Emergency Escape Application with Arduino

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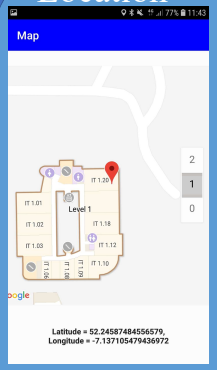
Introduction

- An Arduino board is connected to a mobile application through a bluetooth module.
- A buzzer and a sound sensor are connected to the application through bluetooth.
- The buzzer will sound, and an emergency exit route is then displayed on screen.
- I use a custom view in Android Studio called GridView to display the graph of the escape route.
- The application is for android, it has a firebase database of users. Dijstras algorithm is used to find the quickest route out of the building.
- Google Maps API is used to display the map with the current location.

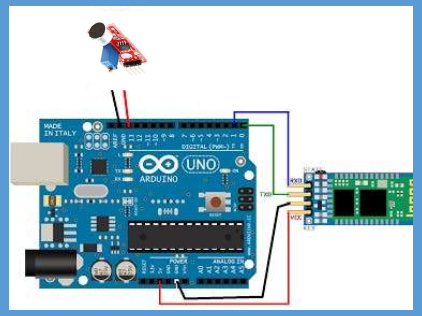
Overview

Location



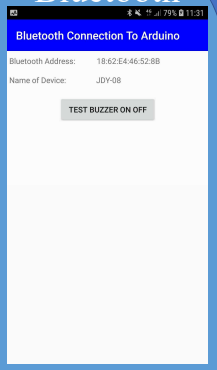
Google Maps API gets the users live current location

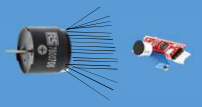
Arduino Board



Bluetooth Arduino Connection and buzzer test activity

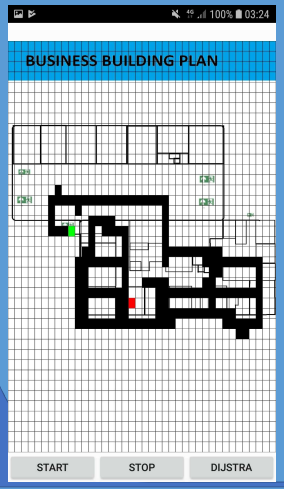
Bluetooth





Alarm from buzzer is received through a sound sensor and Bluetooth module.

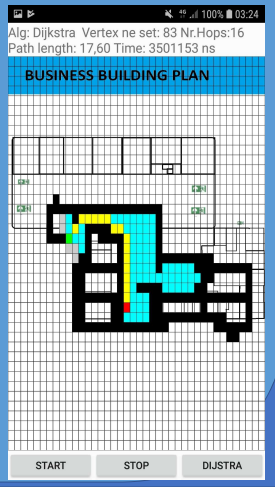
No Route



The start node and end node is chosen based on google maps location on the building plan

Dijstras Algorihm is used to calculate the quickest route between the start node and the end node with detailed information displayed above the graph

Route Drawn



Things I learned

- Dijstra's Algorithm
- Java
- XML
- Firebase
- Google Maps API
- Using Arduino – Buzzer, Sound Sensor and Bluetooth module in C++

Possible Uses

- Getting routes in college campus buildings, could be used for induction days
- Routing Applications
- Arduino Mobile Applications
- Quickest way to a parking spot in a big Car Park
- Emergency escapes at large events

Technologies Used

Android Studio

Firebase

GitHub

Java

ARDUINO

C++