School of Computing

CA326 Year 3 Project Proposal Form

SECTION A

Project Title _____Carpool App for DCU Students_____

Student 1 Name _____Daragh Prizeman_____ ID Number _19459734__

Student 2 Name _____George Eskander_____ ID Number _19451972__

Student 3 Name _____ ID Number _____

(A third team member is exceptional and requires detailed justification.)

Staff Member Consulted for supervision _____Darragh O'Brien_____

Project Description

Introduction

Our project focuses on two main problems. The first of which is the financial cost of students' daily commute to and from DCU campus. Students spend a lot of time and money on transportation to and from campus on a daily basis, whether it be by car, bus or train. Our project hopes to help student's to save money on their daily commute. The other problem which our project hopes to assist with is reducing unnecessary emissions into the environment. Some students may drive to college alone at the moment and would like to be able to carpool with other students, which would help to reduce air pollution, traffic congestion and gives students a new opportunity for socialising.

Outline

Our proposed project is to create a carpool Android app for DCU students, mainly using Django for back-end development and React Native for front-end. We will also use Django's REST framework to facilitate communication between the front-end and back-end. Students who drive to and from DCUs campuses regularly can sign up as a Driver and input their starting location, time of departure, available seats and any other constraints they may have. (e.g. they may not want their total trip time to be longer than an hour or they may only feel safe with female passengers etc.). Students who are looking for a lift to college will be able to sign up as a Passenger and enter their starting location, destination, constraints and any other passengers they are travelling with and then they can search for nearby drivers. Passengers can then choose a driver from a sorted list of nearby drivers deemed to be suitable based on both passengers and driver's constraints and request a carpool. Drivers have the option to accept/deny a passenger request. If the driver accepts, then a route is generated, with the help of Google Maps API or similar, and route information is updated.

Background

We found this project idea on Darragh O'Brien's website:
https://www.computing.dcu.ie/~dobrien/misc/projects.txt.

We both decided that we liked this idea and emailed Darragh O'Brien to inform him of our interest in his idea and to set up a meeting to discuss project supervision. We then researched other carpooling apps such as 'Moovit Carpool', 'UberPool' and 'BlaBlaCar', and brainstormed exactly what we wanted our app to do and set out our plan for the project.

Goals

Our goal is provide students with an easy to use Android app which enables them to find other DCU students to carpool to and from campus with.

This will give DCU students another option of transport run by DCU students as drivers.

Our project is useful to both students and the environment by easing the financial burden on students who commute daily and also helping to reduce air pollution and traffic congestion by creating an app where students can organise to carpool.

Programming language(s) and tools

Languages:

Python, JavaScript, TypeScript

Tools:

Docker, Git, Django, Django Channels, websockets, socket.io, React Native, Redux, Expo, react-native-maps, Firebase, MySQL, Heroku, Google Maps API, Code With Me, Live Share

Breakdown of work

We plan to work together on most parts of this project. We both have experience working together in the past using JetBrains "Code with Me" feature, and Visual Studio Code's "LiveShare" feature, which allow us both to work collaboratively in the same workspace in real time.

Both students have experience with Git, Django and MySQL. George has some experience with sockets and React, which will help the real time parts and the user interface. Daragh has some experience with Docker, which will help with deployment. Both students will learn more about React Native, Docker, APIs and other tools as the project progresses.

Both students will work together from now until December 10th to complete the function specification. To start off implementing the app, we will both setup the backend and then George will help Daragh learn React. Both students will learn React Native then set up the API between Django and React Native, working from there.

Both students will regularly organise and attend meetings with Darragh O'Brien, our supervisor, in order to keep track and monitor our progress throughout the project.