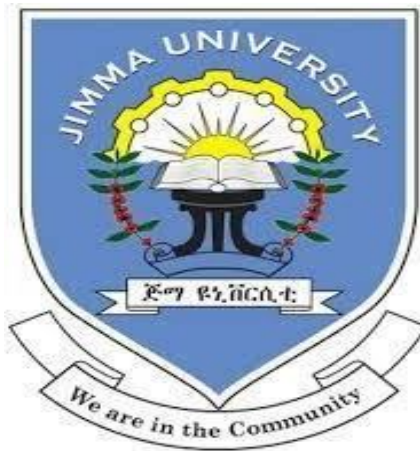


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# JIMMA UNIVERSITY

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JIMMA INSTITUTE OF TECHNOLOGY FACULTY OF COMPUTING AND

INFORMATICS DEPARTMENT OF SOFTWARE ENGINEERING

DOCUMENT-1: REQUIREMENT ENGINEERING

TITLE: ROAD TRAFFIC ACCIDENT RECORDING SYSTEM

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# CHAPTER ONE

## INTRODUCTION

### 1.1. Background Information

Traffic accident happens when a road vehicle collides with another vehicle, Pedestrian (people who walk on foot), Animal, Geographical obstacles, or some technical problem in the parts of vehicles or due to the matter of driver which can result in death, injury, property damage. A traffic accident is a global problem that affects all sectors of society. According to the World Health Organization (WHO), approximately 1.3 million die each year due to traffic accidents. Between 20 and 50 million people suffer non-fatal injuries, with many incurring a disability as a result of their injury. It costs most countries 3% of their gross domestic product.

Traffic accident in Ethiopia is one of the worst accident records in the world. At least 13 people die in a traffic accident. At the regional level, 85% of traffic accidents occur in the Oromia, Amhara, and SNNP regions. Most of people died due to absence of report of an accident at the real time because they cannot get help.

Traffic accident reporting system is a system that enable employee of concerning body to report accident automatically and also every body who has the website of the minister of transport to which he or she report.

Until now the government give some education to society especially for students in primary and secondary school to make awareness about traffic accidents, to educate students on how they have to use the road like walking in the left side of the road, using zebra lines to cross the road in the form of train and also policeman tell people to walk in the left side of the road but there is no well-established system to enable the individuals to report the occurrence of an accident

or system that notifies the driver about the accident, a system that enables the minister of transportation to get information timely

## 1.2. Motivation

The idea of developing this system comes to us because in our country as we try to explain above many people are died due to traffic accident. Therefore it is necessary to make real time report of accident to identify the location where accident happened to tell driver to be careful at that location because accident can be caused by geographical obstacles or number of pedestrian use the road or to report for concerning body that notify them to identify accident and send ambulance, policeman or other aid to rescue life of people who injured by accident and to reduce accident by making awareness of society by reporting daily accident. Another reason is that according to Constitution of Federal Republic Democratic Ethiopia article 51 the proclamation called proclamation No.799/2013 declare that insurance have to paid for third part risk by vehicle accordance with the relevant law but some people are not paid insurance for the accident happened to their property, death of their relative by traffic accident due to absence of report on time for concerning body or agent.

## 1.3. Statement of the Problem

Traffic congestion has been one of the fundamental problems faced by modern cities since the wide usage of automobiles. Just a normal few minutes trip to the convenience store may take up to half an hour due to traffic jams or slowdown. According to the police, congestion's actually the cause of some issues like road rage, road bullies, and major accidents. The small road capacity is also one of the contributing factors. As the number of private cars increases greatly over the years, traffic congestion occurs when the needed road capacity is not fulfilled. Simple improvements to road infrastructure can easily solve this problem. Since congestion occurs frequently in the cities, local government municipalities can consider passing laws restricting the number of cars owned by a family. This method is in fact, workable and effective.

- ✓ **Data Loss:-**those already existing manual records could get lost for some reason. For example because of natural disasters like earthquakes alightningingd as well as man-made disasters like fire.

- ✓ **Time consuming:** - Data record is manually and it is very time-consuming when wanting to find specific data for example if data is needed like insurance. So giving service in a short amount of time will be difficult.
- ✓ **Wastage of resources:** -papers were wasted because everything was written manually.

## **1.4. General and Specific Objectives**

### **1.4.1 General Objective**

The main objective of this project is to design a website app to make processes regarding Traffic Record Management easier.

### **1.4.2 Specific Objectives**

These are the specific objective identified in order to implement the general objective

- Identifying the functional and non-functional requirements of the system.
- Identifying design tools.
- Identifying Methodology to be used.
- Design use case and a class diagram for the system.
- Identifying the main components of the system.
- To develop a prototype of the system

## **1.5. Methodology**

### **Preparation:-**

We use this scheme for our system to scenarios modeling (UML).

### **Brainstorming:-**

We discuss and present ideas about the tools/solutions necessary to be designed to accomplish the Traffic accident recording system scenarios that need to be carried out.

### **Analysis:-**

We categorize requirements and an organizational activity to group requirements by types (e.g., functional, business), by processes, or even by domain identifying if they are specific to a scenario or generic/common to any Traffic accident recording system.

Tools:- We have intended to use different tools in the analysis, design, and implementation of our project. Among these tools: vs code, Adobe xd for developing the web applications, E-draw for **designing** UML, SQL Server **database** designer for developing the back end **database**.

## 1.6. Significance Of the Project

Accident data can be used at different levels by several groups of people with different road safety interests. These include road safety officers, vehicle design engineers, police, lawyers, road safety researchers, politicians, teachers, statisticians, insurance companies, emergency services (ambulance), public drivers, education services, and members of the public, etc.

The project's result could be applicable in different areas benefiting different target groups. The main beneficiaries could be the following.

- ❖ Traffic police officers are the main users of the system in registering traffic accidents, submitting or communicating them, initiating report generation, and using the reports to take appropriate actions.
- ❖ Citizens, NGO(Non-governmental Organization) and media can get access to accident statistics and take necessary action with the help of local government.
- ❖ Insurance Companies whose insured was involved in an accident can also use the system to get current and up-to-date information about their client and take measure.
- ❖ Ethiopian Road Authority for identifying those roads which might have caused repeated traffic accidents and improve these road standards.
- ❖ Ministry of Transport and Communication to identify and monitor which of those licensed drivers and registered vehicles by the ministry are causing repeated accident.
- ❖ Quick and Accurate flow of information about the accident.

- ❖ Emergency management on the accident for quick arrival of the caregivers. These systems respond to emergencies and direct the various departments to the incident location through the obtained information in order to clear the incident or save a life.
- ❖ Identification of the crash location for immediate response to deal with life of the rescue and property.
- ❖ Enables the lawyers to gain clear and justified information on decision making for verdict

## CHAPTER TWO

### REQUIREMENTS

#### 2.1 Functional Requirements

Functional requirements capture the intended behavior of the system. This behavior may be expressed as services, tasks, or functions the system is required to perform. The functional requirements of the Road Traffic Accident Recording System are the following:

##### **Participating Actors**

- Residents
- Traffic Controllers
- Commander
- Administrator

##### **Residents**

Report location, type, and severity of the accident

##### **Traffic Controllers**

Login into the system.

Report or record the location, type, severity, and causes of the accident.



Time at which the accident occurred.

### **Commander**

Login into the system.

Ordering traffic controllers to identify whether accidents occur or not if the report is from a resident.

### **Administrator**

Login into the system

View reports

Manage users account

Search information about accidents.

Notify the commander to take action.

Generating recorded data about the accident to the person injured or relatives.

## **2.2 Nonfunctional requirement**

Non-functional requirements (also known as quality requirements) are requirements that impose constraints on the design or implementation.

### **Usability:**

The system must be simple and easy to be used by all its potential users

### **Performance:-**

The system should be supported every user

Cost-effective: this allows users to write information about accidents offline and post online.

There is also a free call line if there are no internet services.

### **Accessibility:-**

Our system is easy to access

**Security:**

The system should not allow unauthorized users to register and alter accident records.

**Reliability:**

The main database on the server has to be back up regularly at least at the end of every day.

The central server has to be provided a secured area and made always available.