A SEMINAR ON

ACCIDENT DETECTION AND ALERTING SYSTEM

Presented by Group 10

Guide : Prof. D.A Borikar

Covered Today

A brief outline

Introduction

Where are we today ?

There has been a huge rise in accidents lately and most of them remains unnoticed or are addressed late if it occurs in some isolated place. This results in delayed assistance of emergency services which increases the criticality of situation.

OBJECTIVES

1 ACCIDENT IDENTIFICATION

To identify the accident and its severity for effective addressal.

2 BEHAVIOR TRACKING

To process the driving habits of the driver and to keep track of it.

3 ALERTING SYSTEM

To alert the emergency services nearest to the site of accident immediately.

4 COST EFFECTIVENESS

To make the system effective of cost and as feasible to use as possible.

NOVELTY OF THE IDEA

SENSORS' BASED DATA ANALYSIS

Multiple sensors undergo change whenever an accident occurs, Our system brings them in action.

SERVER BASED PROCESSING

Our system incorporates the usage of server side tools to reduce the device load,

MACHINE LEARNING BASED MODELS

Our models are trained with parameters to reduce the false positives and improve the accuracy.

NO HARDWARE DEPENDENCY

In order to make system feasible and cost effective, no hardware hassles are involved.

Workflow
Processes till now

LITERATURE SURVEY
Case study of accidents and available systems used to alert

CHARACTERISATION OF ACCIDENTS
Determination of accidents and parameters responsible for it.

DATABASE MODELLING
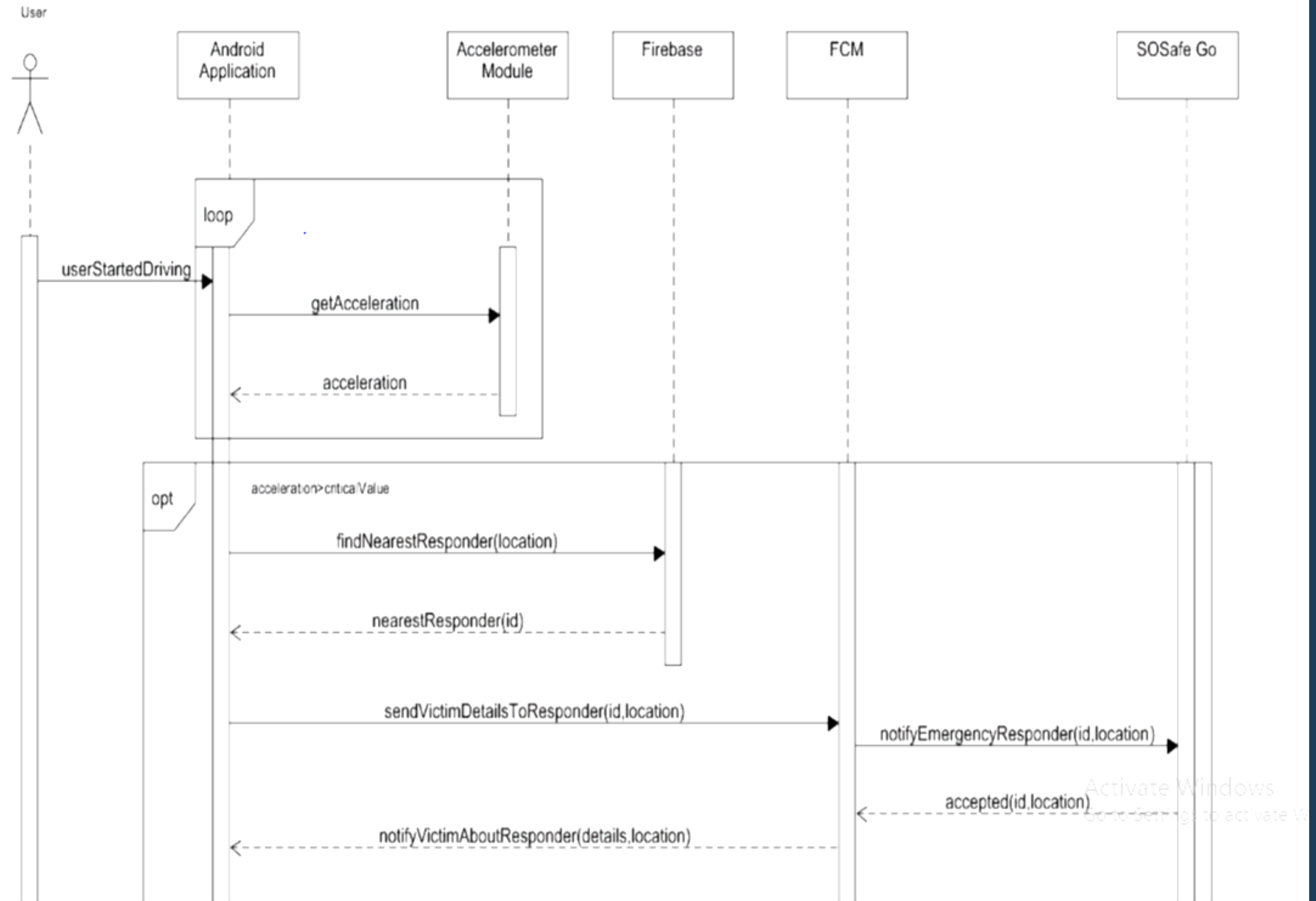Design of database schema and defining of ways in which data can be gathered

PROTOTYPE DESIGNING
Design and implementation of user interface and design of flow of the application
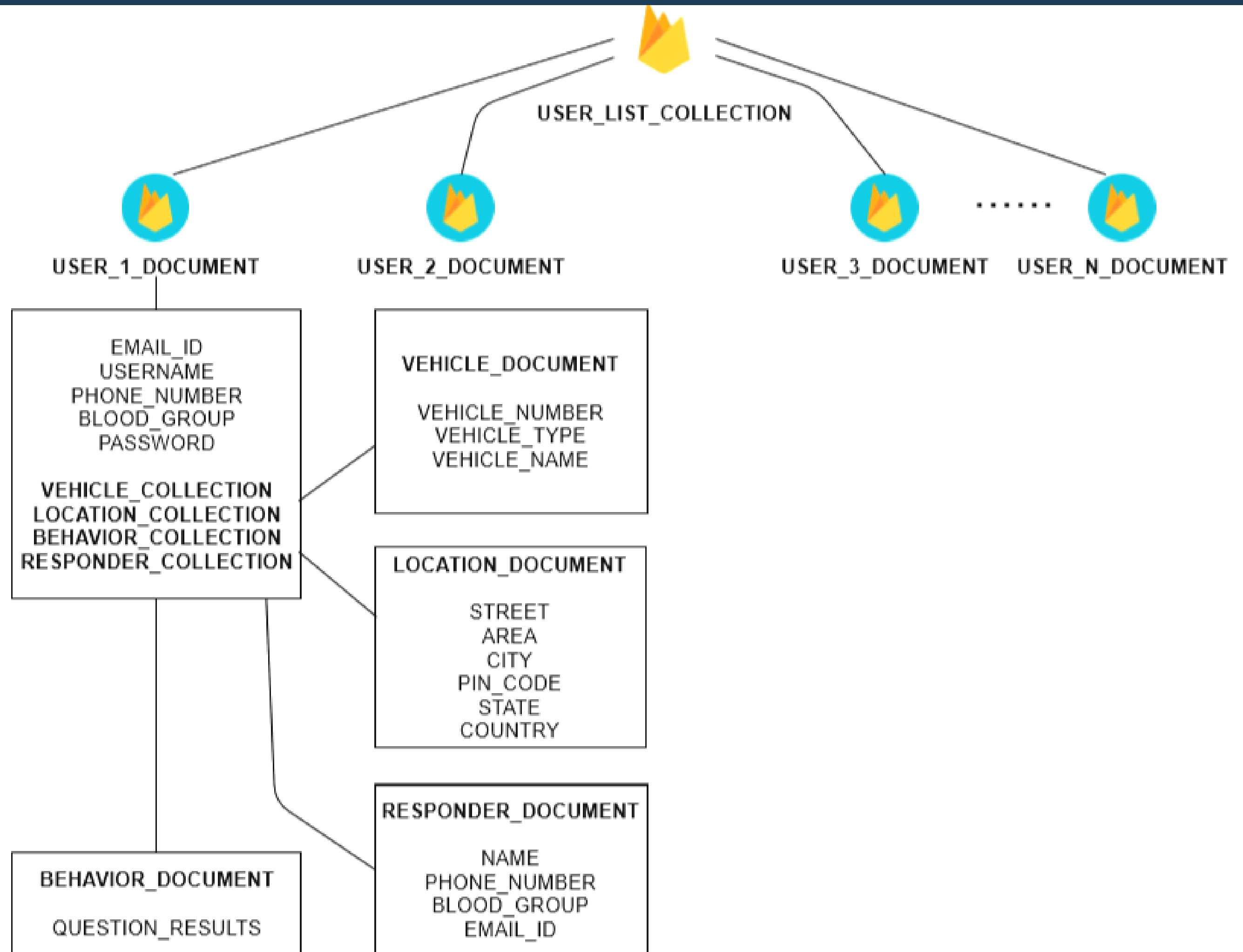
SENSORS STUDY
Study of sensors and the ways in which data can be used for training models
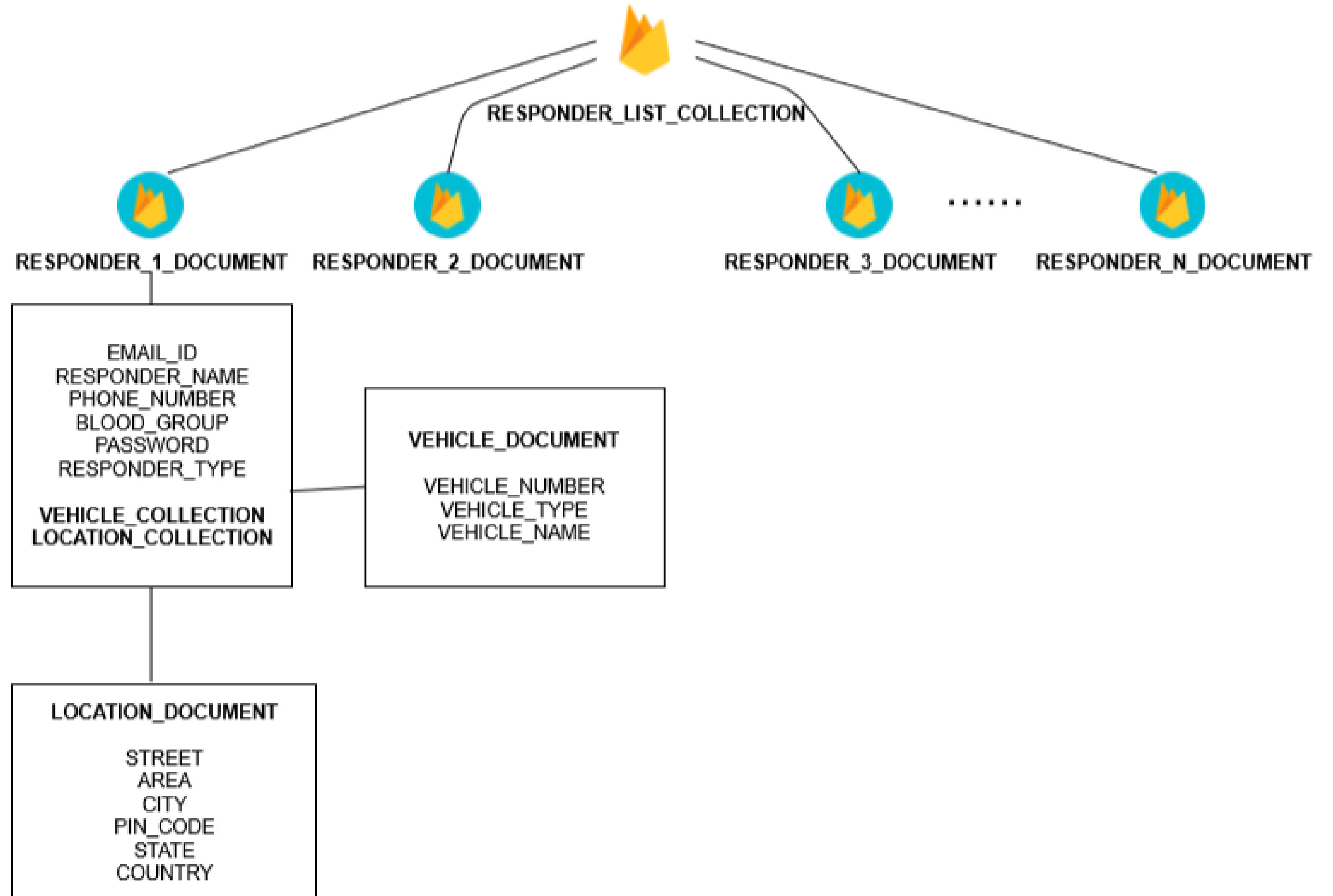
Sequence
of actions

Database Schema
USER

Technology stack

Tools used till now

Location based API's

Android Studio 3.2

Version Control by Git

Google cloud Based API's

QUESTIONNAIRE FACTORS OF VIOLATIONS

FACTOR 1

Stuck behind a slow-moving vehicle you are driven by frustration to try to overtake.

FACTOR 2

Belated braking, misjudging other's speed, unknowingly overspeeding.

FACTOR 3

Questions on visual impairments such as inability to read signs, partial focus or half eye driving.

Estimation of risk taking behavior

and its calculation

6

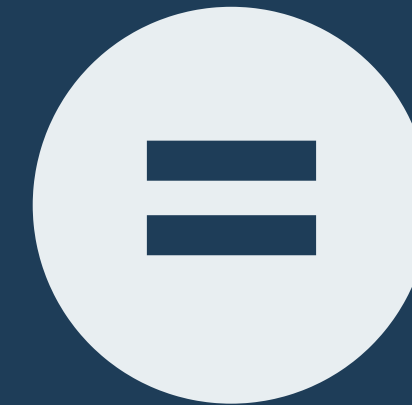### 6 point rating scale

Used to measure frequency of behavior
- a. never (0.0)
- b. hardly (0.2)
- c. occasionally (0.4)
- d. quite often (0.6)
- e. frequently (0.8)
- f. nearly all the time (1.0)

Driver behaviors

Types of behavior or nature of driver that can be classified:
- a. risk taking behavior
- b. ignorant behavior
- c. inexperienced driver
- d. careless
- e. old aged driver

Calculation

Comparing the values obtained with threshold value and using it as a parameter for accident detection.

Future challenges

INTEGRATION OF CLOUD SERVICES
Integration of services such as Firebase, GeoFire, RetroFit with the current protoype.

SENSORS' BASED DATA INTEGRATION
Gathering the sensors based data and filtering it as per the app's requirements and integrating accordingly.

MACHINE LEARNING BASED MODELLING
Training machine learning based models to analyze the characteristics responsible for accidents.

Where this application can lead us ?

This application can result in reduction of accidental deaths and increase in improved emergency services.

It can be further developed with more characteristics to improve the efficiency of accident detection.

GO SAFE