ASIA PACIFIC UNIVERSITY
OF TECHNOLOGY & INNOVATION

INDIVIDUAL ASSIGNMENT

TECHNOLOGY PARK MALAYSIA

CT098-3-2-RMCT

RESEARCH METHODS FOR COMPUTING AND TECHNOLOGY

UC2F1609IS / UC2F1609WM / UC2F1609SE / UC2F1609IT(MBT) / UC2F1609IT / UC2F1609CS(DA) / UC2F1609CS / UC2F1609IT(DBA)
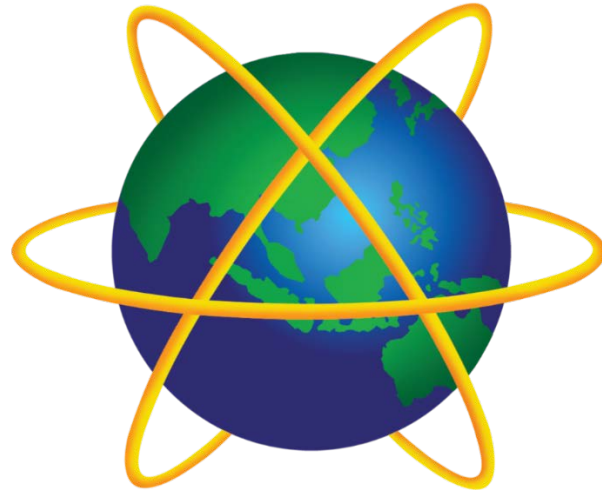
HAND OUT DATE: 20 MARCH 2017

HAND IN DATE: 15 JUNE 2017

WEIGHTAGE: 100%

INSTRUCTIONS TO CANDIDATES:

1   **Submit your assignment at the administrative counter**

2   **Students are advised to underpin their answers with the use of references (cited using the Harvard Name System of Referencing)**

3   **Late submission will be awarded zero (0) unless Extenuating Circumstances (EC) are upheld**

4   **Cases of plagiarism will be penalized**

5   **The assignment should be bound in an appropriate style (comb bound or stapled).**

6   **Where the assignment should be submitted in both hardcopy and softcopy, the softcopy of the written assignment and source code (where appropriate) should be on a CD in an envelope / CD cover and attached to the hardcopy.**

INDIVIDUAL ASSIGNMENT

CT098-3-2-RMCT

Research Methods for Computing and Technology

Name	:	NG HO KIT
Student ID	:	TP035012
Lecturer Name	:	Dr. Imran Medi
Hand-out Date	:	March 2017
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Intake Code	:	UC2F1609SE

FETCH ME PLEASE

(Student Carpool System)

Contents

1.0 Introduction

This project will describe the transportation problem that faced by most of universities students. Besides, a research will be carried out to identify the factors that caused the problem and the way to solve the problems. At the end of this project, a system will be proposed to solve the problems.

2.0 Problem Statement

As university students, transportation is one of many concern faced by most of the student to travel back and forth to University. Even though there are some university provide transportation for their student but the chances of student missed the transportation is still very high due to various kind of reason faced by the student. If the problem remains exist, the student might face some academic problem. Hence, this Student Carpool System (FETCH ME PLEASE) able to help students to solve problem stated above by allowing students to request for 'help' from students who passed by to pick them up.

3.0 Problem Background

Majority of students worry about their transportation especially for those who live in a place that far away from the university which require transportation for them to travel back and forth. According to some research done on a few universities and colleges around the world (Aharonian, 2013) and (Portland State University, 2009), approximate around 40% of student who take public transport, around 35% of student drove alone, around 10% of student carpool, around 5% of student dropped off by their friends or family and the rest percentage are other student transportation method. Public transport may be beneficial for most of students, but sometimes it caused some inconvenient in some places. For places like Islamabad, Pakistan, their student can sometime to be seen on the roofs of the buses during peak hour (Junaidi, 2012). Besides, public transport such as LRT and MRT in Malaysia may be caused a lot of troubles when their service breakdown. For example, cases happen back in September 2016 (malaymail online, 2016), where commuters including students are being stuck in stations due to power supply disruption in Malaysia. Because of that, students have to find alternative way to travel to university or college (malaymail online, 2016). Other than physical factors, personal factors are also one of many reason for student having transportation difficulties.

Transportation may lead to many academic problems such as late or unable attend to classes, low attendance percentage and unable to sit for exam. Besides, according to research (Sacramento City Unified School District , 2014), 28% of student being absent to class due to inconvenient access of transportation and time factor. E-hailing services like Uber and Grab can help prevent the transportation problems (Channick, 2015) as the services being on demand recently but it going to cost a few bucks (depending on distance) more than other type of public transport. Hence, it is not a cheap solution to prevent absenteeism. Good attendance shows the potential employers that the student is a reliable employee (nidirect, 2017).

4.0 Literature Review

4.1 Domain Research

4.1.1 Bad traffic conditions and its effects

A daily commuter, Joshua Chong, took around one hour to one and a half hour each way commute from one place to another on daily basis due to traffic congestion. He mentioned in a local newspaper (The Star Online, 2015) during his interview, he stating that he spent RM7 a day for toll and RM90 to RM100 a week on petrol. But in my opinion, the problem isn't the cost for him to travel from one to another but the time for him to travel from one to another. According to (The World Bank, 2015), residents of Greater Kuala Lumpur spend more than 250 million hours a year stuck in middle of traffic. It is expected that the jams will getting bigger as (Malaysian Automotive Association, 2017) report that around 1.2 million registered passenger cars have been register since 2015 until early March 2017. This proves that number of vehicles on the road has increased which may lead to worsen traffic during the peak hour. (The Nielsen Company (US), 2014) reported that Malaysia ranked number three in the world has the highest incidence of multiple car ownership per households that having more than one car in The Nielsen Global Survey of Automotive Demand.

Lee Morgan of (USA Today, 2017) saying that congested roadways will cause additional stress because of delays caused by the traffic can make people late. He also stated that traffic congestion makes estimate travel times impossible. Which will make ones' leisure time and time to do other tasks being taken away if they act leaving the house early to avoid the jams or just-in-time. (GMA NEWS ONLINE, 2015) reported people who got caught in night traffic were deprived of sleep, (Knapton, 2015) stated that lack of sleep possesses a threat to performance, attention, long-term memory and some other health related problems. This is a serious effect if the problem remains exist.

4.1.2 Grows of public transportation

(American Public Transportation Association, 2014) and (Union Internationale des Transports Publics, 2014) reported that the uses of public transport have increased by at least 10 million trips in between 2013 and 2014. There are a lot of benefits by using public transport such as save fuel, reduce congestion, save money and etc. This clearly stated how the usage of public transports had increased recently. (Public Transport Victoria, 2017) said that public transports help reduce injuries and fatalities caused by car accident and less stressful compare to operating a car. Having public transport also relatively cheaper compare owning a car since taking public transport doesn't have concern about the car maintenance and some charges such as road tax and car insurance.

4.1.3 Unreliable public transport

As usage of public transport keep increasing, it may lead to several problems. According to a survey done by University of California, Berkeley (Carrel, et al., 2013), commuters most likely will stop using public transport due to few reason such as delays, the public transport are full of crowd and long waits. In the survey, they found that commuters had to wait at least twice as long as the scheduled interval between vehicles on a frequent route and real-time data showed a vehicle was arriving but it did not that happened more than once per month. Based on what I have observed as a public transport commuters, the survey result is quite true especially for the vehicle not showing on time. The problems should not exist at all, what if someone is rushing for work or class? Besides, in September 2016, tons of commuters in Malaysia were stranded in stations due to power supply to the train service was disrupted as reported by (malaymail online, 2016). In my opinion, the transit agency should have some kind of backup plan in order to prevent such cases happen.

4.2 Technical Research

There are two similar application at the market which almost similar with the system that will be proposed. These applications are listed as below:

4.2.1 Uber

Uber is a location-based application that used to hire an on-demand private driver. For riders, Uber is a cheap and safe e-hailing service that allow users to hire a private driver to pick you up from one location to another location by inserting the pick-up point and drop-off point (UberEstimate.com, 2017). Uber is an application that connects drivers with passengers directly instead of some kind of procedure such as centralized booking service or hailing a car in the street (Michael Rundle, 2017). Initially launched in San Francisco, California and currently Uber operates in more than 77 countries around the globe. Meanwhile, Uber also let people who owned a private vehicle to be their own boss by providing e-hailing services to the riders which some terms of course. The vehicle must be a good condition 4-door vehicle and the driver must be 21 years old and above (UberEstimate.com, 2017).

4.2.2 Grab

Grab is another e-hailing application which similar to *4.2.1 Uber*, the different between Uber and Grab is that, under Grab there are 4 different features which offer 4 different services by the company which include GrabTaxi (formerly known as MyTeksi), GrabHitch, GrabCar and GrabShare. The differences of 4 services under Grab are listed in the table below.

GrabTaxi	An on-demand taxi booking service.
GrabHitch	A carpooling service that makes commuting affordable.
GrabCar	App-based car with driver service powered by Grab mobile application
GrabShare	An on-demand carpooling service that match the rider with another party that heading the same direction.

In my opinion, both application stated in *4.2.1 Uber* and *4.2.2 Grab* are pretty convenience for the users and it quite cheap compare to traditional taxi. This is because the user can book a ride by insert their location and desired destination with just a tap of a button and the fare are fixed rate, unlike the normal taxi which still running on meter. Using the application is quite safe compare to normal taxi, this is because the users can pick their driver by viewing their profile first. During promotional season, both application offered certain amount of credits for their users which relatively equivalent to free ride if the users taking some short distance trip. But promotions did not last forever, after some time the users still have to pay with their own money. As people who have to rely on this application for their daily commute, it isn't cheap at all.

5.0 Project Aims and Objective

5.1 Aims

The aims for this system is to provide student the alternative way to go colleges or university by requesting 'help' from passed by student.

5.2 Objective

1. To identify timeframe which student usually missed the transportation provided by the university.
2. To implement Global Positioning System (GPS) and API that will be used to track exact location of the student.
3. To study how frequent a student missed the transportation that would be used to improve the current transportation.
4. To make sure the proposed system will improve the attendance rate of the student.
5. To determine how frequent a student that missed the transportation.

6.0 Research Questions

In this section, there will be 2 set of question which include domain question and technical question as listed below.

Domain Question:

1. What is the main factors for student late for class?
2. How frequent a student misses a transportation (both public and private transportation)?
3. During what time a student normally missed their transportation?
4. How frequent a student book e-hailing services?
5. How frequent a public transport that didn't show up on time?

Technical Question:

1. What API should be included in this system and why?
2. What kind of graphical user interface should be implemented and why?
3. What programming language should be involved in this system and why?
4. What database should be implemented in this system and why?
5. What encryption method should be implemented and why?

7.0 Research Design

There are **three** (3) data collection method will be used during this research design as listed below.
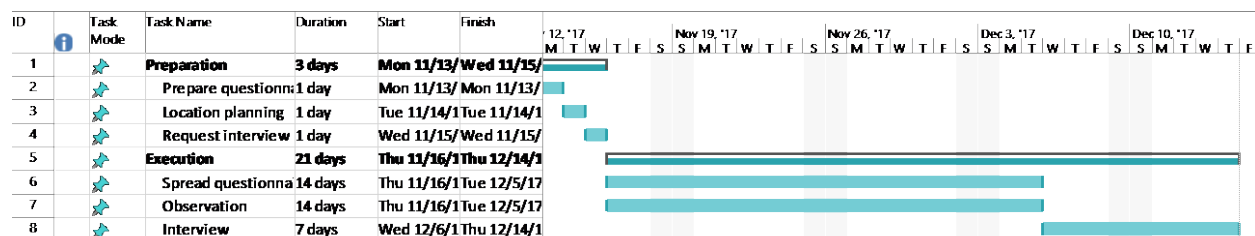
7.1 Questionnaire

Questionnaire will be created to collect the functional requirements from the users. The questionnaire will consist of multiple questions from multiple aspect. The main purpose of the questionnaire is to collect and verify the data of the requirements and the problem statement stated above.

7.2 Observation

Observation will be performed on similar application such as **Uber** and **Grab** stated in 4.2 Technical Research. The reason of the observation is to put myself into end user perspective and identify the strengths and weaknesses of existing system and understand the problems faced by similar application and avoid them during the development of the system.

7.3 Interview

Interview will be conducted on the users to identify the actual problem faced by them. The reason of the interview is to understand those details that cannot be obtained in the questionnaire.

ID	Task Mode	Task Name	Duration	Start	Finish
1		**Preparation**	**3 days**	**Mon 11/13/**	**Wed 11/15/**
2		Prepare questionn:	1 day	Mon 11/13/	Mon 11/13/
3		Location planning	1 day	Tue 11/14/1	Tue 11/14/1
4		Request interview	1 day	Wed 11/15/	Wed 11/15/
5		**Execution**	**21 days**	**Thu 11/16/1**	**Thu 12/14/1**
6		Spread questionna	14 days	Thu 11/16/1	Tue 12/5/17
7		Observation	14 days	Thu 11/16/1	Tue 12/5/17
8		Interview	7 days	Wed 12/6/1	Thu 12/14/1

8.0 Reflection

There are a few doubts that have been identify during the preparation of this proposal. There doubts are stated in the list below:

1. What if there are no available driver that passed by during the hour where student book the ride?
2. What if the driver manages to fetch student go but couldn't manage to fetch the student back?
3. Should driver collect fare from students?
4. What if API doesn't work well with the system?

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