

SMART NATION: OFFLINE PUBLIC TRANSPORT MADE EASY

Student: Ang Poh Keong

Supervisors: Dr Sinha Sharad, Dr Kavallur Pisharath Gopi Smitha



**Offline
BusRide**

Abstract

To contribute to the Smart Nation initiative, an offline bus transport mobile application is developed. This application focuses on making offline bus transportation more convenient for commuters, especially people around the world who does not have access to the internet.

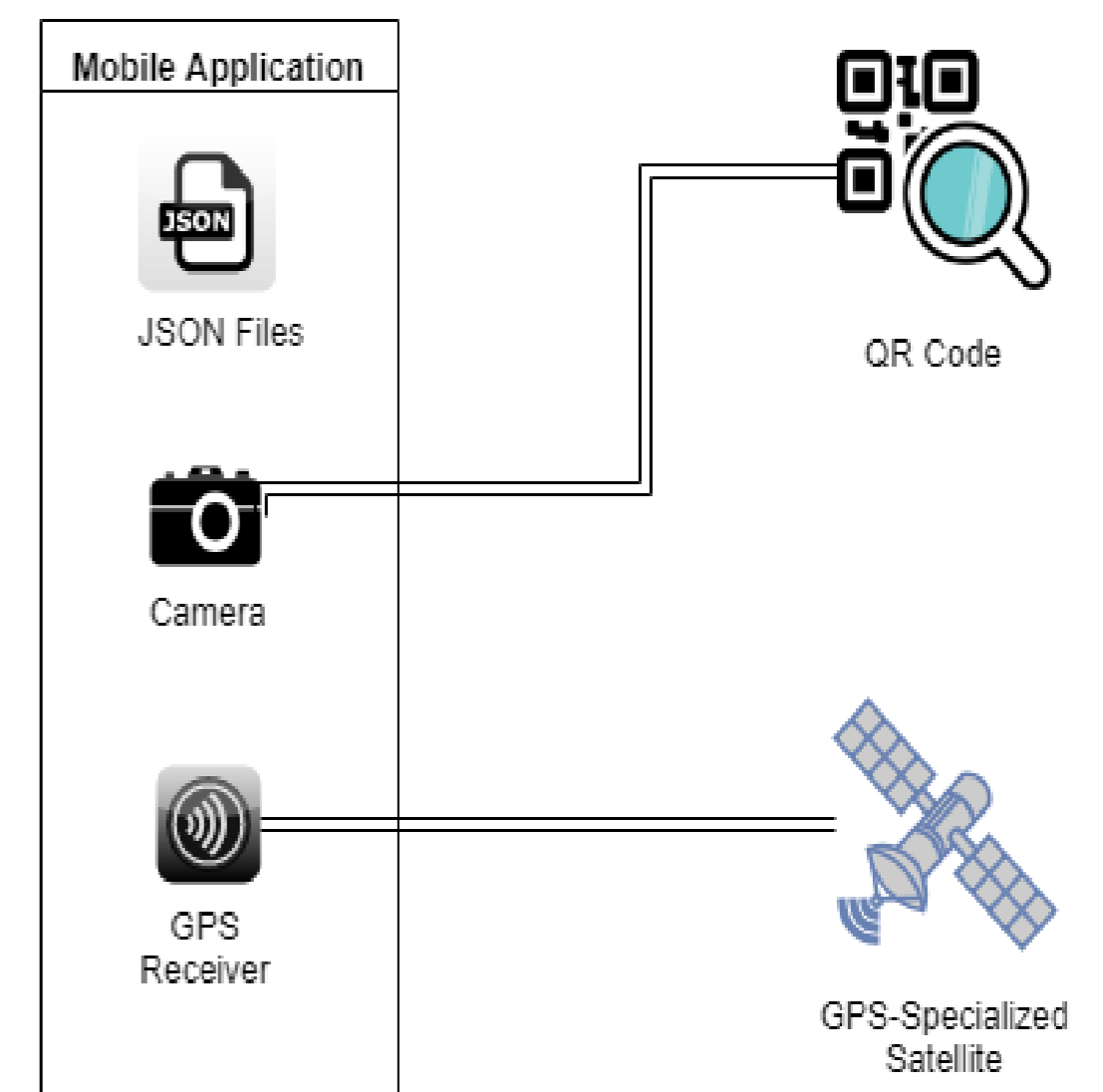
The application is developed based on the Android operating system. Using global positioning system (GPS) and quick response code (QR Code) technologies, the application eases offline bus commutation by allowing users to monitor their bus journey offline without any need for active monitoring on the user side.

Objective

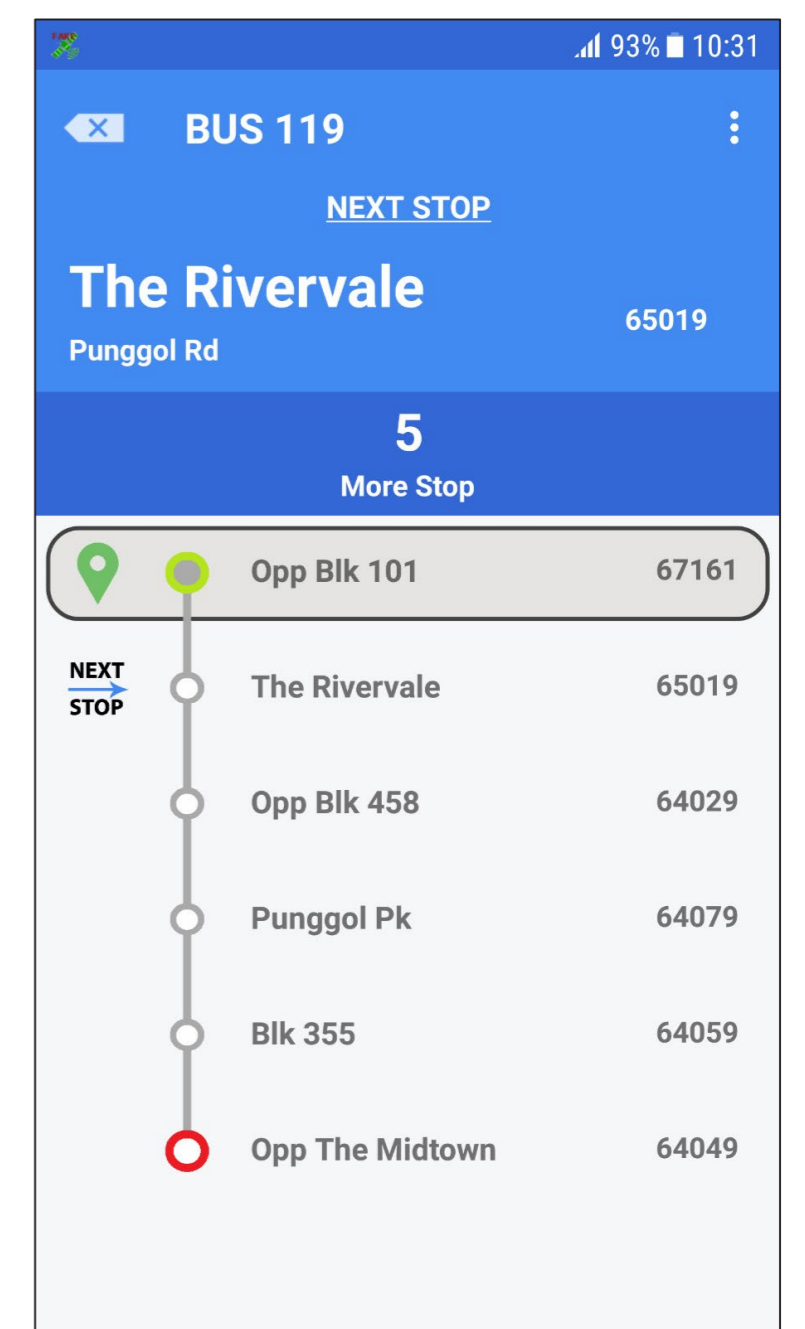
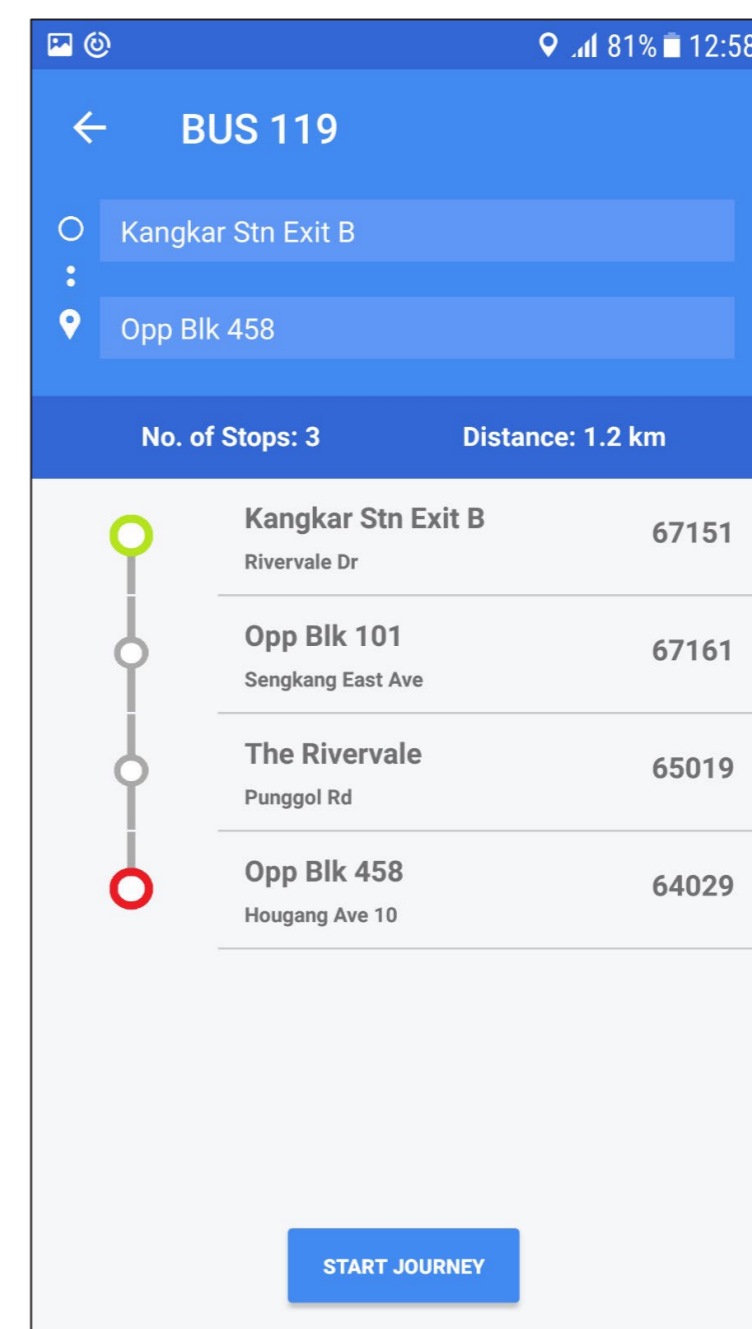
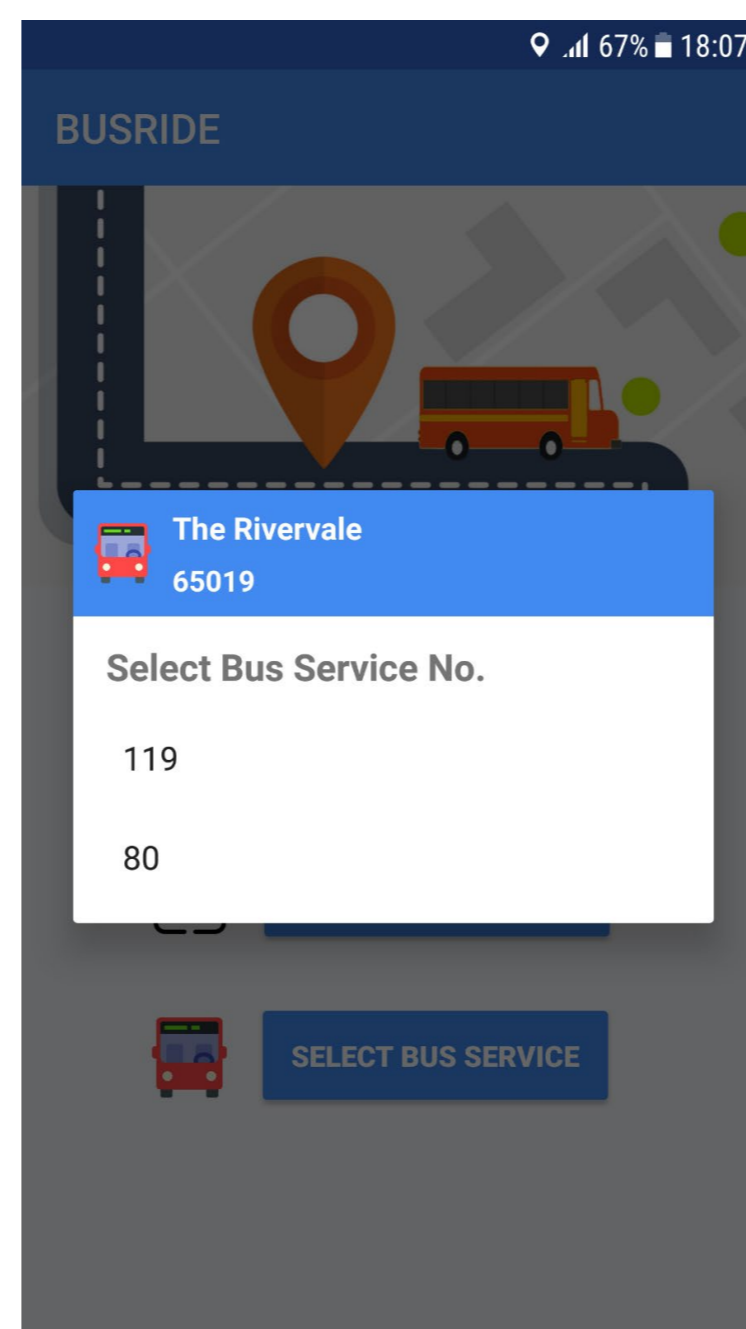
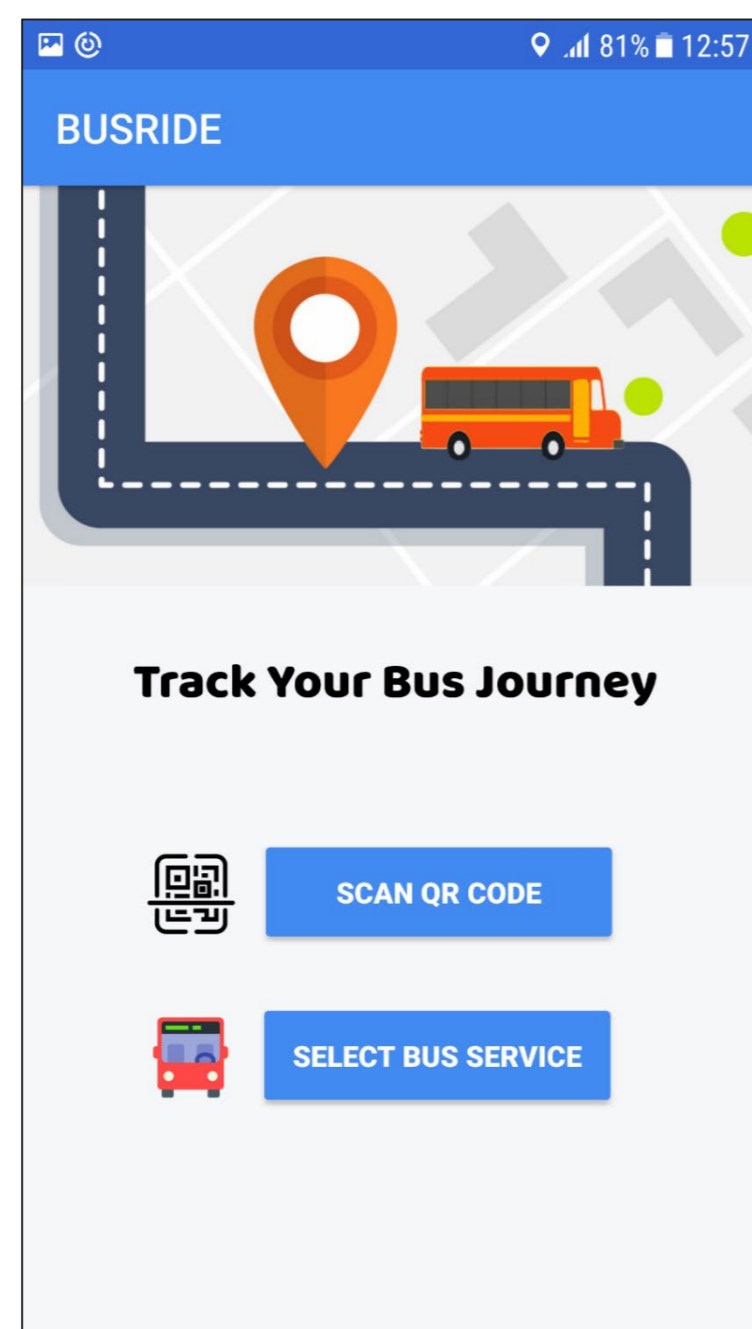
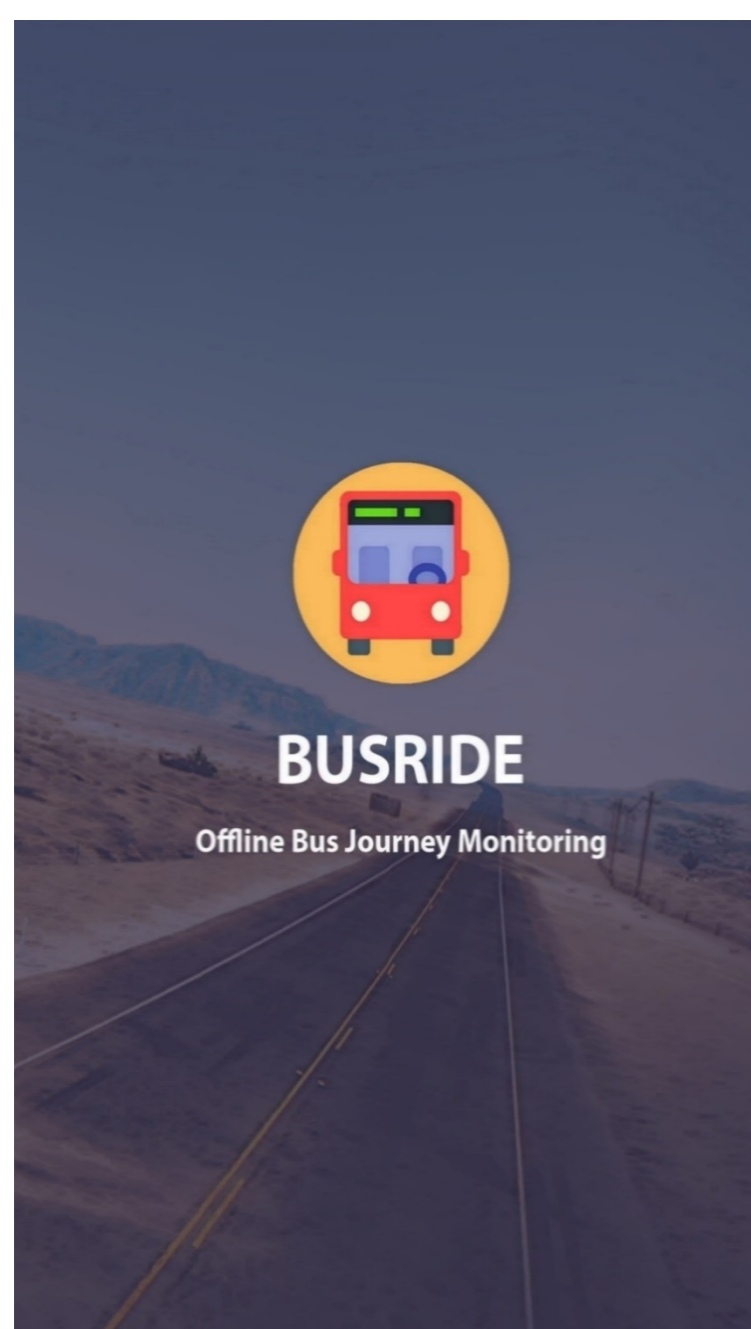
Design and develop an Android application titled "Offline BusRide", with the following capabilities:

- Bus journey monitoring without internet connectivity and active monitoring on the user-side.
- Notification reminders to remind users to alight their desired bus stop. Notifications are customizable through a notification setting menu.
- QR Code scanner for ease of use.

System Architecture



Application Design



Implementation

The main features implementation of the application can be categorized into four main components – Bus journey monitoring, error and notification alerts, QR Code scanning and offline data storage.

Bus Journey Monitoring:

- Retrieval of GPS updates
- Journey Monitoring Algorithm

Offline Data Storage:

- Creation of JSON File
- JSON File Size Analysis
- Reading of JSON File

QR Code Scanner:

- Data Format Design
- Generation of QR Code
- Scanning of QR Code

Notification Alerts:

- Notification Message
- Notification Setting

Limitation

Below are some limitations of the Android application and its technology used:

- The Time to First Fix (TTFF) for the mobile's GPS receiver may vary depending on the user's location and surrounding environment obstruction. TTFF is the measurement of time required for a GPS receiver to acquire satellite signals and calculate a fix geographical position.
- The accuracy of the journey monitoring feature relies entirely on the accuracy of the location calculated by the GPS receiver.

Conclusion

In conclusion, this project successfully demonstrated the capability of monitoring a user's bus journey without internet connectivity.

Utilizing three key components, GPS, JSON and QR Code, the project successfully demonstrates the capability of monitoring a user's bus journey without internet connectivity.

Overall, all functions stated in the objective of this project have been implemented and the developed application has successfully met its requirements.