TORRENT RESCUE APP (TRAPP)

by Torrent Hackers

1. Executive Summary

Floods, being the most frequent natural disaster in Malaysia, have great consequences such as damages to houses, cars, streets and brings its count of deaths and disappearance. This disaster happens almost every year and it takes a toll on the affected population and to this day there is no real way of preventing or fully mitigating the consequences of the flood.

To address this problem, our team, Torrent Hackers, plans to develop a mobile application using Flutter that will have few features to help the victims in case of a flood with the main objective to help them reach the nearest relief center. For example, it will notify the relevant authorities of the areas affected by the flood and will notify the victims before they are affected using rain/weather information. Another feature will allow victims to stay in contact with their family and friends while saving as much battery as possible and guide them to the nearest relief center.

We will perform planning, research, mobile app development and project documentation. We are expected to deliver mobile app source codes, and project documentation. The deliverables will be reviewed and approved by our supervisor before submission

2. Detailed Project Proposal

- **Project background**

Flood is defined as high water flow dominating the natural or artificial banks in any part of the river system. Therefore, when a river bank is overtopped, the water extends over the flood plain and generally becomes a danger to the society.

In Malaysia, there are 189 river basins and recurrent flooding is a problem for 85 of them. The area vulnerable to flooding is estimated to be approximately 29.800km² representing almost 10% of Malaysia. The flood is affecting 4.82 million people which is 22% of the Malaysian population and the total damages cost about RM900 millions per year.

Researches have shown that causes of the flood are improper drainage system, dam breaking and improper management of the environment or even heavy rainfall. There are 2 types of floods: flash flood and monsoon flood. During flash floods the water level returns back to normal in a few hours whereas monsoon floods coming with the monsoon season can take weeks to a month to return back to the normal water level.

In December 2021, a tropical depression brought a long period of rain equivalent to a month's worth of rainfall in a few days which had terrible consequences. 70 000 people from 8 states were evacuated to emergency shelters and 50 people died from that event with few disappearing.

- **Problem Statements**

When flood occurs, it has terrible impacts on people as, at best, it disrupts their day-to-day activities and depending on the type of the flood, the impacts can last for a week to a month, and with climate change this will make the situation even more challenging. Floods can cause damage to automobiles, houses, shops and industries and can make streets and highways inoperable. Since flood is a recurring natural disaster in Malaysia, there is a need to prevent, predict or at least better mitigate the effects of this disaster.

To better accompany the victims through the flood in Malaysia, an app called Torrent Rescue App (TRAPP) will be developed. This app, in emergency and battery saving mode, will notify the area touched by the flood to the relevant authorities and guide the victims with simple steps on how to leave their houses and reach the nearest relief center while maintaining contact with their family and friends letting them know at all times their location, thus limiting the trauma during the event.

- **Objective(s) of the Project:** This project embarks on the following objectives:

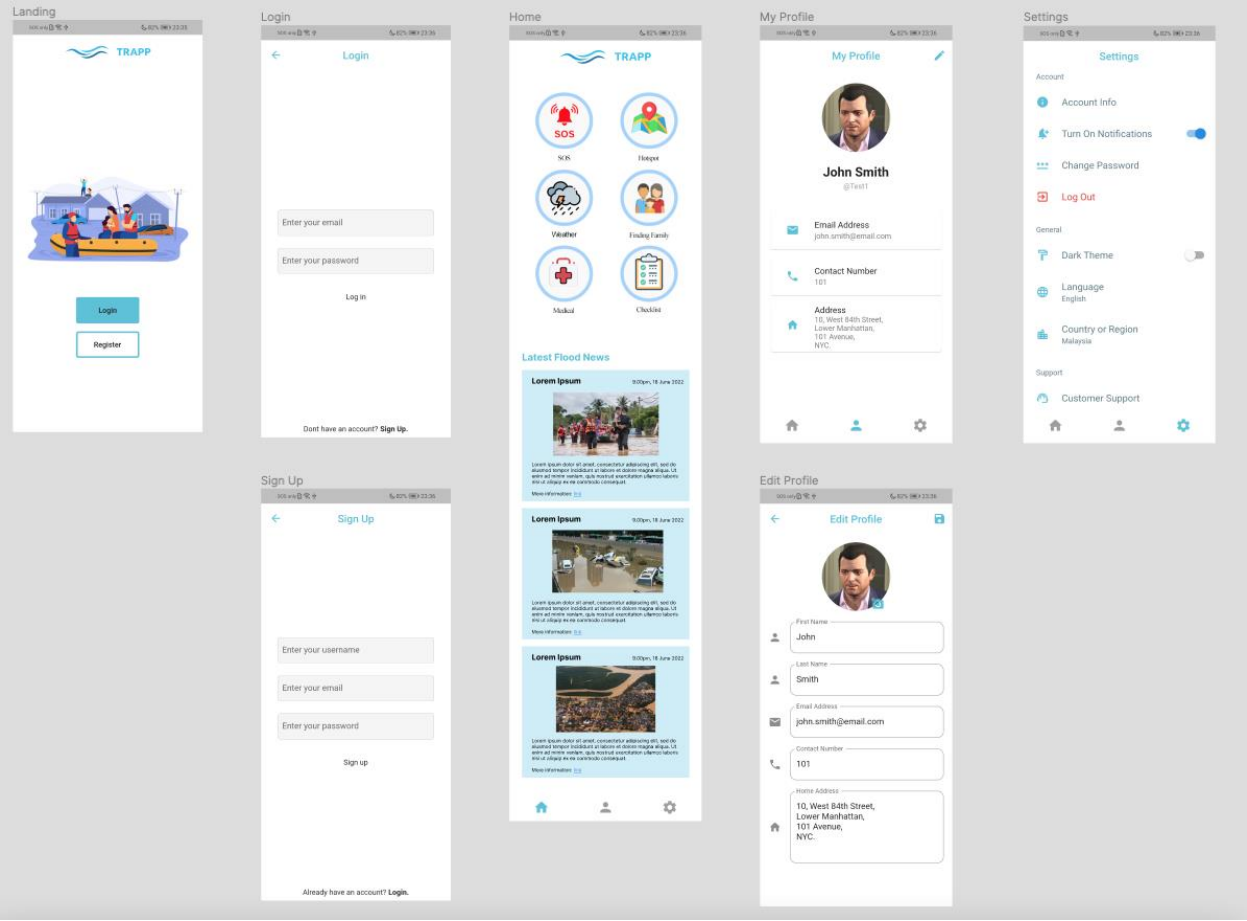
1. To guide the flood victims to the nearest relief center in coordination with the fire department team using geolocation.
2. To design and develop a system that provides a checklist to the victims to follow and provide victims a mechanism to seek medical attention which will help to reduce the stress and trauma of victims.
3. To design and develop a system that will notify family and friends when a flood occurs and check their location at all times while keeping limited features thus reducing battery usage in emergency mode.
4. To assess flood risk by skimming through weather/rain information and notify the victims before the flood occurs which helps to minimize their loss.

Methodology

Agile will be the methodology used in this project since it will offer increased flexibility. Due to time constraints from study and work responsibilities, dividing the project in short phases that will be both manageable and flexible will allow the team to make the changes needed. Rather than following a rigid plan, Agile allows us to continuously improve the project in all phases. To realize the project laptops using intel processors will be used

- **Expected Outcome of the Project**

App Mockup



App Prototype: link

- Intel software used

1. Intel® Graphics – Windows* DCH Drivers
    a. Two PCs with Intel Core i5 7th Gen and Intel Core i3 8th Gen respectively.
2. Intel® DevCloud