilitates the ability for a customer to create a reservation at a restaurant registered with Skip the Lines.

|  |
| --- |
| **Use Case: Book a reservation** |
| **ID:** UC-3 |
| **Brief description:**  A customer creates a reservation at a restaurant. |
| **Actor(s):**  Customer |
| **Preconditions:**   1. The customer must have a Koogle account and access to Koogle Maps. 2. The customer must not have another reservation within 90 minutes of the reservation they want to create. 3. The customer can only book a reservation that takes place on the same day they make the reservation. |
| **Main flow:**   1. Include (Pre-order food) 2. The customer logs in to his or her Koogle account. 3. Through Koogle Maps, the customer selects the Skip the Lines reservation link for a specific restaurant. 4. The customer enters his or her personal information and the size of their group. 5. If the reservation time is already taken   4.1 The customer is prompted to select a different time.   1. Else the customer successfully selects the reservation time 2. The customer submits the reservation. |
| **Postconditions:**   1. The customer booked a reservation for a table at a restaurant. |
| **Alternative flow(s):**   1. A customer decides to cancel the reservation before the reservation has been made. |

|  |
| --- |
| **Use Case: Pre-order food** |
| **ID:** UC-4 |
| **Brief description:**  A customer pre-orders food during their reservation creation process. Food shall be ready at the time of the reservation. |
| **Actor(s):**  Customer |
| **Preconditions:**   1. The customer must be in the reservation creation process. 2. The customer must have chosen to preorder food during the reservation creation process. 3. The customer must have specified the number of people in their group during the reservation creation process. 4. The customer’s payment information must be on their Koogle account. 5. The pre-ordered item must be in the restaurant’s menu. |
| **Main Flow:**   1. For each group member of the reservation the customer enters the following information:    1. Group member name    2. Menu item(s) to be pre-ordered    3. Modifications to pre-ordered item(s)    4. Allergies or other dietary restrictions 2. The customer reviews the pre-ordered item(s) 3. The customer moves onto the next step in the reservation creation process. |
| **Postconditions:**   1. Once the reservation is submitted, the pre-order is sent to the restaurant. |
| **Alternate Flow(s):**  None |

|  |
| --- |
| **Use Case: Cancel restaurant reservation** |
| **ID:** UC-5 |
| **Brief description:**  After a customer has booked a reservation at a restaurant, he or she no longer wants that reservation at the selected restaurant. |
| **Actor(s):**  Customer |
| **Preconditions:**   1. The reservation must already be booked. 2. The reservation start time to be seated at the restaurant has not past. |
| **Main flow:**   1. The customer selects his or her booked reservation through Koogle Maps. 2. The customer cancels the reservation. |
| **Postconditions:**   1. The reservation at the selected restaurant is removed. |
| **Alternate Flow(s):**  None. |

### 3.2.1 Description and Priority

The reservation booking system is a high priority feature that operates an online reservation service through Koogle Maps.The reservation booking system also allow customers to pre-order food for their booked reservation.

### 3.2.2 Functional Requirements

REQ-3.2-1: Each customer must have a Koogle account in order to make a reservation through Skip the Lines.

REQ-3.2-2: Each customer must be able to make a reservation in Skip the Lines from Koogle Maps.

REQ-3.2-3: Each customer must be able to make a reservation with a restaurant that is registered with Skip the Lines .

REQ-3.2-4: Each customer must be shown the hold time for a reservation before the reservation is finalised.

REQ-3.2-5: Each customer can only make a reservation for the same day they will book the reservation.

REQ-3.2-6: Each customer must not be allowed to create more than one reservation with start times within 90 minutes of each other.

REQ-3.2-7: Each customer must be able to see each restaurant’s wait time on Koogle Maps in a selected area.

REQ-3.2-8: Each customer must have a payment method registered with their Koogle account to be able to pre-order food with their reservation.

REQ-3.2-9: Each customer must agree to the Terms of Service provided by Koogle in order to make a reservation.

REQ-3.2-10: Each customer must agree to the Privacy Policy provided by Koogle in order to make a reservation.

REQ-3.2-11: Each customer must be able to enter their name while making a reservation.

REQ-3.2-12: Each customer who does not have their phone number on their Koogle account must be able to enter their phone number while making a reservation.

REQ-3.2-13: Each customer must enter the size of their group while making a reservation.

REQ-3.2-14: Each customer must be able to pre-order food for each member of their group.

REQ-3.2-15: When a table is ready at a restaurant, the group at the top of the restaurant's wait queue must be notified with a text message.

REQ-3.2-16: If a customer does not claim their table before the end of a restaurant's reservation hold time, that customer’s reservation will automatically be cancelled.

REQ-3.2-17: A notification must be sent to the customer regarding the current wait time and the relevant restaurant holding time after making a reservation.

## 3.3 Restaurant Registration

This feature facilitates the ability for a restaurant to create an account with Skip the Lines which then allows the restaurant to start taking reservations from customers through Skip the Lines.

|  |
| --- |
| **Use Case: Create new restaurant user account** |
| **ID:** UC-6 |
| **Brief description:** A restaurant owner creates a Skip the Lines account |
| **Actor(s):**  A restaurant owner |
| **Preconditions:**   1. The restaurant owner must not already have an account. |
| **Main flow:**   1. The restaurant owner wants to create a new Skip the Lines account. 2. While the restaurant owner details are invalid.    1. The restaurant owner is prompted to enter their details again for confirmation.    2. The restaurant owner’s details are validated. 3. The restaurant owner creates a new Skip the Lines account for his or her restaurant. |
| **Postconditions:**   1. A new account has been created for the owner’s restaurant. |
| **Alternative flow(s):**   1. 2.1 a) The restaurant owner is prompted with an invalid email address exception 2. 2.1 b) The restaurant owner is prompted with an invalid password exception 3. Account creation is cancelled. |

|  |
| --- |
| **Use Case: View reservations** |
| **ID:** UC-7 |
| **Brief description:** A restaurant views the currently booked reservations. |
| **Actor(s):** A restaurant employee |
| **Preconditions:** None |
| **Main flow:**   1. The restaurant employee opens the Skip The Lines App. 2. The restaurant employee opens the section for current booked reservations. |
| **Postconditions:**   1. Reservation information has been accessed by the Restaurant staff. |
| **Alternative flow(s):**  None. |

|  |
| --- |
| **Use Case: Add a customer to the reservation wait queue** |
| **ID:** UC-8 |
| **Brief description:** A restaurant employee adds a customer to the restaurant’s reservation wait queue. |
| **Actor(s):** Restaurant employee |
| **Preconditions:**   1. The customer must not already be on the restaurant’s reservation wait queue. |
| **Main flow:**   1. The restaurant employee receives a reservation from a customer. 2. The restaurant employee adds a customer to the reservation list based on the information provided by the customer. |
| **Postconditions:**   1. A customer’s group has been added to the reservation wait queue. |
| **Alternative flow(s):**  None. |

|  |
| --- |
| **Use Case: Remove a customer from the reservation wait queue** |
| **ID:** UC-9 |
| **Brief description:** A restaurant employee needs to remove a customer from the reservation wait queue |
| **Actor(s):** Restaurant employee |
| **Preconditions:**   1. The customer must be in the reservation wait queue. 2. The customer may request to be removed from the reservation wait queue. 3. The restaurant employee needs to remove the customer from the reservation wait queue due to punctuality. |
| **Main flow:**   1. The restaurant employee views the reservation list. 2. The restaurant employee selects the customer and removes the customer. |
| **Postconditions:**   1. The customer has been removed from the reservation wait queue |
| **Alternative flow(s):**  None. |

|  |
| --- |
| **Use Case: View pre-ordered food** |
| **ID:** UC-10 |
| **Brief description:** A restaurant employee views a groups pre-ordered food selection. |
| **Actor(s):** A Restaurant employee |
| **Preconditions:**   1. A group must have pre-ordered food during their registration creation. |
| **Main flow:**   1. If a group has pre-ordered food    1. The restaurant employee selects the pre-ordered food tab next to a customer's reservation slot in the wait-queue. 2. The restaurant employee views the groups food orders. |
| **Postconditions:**   1. The restaurant employee can view the groups pre-ordered food. |
| **Alternative flow(s):**  None. |

|  |
| --- |
| **Use Case: Delete restaurant user account** |
| **ID:** UC-11 |
| **Brief description:** The restaurant owner wants to remove their restaurant’s Skip the Lines account. |
| **Actor(s):** A restaurant owner |
| **Preconditions:**   1. The restaurant owner has an existing account with Skip the Lines |
| **Main flow:**   1. The restaurant owner logs in to their restaurant’s Skip the Lines account. 2. The restaurant owner selects the “delete account” tab. 3. The restaurant owner’s account is removed. |
| **Postconditions:**   1. The restaurant’s Skip the Lines account has been removed. |
| **Alternative flow(s):**  None. |

## 

### 3.3.1 Description and Priority

This feature is high priority. It facilitates the ability for a restaurant to register with Skip the Lines which allows the restaurant to take reservations through Skip the Lines.

### 3.3.2 Functional Requirements

REQ-3.3-1: Each restaurant must be able to register an account with Skip the Lines.

REQ-3.3-2: Each restaurant must be able to enter their primary contact name, primary contact phone number, restaurant name, restaurant address, mailing address, operating hours, restaurant type, reservation hold time, menu and reservation type at the time of registration.

REQ-3.3-3: Each restaurant must be allowed to enter up to 5 additional contact names and contact phone numbers.

REQ-3.3-4: To register with Skip the Lines, a restaurant must agree to the Terms of Service provided by Koogle.

REQ-3.3-5: To register with Skip the Lines, a restaurant must agree to the Privacy Policy provided by Koogle.

REQ-3.3-6: Each restaurant must be able to view each customer who has made a reservation for an upcoming time.

REQ-3.3-7: Each restaurant must be able to add a customer to the restaurants reservation list.

REQ-3.3-8: Each restaurant must be able to remove a customer from the restaurants reservation list.

REQ-3.3-9: Each restaurant must be able to view a groups pre-ordered food options if available.

# 4 External Interface Requirements

## 4.1 User Interfaces

The customer interface is inspired by Koogle Maps UI and functionality conventions. The customer interface will be incorporated into Koogle Maps. Below, Figure 1 shows an example of what Koogle Maps looks like when a customer searches for a restaurant(s). Koogle Maps will contain a tab under each restaurant's name on the left hand side of the screen that will produce a pop-up menu of the Skip the Lines features where each tab is specific to each restaurant.

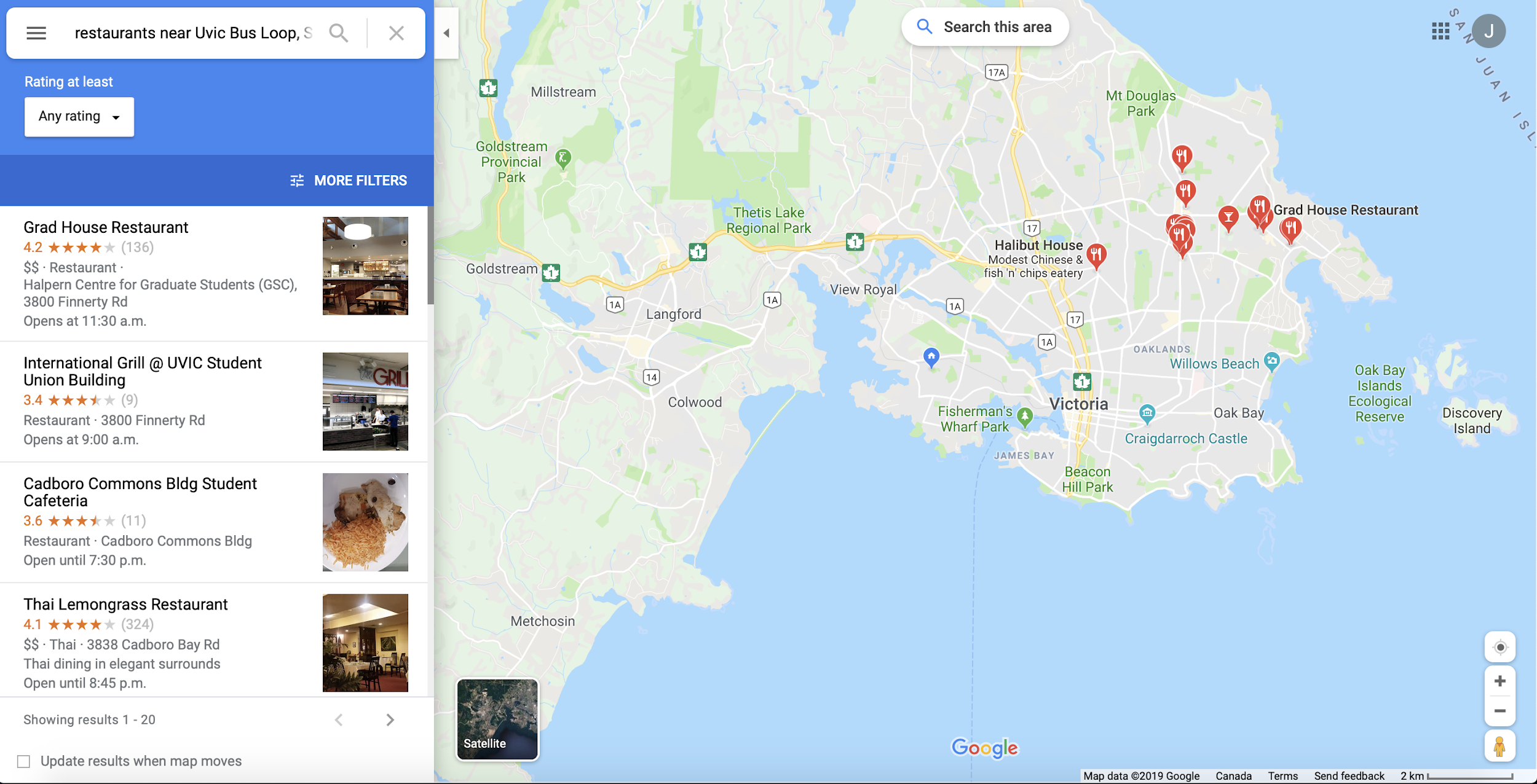


Figure 1. An example of a search for a restaurant in Koogle Maps.

## 4.2 Software Interfaces

This section describes the interactions between Skip the Lines and external software systems.

### Koogle Servers & Databases

Data In

* Up to date information about restaurants such as: address, hours of operation and menu.
* Information requests from users such as: wait times, available reservations, restaurant information
* Pull requests from restaurants such as: requests to be taken off a reservation list
* Reservation requests from customers (creating a reservation a reservation)

Data Out:

* Reservation information & accompanying relevant customer information to restaurant such as: when a reservation is created or edited
* Advertisements to customer devices (monetization method)
* Display of information on Koogle Maps (Integration into Koogle Maps)
* Notifications such as: specials, and alerts to when your table is ready or reservation is nearing)
* Restaurant information for restaurants registering with Skip the Lines that is not already in Koogle databases.

### Customer Devices (Android or iOS or Supported Web Browser)

Data In

* Up to date restaurant information such as: wait times, available reservations, restaurant information
* Reservation creation/altering confirmation
* Notification texts such as: specials, and alerts to when your table is ready or reservation is nearing

Data Out

* Phone Number, Email, Name upon account creation
* Reservation information such as: creating or altering of said reservation

### Restaurant’s Tablet

Data In

* Reservation information & accompanying relevant customer information to restaurant such as: when a reservation is created or edited

Data Out

* Up to date information such as: wait times, available reservations, and restaurant information

## 4.3 Communications Interfaces

Skip the Lines offers a communication interface for automatically sending notifications regarding on the wait time and table availability. Each registered restaurant provides their real-time wait time information into Skip the Lines. A notification related to the current wait time will be sent to a customer’s Koogle account after this customer makes a reservation. Skip the Lines does not support direct communication interfaces for a restaurant to contact its customers. However, as a customer must leave his contact information while doing a reservation, each restaurant is able to reach its customers through those contact information by itself. Skip the Lines must allow a customer user to select if he or she wants to be contacted by email or phone number while doing a reservation.

REQ-4.3-1: A notification of the current wait time and reservation hold time must be sent to a customer after his or her made a reservation.

REQ-4.3-2: An alert notification must be sent 15 mins earlier than when a table will be available.

# 5 Other Non-Functional Requirements

## 5.1 Performance Requirements

Projected wait times listed for restaurants on Skip the Lines must be within 10 minutes (+/-) of actual wait times.

## 5.2 Security Requirements

REQ-5.2-1: A customer must not be able to view any other customer’s personal information.

REQ-5.2-2: A customer must not be able to view any other customer’s reservation information.

REQ-5.2-3: A customer's geographic location must not be accessed without customer's permission.

REQ-5.2-4: Information security procedures must be used when handling user information.

REQ-5.2-5: Information security procedures must be used when handling user financial information.

## 5.3 Software Quality Attributes

Skip the Lines must provide a well designed user experience for customers and restaurants. The user experience is not a quantitative characteristic that can be measured, but rather a qualitative characteristic that will be improved over time based on feedback.

# Appendix: Issues List

Unresolved issues:

* Discuss the layout of a customer’s interface, including screen layout constraints, standard buttons and functions.