CS102	**Fall 2020/21**		
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Criteria	TA/Grader	Instructor
Presentation		
Overall		

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Requirements Report

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1. Introduction

A mobile app to track how crowded the various cafes in Bilkent University. The app uses user location data to calculate how busy the place is. We use user location and the coordinates of the place to identify if the user is in the vicinity of the cafe. The user also gets notifications when they enter/leave the place. Users can give feedback about whether they are actually in the cafe by answering the question in the notification. The app will feature a suggestion algorithm that will suggest less crowded and nearer places to the user.

The app will also feature a user profile system. Users can create a profile for themselves to connect with their friends. With the profile system, we can show the user where their friends are and include this information in the suggestion algorithm.

The app will run on android devices; it will use real-time user location information gathered from androids location services and will feature a notification system that the user interacts actively with. We will use a database to store cafe and user locations remotely and make the calculations.

2. Details

2.1 Goal of the App and the Intended Users

The app aims to give users information about the crowdedness of places in the campus and let users make an informed decision. Our users will be Bilkent University students who use the cafes and restaurants around the campus.

2.2 Getting Crowdedness Data

We will use android location services to identify if a given user is in a cafe/restaurant in Bilkent university. We plan to achieve this by having the exact coordinates of the place and the user and then calculate on a database if the user is inside a predetermined circle around the center of the place. We will send a notification to the user when they enter this circle whether they are actually in the cafe/restaurant.This is because we don't exactly know if the user is inside the cafe since we don't have data on altitude and most cafes have classrooms or dormitories above them. This system will ensure that our data is correct.

2.2.1 Using the Crowdedness Data

We will show users the average and current crowdedness information. We will keep daily/weekly crowdedness data and use it to create a data history of the place. This will give users historical information on how crowded cafes will be in any given day/hour. We will also show if the place is more or less crowded than expected (historical data). We will graph the data to give users a better view.

2.3 User Profile System

We will let users create profiles. Every user will have a unique user ID. We will create profiles with email and password and we will confirm email places by sending verification codes to the given email. Users with profiles can see where their friends are provided that they are inside one of the cafes/restaurants that we are using. Users can make their profiles public or private. Private users' location will not be revealed to their friends. We will have a search profile feature which will let users search others by name, surname or user ID. Also users will be able to add others by showing a QR code. We will have unique QR codes for profiles. Moreover, we will track and store user statistics, which will give users their top places of the week/month, and also track time spent at each place.

2.4 Rating and Reviewing

Users will be able to rate or review the places they visited. We will prompt the user with a notification after they leave the place (we already know for certain if they are there or not at this stage). If they touch the notification they will be directed to the rating page where they can give a star rating out of 5. The other users can see the average rating and comments of

other users under the place tab. The rating system will be incorporated into the suggestion algorithm.

2.5 Notification System

Users will receive a notification from the app when they enter in the locationally determined circles. Users can interact with this notification to confirm that they are in that cafe/restaurant and we will use this data to fine-tune our crowdedness data. The app will send notifications if there are some places which are less crowded than usual during the day. The app will send notifications after the user leaves the place for rating. There will be options to close or limit what notifications they want to get.

2.6 Suggestion Algorithm

We will suggest places by using crowdedness, distance, rating, and friend count. We will give points to individual parameters and use the total average of these scores to sort places. Then we will suggest according to this sorting. The user will also be able to sort the places based on these parameters alone.

2.7 User Interface

Two different views: one view with an interactable map (imported from Google Maps). The second view, which we call block view, lets the user see places inside blocks (sorted according to the algorithm) with relevant information. We will also color code the places with red, yellow, and green according to crowdedness.

2.8 Similar Applications and Our Differences

Our app resembles Foursquare and Google Maps. The app will be a mixture of these two, but focused on Bilkent University campus. We think our app has usability since most of the cafes and restaurants inside the campus are not available on such other applications. Our app will give relevant and reliable information that can be used by Bilkent University students.