SMART IoT DEVICE FOR WOMEN SAFETY

A Project Report

Submitted by

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in partial fulfillment of requirements for the award of the
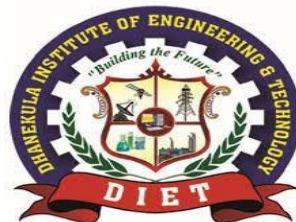
Degree of
BACHELOR OF TECHNOLOGY
IN
COMPUTER SCIENCE AND ENGINEERING
Under the esteemed guidance of
Mrs.CH.PADMINI
Assistant Professor

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DHANEKULA INSTITUTE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, Affiliated To JNTU, Kakinada)

Programmes Accredited by NBA: B. Tech in CE, EEE, MEC& ECE

NAAC Accredited & An ISO 9001- 2015 Certified Institution

GANGURU, Vijayawada, Andhra Pradesh -521139

APRIL 2020

DECLARATION

We hereby declare that the project entitled **"SMART IoT DEVICE FOR WOMEN SAFETY"** submitted for the B. Tech (CSE) degree is our original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

Place: **Signature of the Student**

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CERTIFICATE

This is to certify that the project titled "**SMART IoT DEVICE FOR WOMEN SAFETY**" is a bonafide work carried out by **G. BrahmaReddy (168T1A0528), K. ChaitanyaSai (168T1A0556), CH. SowmyaLalitha (168T1A0522), B.SiriKrishna (168T1A0508), A. Prashanth Sai (158T1A05C1),** the students of B. Tech (CSE) of Dhanekula Institute of Engineering and Technology, affiliated to Jawaharlal Nehru Technological University(JNTU), Kakinada, during the academic year 2019-20, in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology (Computer Science and Engineering) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

Signature of Guide   **Signature of HOD**
Mrs.CH.Padmini   **Dr. S. Suresh**
Assistant Professor   **Professor**

External Examiner

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We would like to take this opportunity to express my deep gratitude to the members who assisted us directly and indirectly for the completion of this project work.

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We would like to express my gratitude to **Dr. RAVI KADIYALA, Principal**, **Dr. S. SURESH, Professor and Head of the Department, K. SANDEEP, Assistant Professor and Project Coordinator** and our management for providing me adequate facilities and continuous improvements and suggestions without which this would not have seen the light of the day.

We would like to extend my warm appreciation to all my friends for sharing their knowledge and valuable contributions in this project.

Finally we express our deep sense of gratitude to our parents for their continuous support throughout our academic carrier and their encouragement in completion of this project successfully.

ABSTRACT

In our day to day life women are facing a lot of problems like harassment , kidnapping in our society. We would like to enforce safety of women by creating an Smart IOT device. Even the government is providing various security measures but we feel that a smart security device is more helpful. The people who want to save a girl can help the girl by registering into a website. Whenever the force sensor activates the current location of the girl is passed to all the registered users. The people can the save girl by reaching the location in short time.

Vision/Mission/PEOs

Institute Vision	Pioneering Professional Education through Quality
Institute Mission	Providing Quality Education through state-of-art infrastructure, laboratories and committed staff. Moulding Students as proficient, competent, and socially responsible engineering personnel with ingenious intellect. Involving faculty members and students in research and development works for betterment of society.
Department Vision	To empower students of Computer Science and Engineering Department to be technologically adept, innovative, global citizens possessing human values.
Department Mission	To Encourage students to become self-motivated and problem solving individuals. To prepare students for professional career with academic excellence and leadership skills. To Empower the rural youth with computer education. To Create Centre's of excellence in Computer Science and Engineering.
Program Educational Objectives(PEOs)	Graduates of Computer Science & Engineering will: **PEO1:** Excel in Professional career through knowledge in mathematics and engineering principles. **PEO2:** Able to pursue higher education and research. **PEO3:** Communicate effectively, recognize, and incorporate societal needs in their professional endeavors. **PEO4:** Adapt to technological advancements by continuous learning.

POs/PSOs

POs:

1	**Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
2	**Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3	**Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
4	**Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6	**The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7	**Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10	**Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11	**Project management and finance**: Demonstrate knowledge and

	understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12	**Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES

PSO1: Have expertise in algorithms, networking, web applications and software engineering for efficient design of computer-based systems of varying complexity.

PSO2: Qualify in national international level competitive examinations for successful higher studies and employment.

Project Mappings

Batch No:	4
Project Title	SMART IOT DEVICE FOR WOMEN SAFETY
Project Domain	INTERNET OF THINGS
Type of the Project	PRODUCT
Guide Name	Mrs.CH.PADMINI
Student Roll No	Student Name
168T1A0528	G.BRAHMAREDDY
168T1A0556	K.CHAITANYASAI
168T1A0522	CH.SOWMYALALITHA
168T1A0508	B.SIRIKRISHNA
158T1A05C1	A.SAIPRASHANTH

Projet Title	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
SMART IOT DEVICE FOR WOMEN SAFETY	3	3	3	3	3	3	3	3	3	3	3	2	3	2

Mapping Level	Mapping Description
1	Low Level Mapping with PO & PSO
2	Moderate Mapping with PO & PSO
3	High Level Mapping with PO & PSO

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168T1A0508

168T1A05C1   Project Guide

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INTRODUCTION

1. INTRODUCTION

Now-a-days Internet of Things is connected with our daily activities and it has become a part of our lives. With the advancement of sensor technology, availability of internet connected devices make IoT devices to act smart devices in emergency situations without human intervention. IoT is used in almost every field such as sensing, Networking, Robotics. As technology advances IoT will become a part of our day to day life. Through IoT Humans save time, resources and human power by providing the real time services without any intervention of humans.

At present women are equal with men in every aspect of work. Women's contribution to the development of our nation was immense. But we are living in a society that we cannot ensure safety to women. The crimes against women are increasing abruptly. This paper proposes an alert based system that is able to track the present location of women. The system sends location to registered people[who pledge for women safety, police, parents. Our system provides a smart solution that can definitely ensure safety to women.

1.1   PROBLEM IDENTIFICATION:

Many applications have been designed for ensuring safety to women but they can't provide a complete solution to the problem. Some of them are: One system sends the current location of women through GPS to parents and police stations when the panic button is pressed. Some other systems send location to police when their heart beat increases through heartbeat sensor. Many other researchers did a lot of research work for tracking systems, It was a basic system to send location of the user by using GSM. Other IoT based device that provides the current location of women on a web server. Other IoT device that uses GPS and pressure switch. Whenever switch is pressed the current location is sent to emergency contacts. The main drawbacks with the current devices are the medical related sensors are not giving accurate results. Whenever women sees any accident then heartbeat rises then location is sent to parents even there is no problem. Suppose if the victim is far away from police station then police parents or police can't help the victim even though location was there. By perceiving the news of women abusement and harassment many people feel that if they were at the location they can

readily save the girl. So we proposed an idea that can definitely ensure safety to women by the people who are ready to save the girl. We developed a Raspberry Pi system for the first time which provides location of victim to all the registered people.

1.2 PROJECT OVERVIEW:

We created an IoT device that can definitely ensure safety to women. If women feels any problem she can just press force sensor then Raspberry Pi system sends the current location of women to all the registered people, parents & police. The components present in our system are Raspberry Pi, Force Sensor, AD Converter, GPS, Web Application, SMS Gateway, Database.

1.3 HARDWARE REQUIREMENTS:

- Raspberry Pi
- GPS
- Force Sensor
- AD converter
- Jumper Wires

1.3.1 RASPBERRY PI:

Raspberry is a small sized computer that can be connected to a display unit, it can be either a computer monitor or projector. It can perform anything that you did expect from a desktop computer to do.

1.3.2 GPS:

GPS is an navigation based system that is used to determine the current position of an object in terms of latitude and longitude. There are 24 satellites deployed in space which surrounds the earth. This satellite broadcasts the position of an object.GPS uses triangulation process to obtain the exact position of an object. The GPS module is connected to Raspberry Pi through GPIO pins.

1.3.3 FORCE SENSOR:

The Force Sensor material resistance varies when any force or stress is applied on

it.The conductive polymer is responsible for changing the resistance inside the material.The Force sensor is connected to a digital convertor which in turn the digital converter is connected to Raspberry Pi GPIO pins.

1.3.4 AD CONVERTER:

Basically the input from force sensor is analog signal. So inorder to convert it into digital signal we use Analog to Digital convertor. It takes Analog signal as input from force sensor and sent digital signal as output to Raspberry Pi.

1.3.5 JUMPER WIRES:

These jumper wires are connected to raspberry pi and GPS including AD converter for data collection and input the data as output through code.

1.4 SOFTWARE REQUIREMENTS:

- Web Server
- SMS Gateway
- PYTHON Programming

1.1.1 WEB SERVER:

UwAmp is a free web server that can be installed on a local PC. UmAmp has the following components such as Apache, MySql, PHP and SQLite. We have to start the server if we want to work. After starting the web server we can add any web pages. The local database stores the details of the registered people.

1.1.2 SMS GATEWAY:

SMS Gateway is used to dispatch multiple messages to several people from a web browser. It can also provide international messaging service gateway with roaming facility.

1.1.3 PYTHON PROGRAMMING:

Python programming language is used as an interface between Raspberry Pi, Sensors and Database . Python is a flexible programming language with short code and it has multiple

libraries. The interaction with Sensors and Raspberry Pi is easy with python programming language.

LITERATURE SURVEY

2. LITERATURE SURVEY

2.1 EXISTING SYSTEM:

Many applications have been designed for ensuring safety to women but they can't provide a complete solution to the problem. Some of them are: One system sends the current location of women through GPS to parents and police stations when the panic button is pressed. Jesudoss[1]., Some other systems send location to police when their heart beat increases through heart beat sensor. Many other researchers did a lot of research work for tracking systems, It was a basic system to send location of the user by using GSM. KrishnaPriyanka[2].,Other IoT based device that provides the current location of women on a web server. Other IoT device that uses GPS and pressure switch. Mahejabeen[3].,Whenever switch is pressed the current location is sent to emergency contacts. The main drawbacks with the current devices are, the medical related sensors are not giving accurate results. Deepali[5].,Whenever women sees any accident then heartbeat rises then location is sent to parents even there is no problem. Suppose if the victim is far away from police station then police parents or police can't help the victim even though location was there. By perceiving the news of women abusement and harassment many people feel that if they were at the location they can readily save the girl. So we proposed an idea that can definitely ensure safety to women by the people who are ready to save the girl. We developed a Raspberry Pi system for the first time which provides location of victim to all the registered people.

2.1.1 Disadvantages of existing system:

1. The systems are bulky and are not portable where in these cannot be carried easily anywhere, any time.
 2. Requires more hardware, which in turn increases the implementation cost.
 3. The systems doesn't provide a complete kit solution to the existing problem
4. As we can see above the entire systems are separated with each other and lack the feature of one stop solution to problem of women safety

5. The main drawback of the applications and services is that the initial action has to be triggered by the victim which often in situation like these doesn't happen. So the emphasis is to build a solution that works autonomously in situations encountered.

6.At presenting the existing system provides information only to police , parents and relatives not others so the persons nearby can't help the victim if they are near by the location.

2.2 PROPOSED SYSTEM:

We created an IoT device that can definitely ensure safety to women. If women feels any problem she can just press force sensor then Raspberry Pi system sends the current location of women to all the registered people, parents & police. The components present in our system are Raspberry Pi, Force Sensor, AD Converter, GPS, Web Application, SMS Gateway, Database.
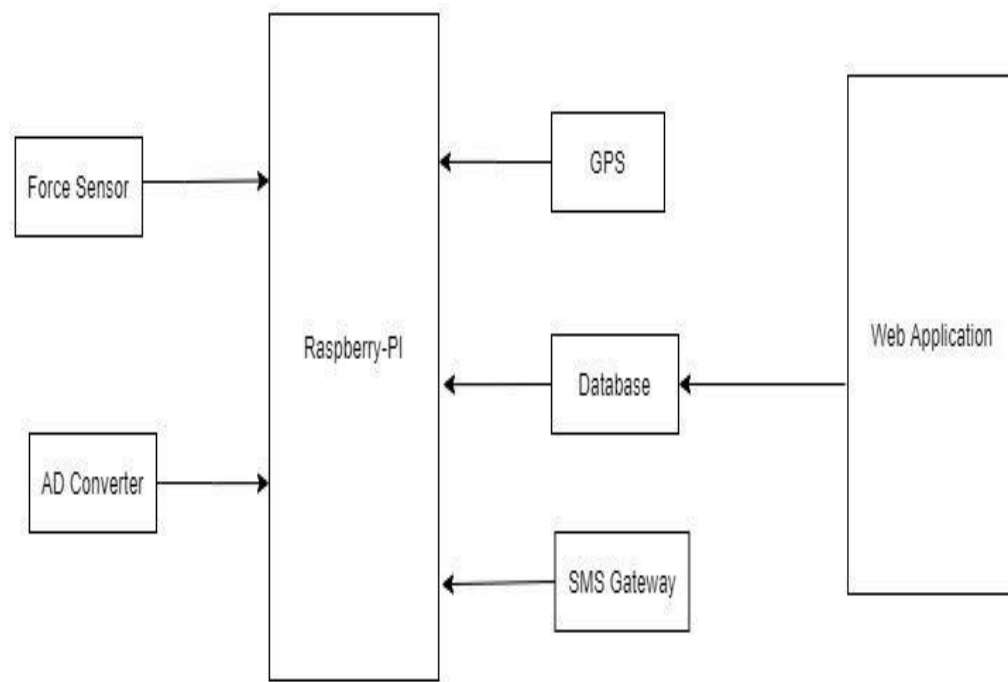
2.2.1 BLOCK DIAGRAM OF PROPOSED SYSTEM:

Figure1:Block Diagram

2.2.2 ADVANTAGES OF PROPOSED SYSTEM:

- Force sensors are low cost and they will show high accuracy level.
- Our system is portable, easy to use and enabled with internet connection.
- Our project definitely ensures safety to women.
- Victim can be saved within a short time by surrounding people's help.
- Raspberry Pi is a low cost mini sized computer and it is good at software applications.
- Raspberry Pi supports linux,python and many interfaces like HDMI, multiple USB,Ethernet, onboard Wi-Fi, Bluetooth and many GPIOs.
- Raspberry Pi works as an operating system for IoT devices.

2.2.3 LIMITATIONS OF PROPOSED SYSTEM:

- Raspberry Pi board is a delicate device so it has to be handled carefully.
- Our device should be connected to the WIFI module. Without WIFI module we cannot connect the raspberry pi with the internet.
- The Force Sensor is a sensible device so that the sensor should be handled with extra care while using the sensor.

SYSTEM ANALYSIS AND DESIGN

3. SYSTEM ANALYSIS AND DESIGN

3.1 REQUIREMENT SPECIFICATIONS:

3.1.1 Raspberry Pi:

Raspberry Pi is the name of a series of single-board computers made by the RASPBERRY PI FOUNDATION, a UK charity that aims to educate people in computing and create easier access to computing education.The Raspberry Pi launched in 2012,and there have been several iterations and variations released since then. The original Pi had a single-core 700MHz CPU and just 256MB RAM, and the latest model has a quad-core 1.4GHz CPU with 1GB RAM. The main price point for Raspberry Pi has always been $35 and all models have been $35 or less, including the Pi Zero, which costs just $5.All over the world, people use Raspberry Pi's to learn programming skills,build hardware projects, do home automation, and even use them in industrial applications.The Raspberry Pi is a very cheap computer that runs Linux, but it also provides a set of GPIO (general purpose input/output) pins that allow you to control electronic components for physical computing and explore the Internet of Things (IoT).
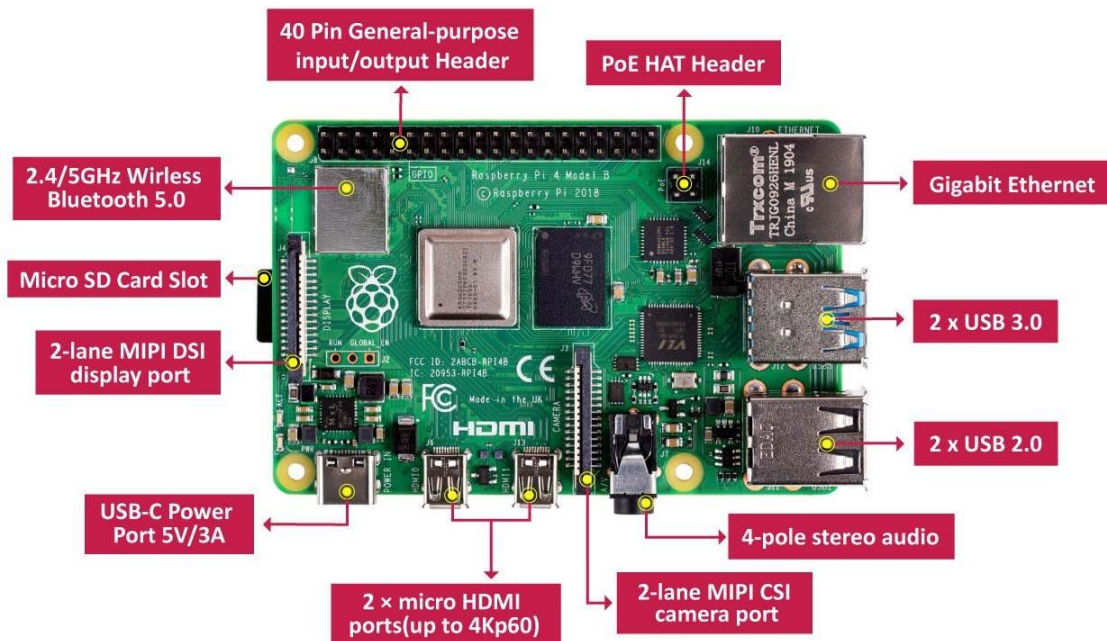

Figure 2: Raspberry Pi

3.1.1.1 GPIO

A **general-purpose input/output** (**GPIO**) is an uncommitted digital signal pin on an <u>integrated circuit</u> or electronic circuit board whose behavior—including whether it acts as input or output—is controllable by the user at <u>run time</u>.

GPIOs have no predefined purpose and are unused by default. If used, the purpose and behavior of a GPIO is defined and implemented by the designer of higher assembly-level circuitry: the circuit board designer in the case of integrated circuit GPIOs, or system integrator in the case of board-level GPIOs.

Many circuit boards expose board-level GPIOs to external circuitry through integrated electrical connectors. Typically, each such GPIO is accessible via a dedicated connector pin.

Like IC-based GPIOs, some boards merely include GPIOs as a convenient, auxiliary resource that augments the board's primary function, whereas in other boards the GPIOs are the central, primary function of the board. Some boards, which typically are classified as multi-function I/O boards, are a combination of both; such boards provide GPIOs along with other types of general- purpose I/O. GPIOs are also found on embedded controller boards such as <u>Arduino</u>, <u>BeagleBone</u> and <u>Raspberry Pi</u>. Board-level GPIOs are often endowed with capabilities which typically are not found in IC- based GPIOs. For example, <u>schmitt-trigger</u> inputs, high-current output drivers, <u>optical isolators</u>, or combinations of these may be used to buffer and condition the GPIO signals and to protect board circuitry. Also, higher-level functions are sometimes implemented, such as input <u>debounce</u>, input <u>signal edge</u> detection, and <u>pulse-width modulation</u> (PWM) output.
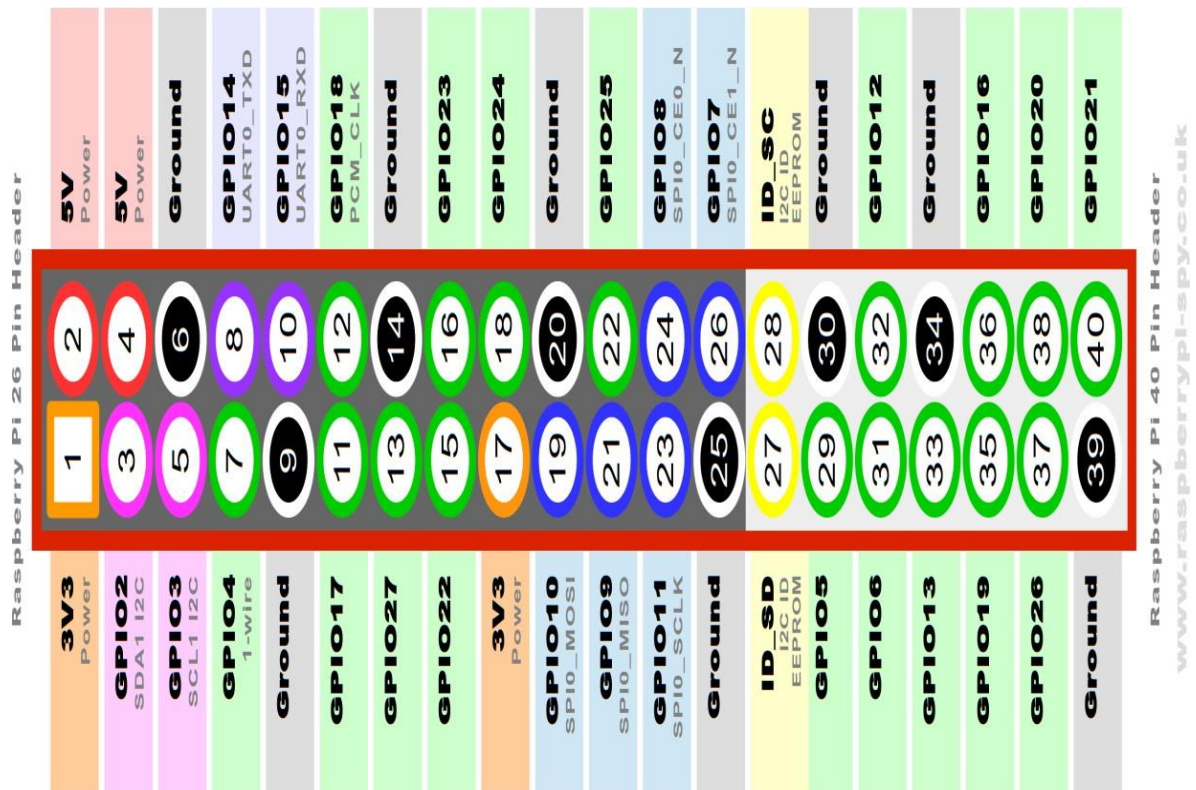
Figure 3:GPIO Pins

3.1.2 GPS

The Global Positioning System (GPS) is a utility that provides users with positioning, navigation, and timing (PNT) services. This system consists of three segments: the space segment, the control segment, and the user segment. The GPS space segment consists of a constellation of satellites transmitting radio signals to users.T he GPS control segment consists of a global network of ground facilities that track the GPS satellites, monitor their transmissions, perform analyses, and send commands and data to the constellation. The user segment consists of the GPS receiver equipment, which receives the signals from GPS satellites and uses the transmitted information to calculate the users three dimensional position and time.

Like the Internet, GPS is an essential element of the global information infrastructure. The free, open, and dependable nature of GPS has led to the development of hundreds of applications affecting every aspect of modern life. GPS technology is now in everything from cell phones and wristwatches to bulldozers, shipping containers, and ATM's.

Figure 4:GPS

3.1.2 Force Sensor :

FSR (force-sensing resistor) sensor also known as FORCE SENSOR allow you to detect physical pressure, squeezing and weight. FSR is basically a resistor that changes its resistive value (in ohms Ω) depending on how much it's pressed. These sensors are fairly low cost and easy to use but they're rarely accurate. They also vary some from sensor to sensor perhaps 10%. It means when you use FSR's you should only expect to get ranges of response. As with all resistive based sensors force-sensing resistors require a relatively simple interface and can operate satisfactorily in moderately hostile environments. Compared to other force sensors, the advantages of FSR are their size and good shock resistance. However FSR will be damaged if pressure is applied for a longer time period (hours).FSR consists of a conductive polymer, which changes resistance in a predictable manner following application of force to its surface. They are normally supplied as a polymer sheet or

ink that can be applied by screen printing. The sensing film consists of both electrically conducting and non-conducting particles suspended in matrix. The particles are sub-micrometre sizes, and are formulated to reduce the temperature dependence, improve mechanical properties and increase surface durability. Applying a force to the surface of a sensing film causes particles to touch the conducting electrodes changing the resistance of the film.Force-sensing resistors are commonly used to create pressure-sensing "buttons" and have applications in many fields, including musical instruments, car occupancy sensors, and robotics.

Figure 5:Force Sensor

3.1.3 AD Converter:

In electronics, an **analog-to-digital converter** (**ADC**, **A/D**, or **A-to-D**) is a system that converts an analog signal, such as a sound picked up by a microphone or light entering a digital camera, into a digital signal. An ADC may also provide an isolated measurement such as an electronic device that converts an input analog voltage or current to a digital number representing the magnitude of the voltage or current. Typically the digital output is a two's complement binary number that is proportional to the input, but there are other possibilities.There are several ADC architectures. Due to the complexity and the need for precisely matched components, all but the most specialized ADCs are implemented as integrated circuits (ICs).
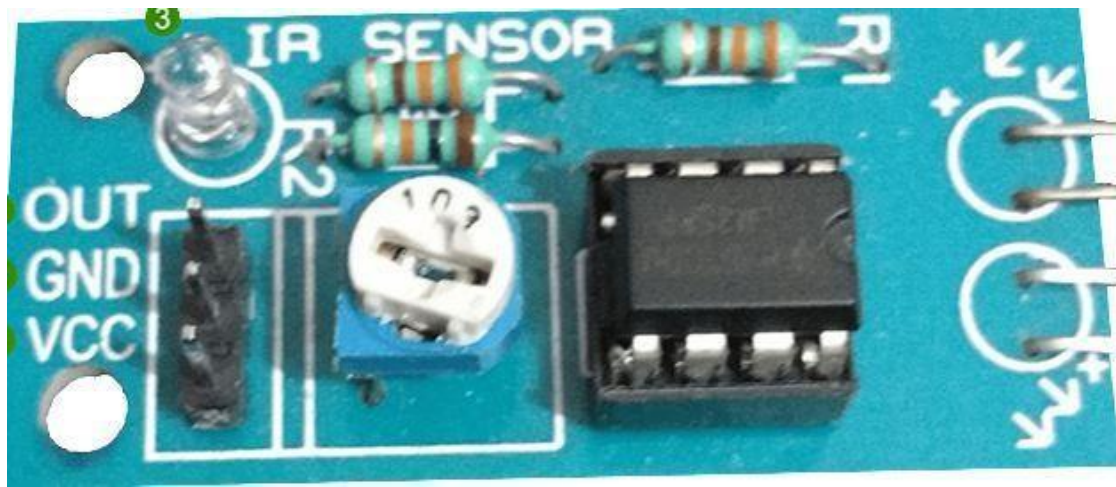
Figure 6:AD Converter

3.1.4 Jumper Wires:

A **jump wire** (also known as jumper wire, or jumper) is an <u>electrical wire</u>, or group of them in a cable, with a connector or pin at each end (or sometimes without them – simply "tinned"), which is normally used to interconnect the components of a <u>breadboard</u> or other prototype or test circuit, internally or with other equipment or components, without soldering.Individual jump wires are fitted by inserting their "end connectors" into the slots provided in a breadboard, the <u>header connector</u> of a circuit board, or a piece of test equipment.There are different types of jumper wires. Some have the same type of electrical connector at both ends, while others have different connectors. Some common connectors are:

- Solid tips – are used to connect on/with a breadboard or female header connector. The arrangement of the elements and ease of insertion on a breadboard allows increasing the mounting density of both components and jump wires without fear of short-circuits. The jump wires vary in size and colour to distinguish the different working signals.
- Crocodile clips – are used, among other applications, to temporarily bridge sensors, buttons and other elements of prototypes with components or equipment that have arbitrary connectors, wires, screw terminals, etc.
- Banana connectors – are commonly used on test equipment for DC and low-frequency AC signals.
- Registered jack (RJnn) – are commonly used in telephone (RJ11) and computer networking (RJ45).
- RCA connectors – are often used for audio, low-resolution composite video signals, or other low-frequency applications requiring a shielded cable.

- RF connectors – are used to carry radio frequency signals between circuits, test equipment, and antennas.

- RF jumper cables - Jumper cables is a smaller and more bendable corrugated cable which is used to connect antennas and other components to network cabling. Jumpers are also used in base stations to connect antennas to radio units. Usually the most bendable jumper cable diameter is 1/2".
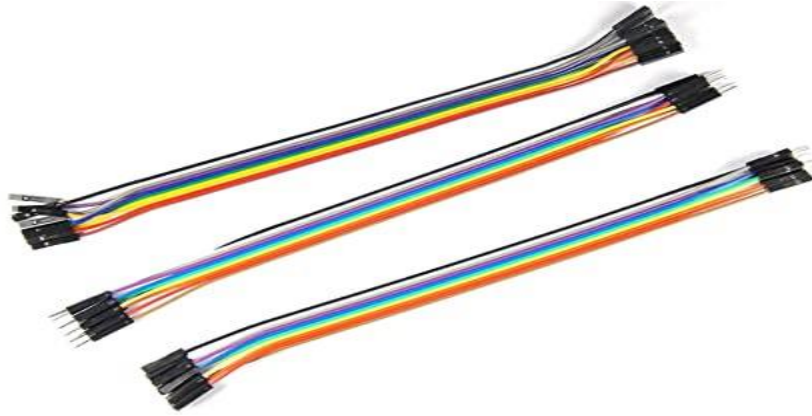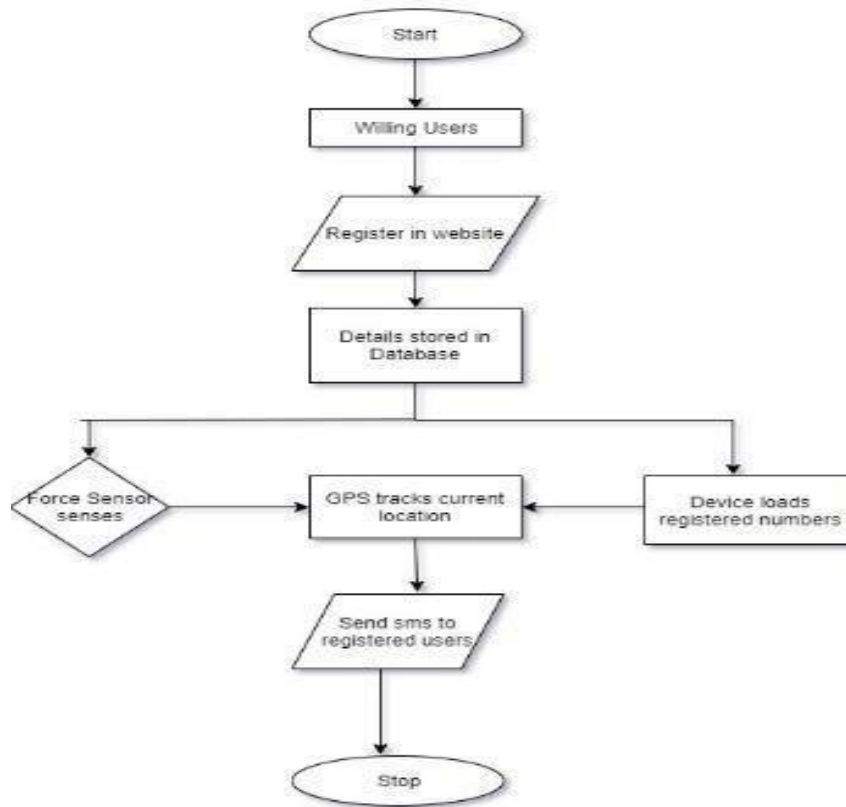

Figure 7:Jumper Wires

3.2 FLOWCHART:

Figure 8:Flowchart of SIWS

3.3 SYSTEM DESIGN:

3.3.1 UML diagrams:

The unified modeling language allows the software engineer to express an analysis model using the modeling notation that is governed by a set of syntactic semantic and pragmatic rules. A UML system is represented using five different views that describe the system from distinctly different perspective. Each view is defined by a set of diagrams, which is as follows:

- **User model view:**This view represents the system from the user perspective.The analysis representation describes a usage scenario from the end-user perspective.

- **Structural model view:**In this model the data and functionality are arrived from inside the system.This model view models the static structures.

- **Behavioural model view:**It represents the dynamic of behavioural as parts of the system, depicting the interactions of collection between various structural elements described in the user model and structural model view.

- **Implementation model view:**In this the structural and behavioural as parts of the system are represented as they are to be built.

- **Environmental model view:**In this structural and behavioural aspects of the environment in which the system is to be implemented are represented.

UML is specifically constructed through two different domains they are:

- UML Analysis modelling focuses on the user model and structural model views of the system.

- UML design modelling, which focuses on the behavioural modelling, implementation modelling and environmental model views.

- Use case Diagrams represent the functionality of the system from a user's point of view. Use cases are used during requirements elicitation and analysis to represent the functionality of the system. Use cases focus on the behaviour of the system from external point of view.

- Basic Building Blocks of UML

    The vocabulary of UML encompasses three kinds of building blocks
    1.Things
    2.Relationship
    3.Diagram

- Things in UmL

    These things are the basic object-oriented building blocks of UML. They are used to write well-formed model. these are four kinds of things in the UML.

- Structural Thing
- Behavioural Things
- Grouping Things
- An notational Things

▪ Relationship in UML

There are different types of relationship in the UML They are:

   1.Dependency

   2.Association

   3.Aggregation

   4.Composition

   5.Generalization

   6.Realization

▪ Diagrams in UML:

▪ Diagrams are graphically representation of set of elements. Diagram project a system, or visualize a system from different angle and perspective.

There are two broad categories of diagrams and they are again divided into subcategories −

- Structural Diagrams
- Behavioral Diagrams

▪ STRUCTURAL Diagrams in UML:The structural diagrams represent the static aspect of the system. These static aspects represent those parts of a diagram, which forms the main structure and are therefore stable.

These static parts are represented by classes, interfaces, objects, components, and nodes.

The four structural diagrams are

- Class diagram

- Object diagram

- Component diagram

- Deployment diagram

- BEHAVIORAL Diagrams in UML:Any system can have two aspects, static and dynamic. So, a model is considered as complete when both the aspects are fully covered.Behavioral diagrams basically capture the dynamic aspect of a system. Dynamic aspect can be further described as the changing/moving parts of a system.UML has the following five types of behavioral diagrams

  - Use case diagram

  - Sequence diagram

  - Collaboration diagram

  - State chart diagram

  - Activity diagram

3.3.1.1 Class diagram:

This show the set of classes, interface, collaboration and their relationships. There are the most common diagram in modelling the object oriented system and are used to give the static view of a system. Class are composed of three things a name, attributes and operation.
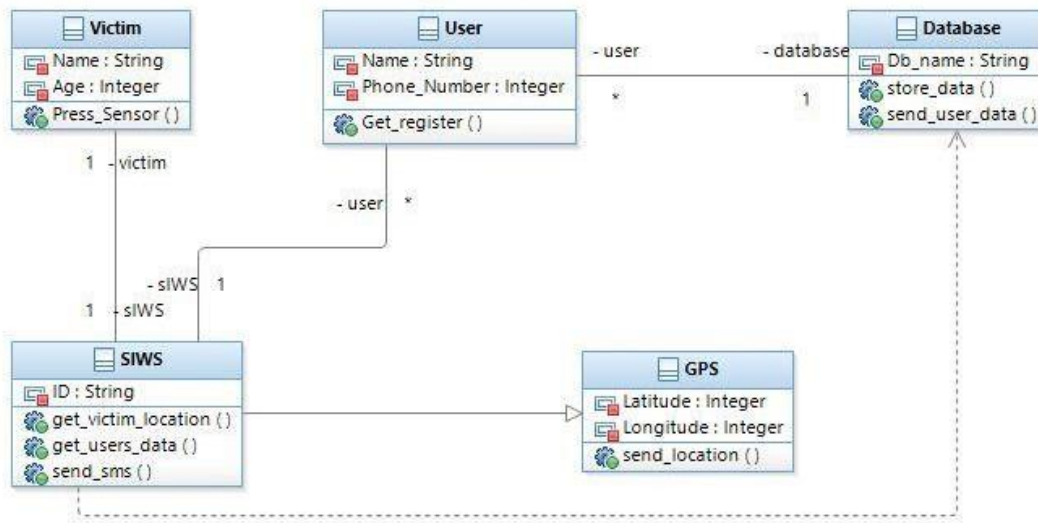

Figure 9:Class Diagram of SIWS System

3.3.1.2 Use case diagram:

It shows the set of use cases and actors and their relationship. These diagram illustrate the static use case view of a system and are important in organizing and modelling the behavior of a system.
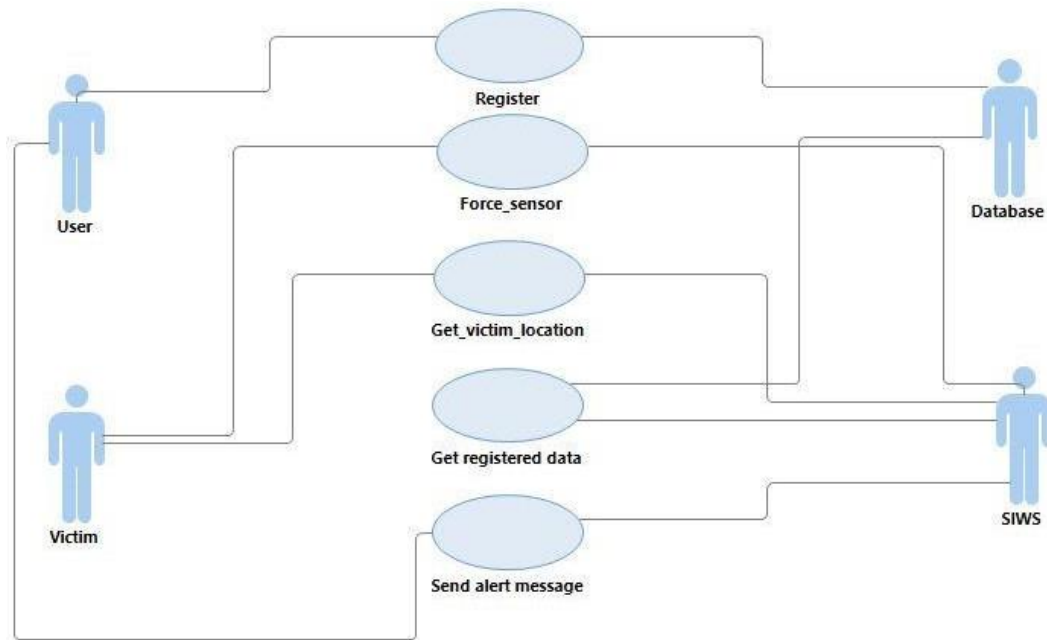

Figure 10:Use Case Diagram of SIWS System

3.3.1.3 Sequence diagram:

Sequence diagram is an interaction diagram which focuses on the time ordering of message it shows asset of objects and messages exchange between these objects.
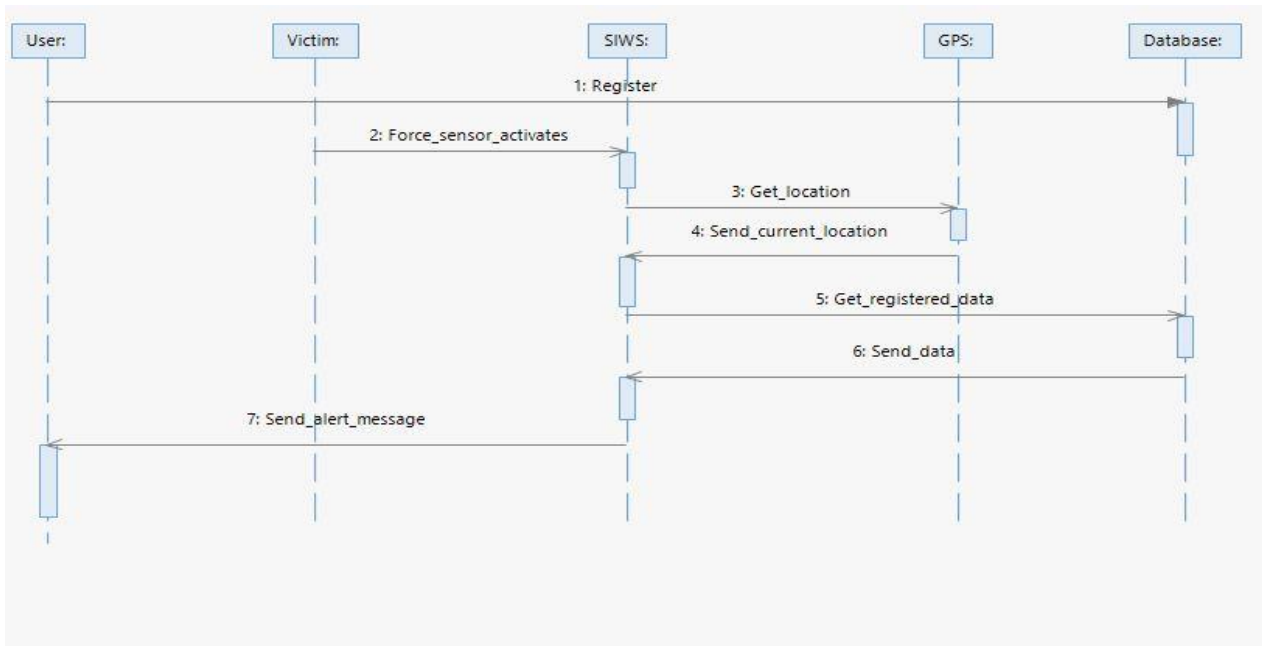

Figure 11:Sequence Diagram of SIWS System

3.3.1.4 Collaboration diagram:

This diagram is an interaction diagram that stresses or emphasizes the structural organization of the objects that sends and receives message. It shows a set of objects, link between objects and messages. It show a set of objects, link between objects and message and receive by those objects.
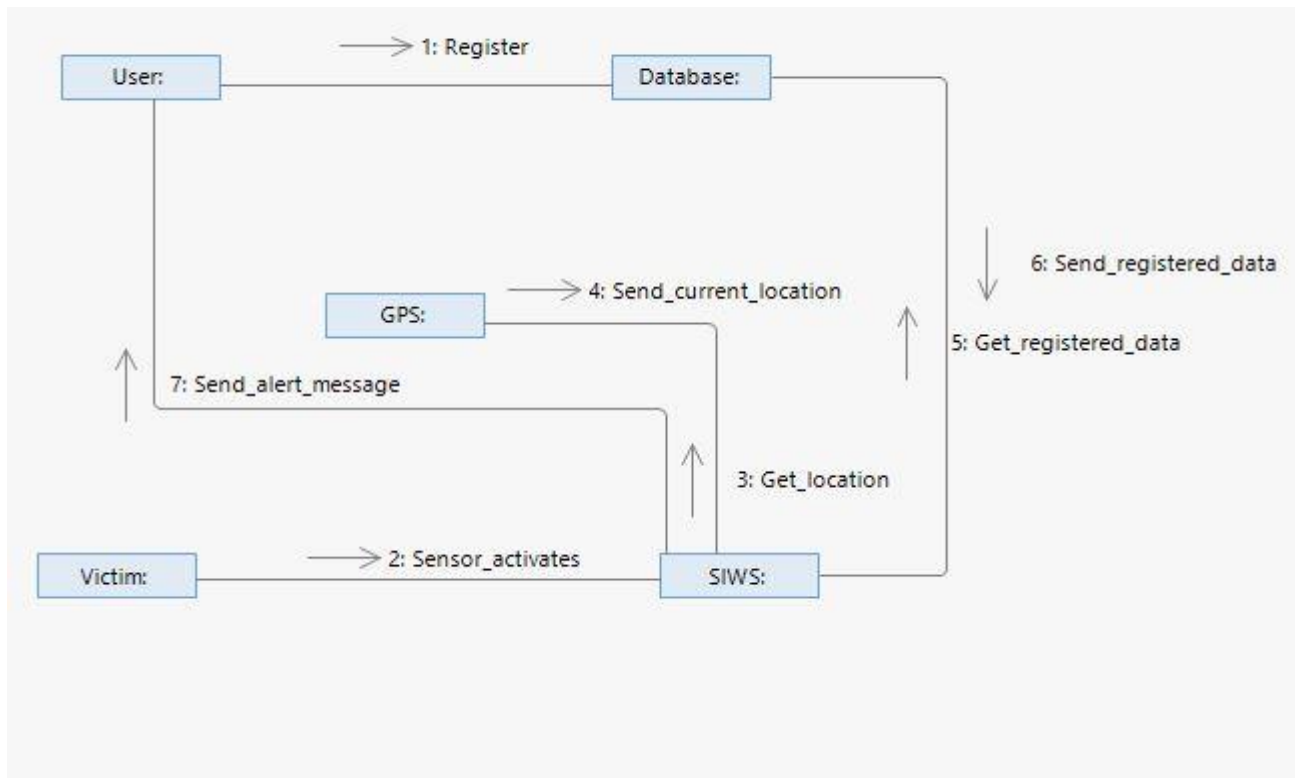

Figure 12:Collaboration Diagram of SIWS System

3.3.1.1 Activity diagram:

Activity diagram is another important diagram in UML to describe the dynamic aspects of the system. Activity diagram is basically a flowchart to represent the flow from one activity to another activity. The activity can be described as an operation of the system. The control flow is drawn from one operation to another. This flow can be sequential, branched, or concurrent. Activity diagrams deal with all type of flow control by using different elements such as fork, join etc.
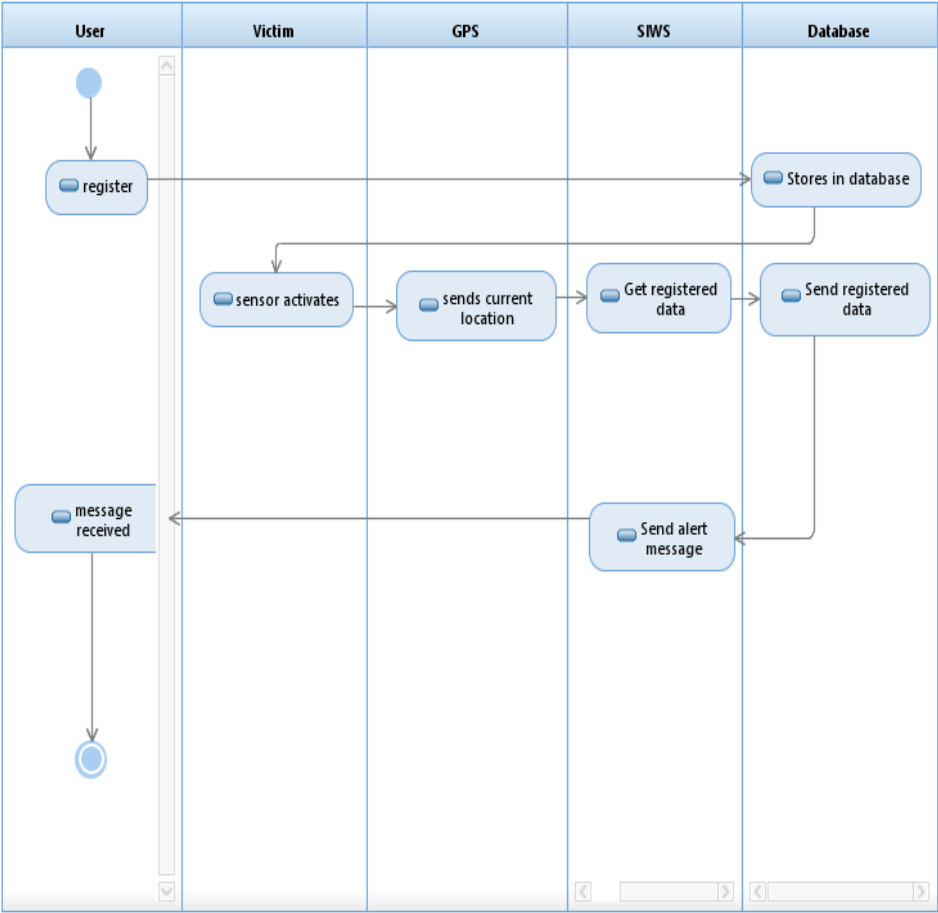

Figure 13:Activity Diagram of SIWS System

3.3.1.1 Component diagram:

It shows the set of components and their relationship and are used to illustrate the static implementation view of a system. They are related to the class diagram where in components map to one or more classes, interface of collaborations.
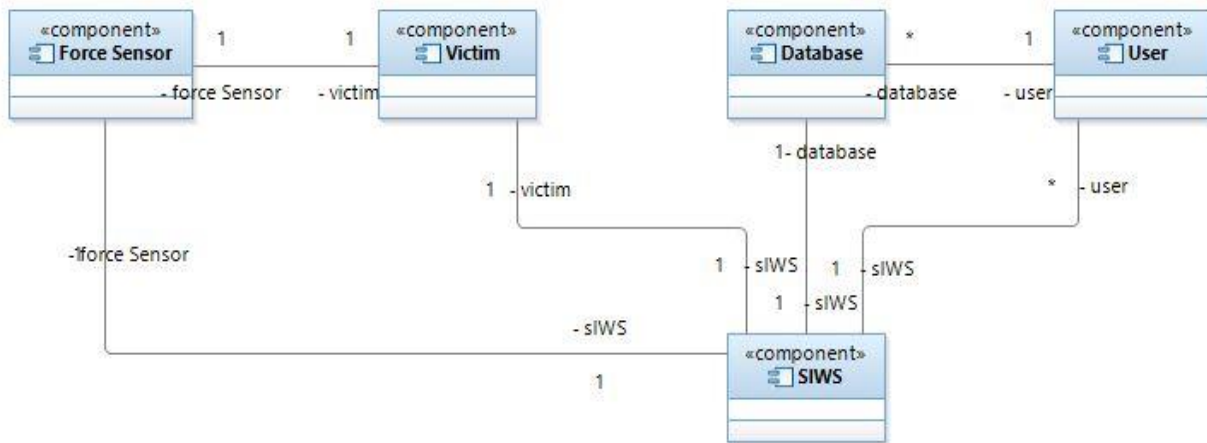

Figure 14:Component Diagram of SIWS System

3.3.1.1 Deployment diagram:

It shows a set of nodes and their relationship. They are used to show the static deployment view of the architecture of a system They are related to the component diagram where a node encloses one or more components.
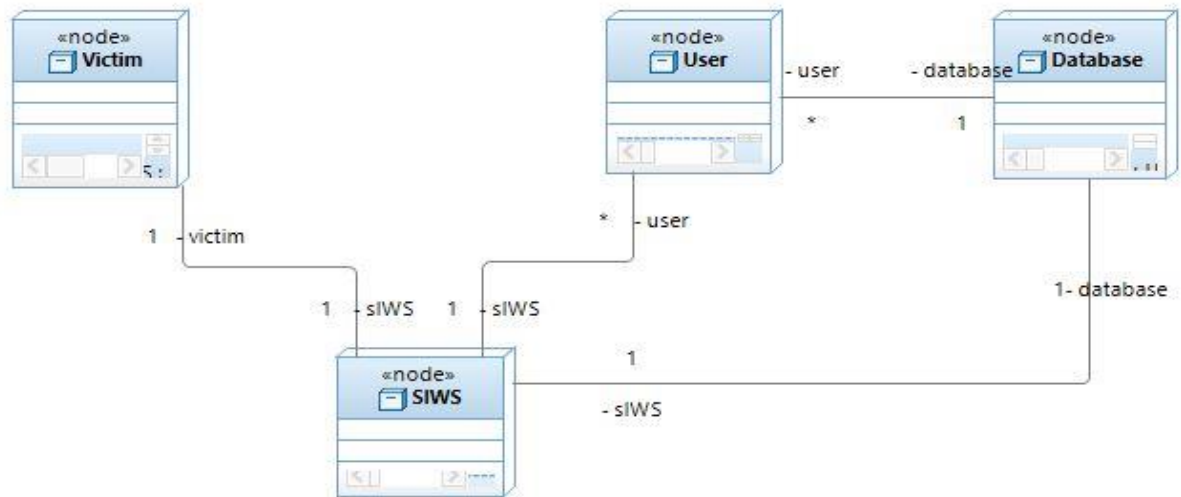

Figure 15:Deployment Diagram of SIWS System

3.3.1.2 State Chart diagram:

A State chart diagram describes a state machine. State machine can be defined as a machine which defines different states of an object and these states are controlled by external or internal events.
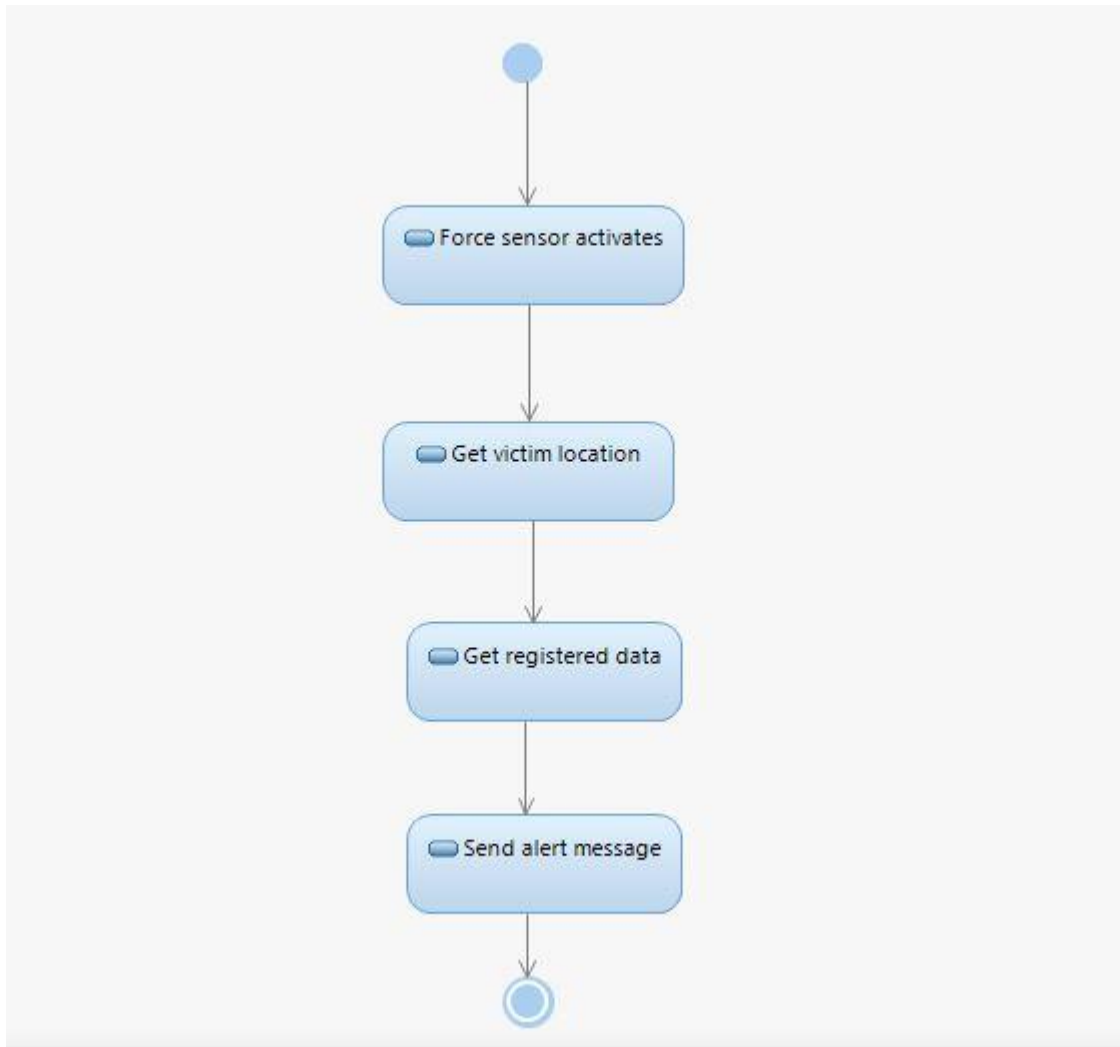

Figure 16:State Chart Diagram of SIWS System

3.4 Process of SIWS

Whenever the Raspberry Pi system is connected to a power source,the Operating system gets loaded with a green signal blinking on it.Then all the connected components are initialized.

Explanation:

Step 1: The users who are willing to help women can readily register themselves into a website by providing their details.The details are stored in a database.

Step 2: Whenever women feels any problem she can just press the force sensor.

Step 3: The input from the force sensor is read into an AC converter there after the signal is transferred to the Raspberry Pi system.

Step 4: The Raspberry Pi system gets the registered phone numbers from the database.

Step 5: The GPS module gets the current location of the victim when it is triggered by the Raspberry Pi system.

Step 6: Finally the SMS Gateway sends the location of the victim to all the registered people,police & parents.

CODE TEMPLATE

4. CODE

TEMPLATE CODE TEMPLATE FOR WEB APPLICATION: Register.php:

```
<!DOCTYPE html>
<html>
    <head>
        <meta charset="utf-8">
        <title>Registration</title>
        <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css"
integrity="sha384-
Vkoo8x4CGsO3+Hhxv8T/Q5PaXtkKtu6ug5TOeNV6gBiFeWPGFN9MuhOf23Q9If
jh" crossorigin="anonymous">
        <style>
            @import
            url('https://fonts.googleapis.com/css?family=Poppins&display=swap'); body {
            font-family: 'Poppins' !important;


            }
            label{
                font-weight: 500
                !important; font-size:
                1.1rem;
            }
            .form-control{
                border: 1px solid
                gray; color: black
                !important; font-
                size: 1.1rem;
            }
        </style>
    </head>
<body>
```

```php
<?php
require('db.php
');
// If form submitted, insert values into the
database. if (isset($_REQUEST['username'])){
    // removes backslashes
$username = stripslashes($_REQUEST['username']);
    //escapes special characters in a string
$username = mysqli_real_escape_string($con,$username);
$phoneno = stripslashes($_REQUEST['phoneno']);
$phoneno = mysqli_real_escape_string($con,$phoneno);
$password = stripslashes($_REQUEST['password']);
$password = mysqli_real_escape_string($con,$password);
$trn_date = date("Y-m-d H:i:s");
```

```php
    $query = "INSERT into `users` (username, password, phoneno,
trn_date) VALUES ('$username', '".md5($password)."', '$phoneno',
'$trn_date')";
#echo $query;
    $result = mysqli_query($con,$query);
    if($result){
        echo "<div class='form'>
<h3>You are registered successfully.</h3>
<br/>Click here to <a href='login.php'>Login</a></div>";
    }
  }else{
?>
<div class="container-fluid p-3" style="background-color: #E8E9F3;">
    <h1 class="text-primary text-center p-3">Smart IoT Device for Women Safety</h1>
 </div>
 <div class="container">
     <div class="col-6 mx-auto mt-5">
         <form action="" method="post" name="registration">
             <h5 class="text-primary p-3 text-center">New User Register Here...</h5>
             <div class="form-group p-2">
                 <label for="username" class="text-primary">Username</label>
                 <input type="text" name="username" placeholder="Enter Username"
required class="form-control" />
             </div>
             <div class="form-group p-2">
               <label for="username" class="text-primary">Phone Number</label>
               <input type="text" name="phoneno" placeholder=" Enter Phone Number"
required class="form-control" />
          </div>
             <div class="form-group p-2">
                 <label for="username" class="text-primary">Password</label>
                 <input type="password" name="password" placeholder=" Enter
Password" required class="form-control" />
```

```
                    </div>
                    <div class="form-group text-center">
                        <input name="submit" type="submit" value="Register" class="btn btn-
primary" />
                    </div>
                </form>
            </div>
        </div>
<?php } ?>
</body>
</html>
```

Login.php:

```php
<!DOCTYPE html>
<html>
    <head>
        <meta charset="utf-8">
        <title>Login</title>

        <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css"
integrity="sha384-
Vkoo8x4CGsO3+Hhxv8T/Q5PaXtkKtu6ug5TOeNV6gBiFeWPGFN9MuhOf23Q9If
jh" crossorigin="anonymous">
        <style>
            @import
            url('https://fonts.googleapis.com/css?family=Poppins&display=swap'); body {
            font-family: 'Poppins' !important;


            }
            label{
                font-weight: 500
                !important; font-size:
                1.1rem;
            }
            .form-control{
                border: 1px solid
                gray; color: black
                !important; font-
                size: 1.1rem;
            }
        </style>
    </head>
<body>
<?php
```

```php
require('db.ph
p');
session_start()
;
// If form submitted, insert values into the
database. if (isset($_POST['username'])){
     // removes backslashes
 $username = stripslashes($_REQUEST['username']);
     //escapes special characters in a string
 $username = mysqli_real_escape_string($con,$username);
 $password = stripslashes($_REQUEST['password']);
 $password = mysqli_real_escape_string($con,$password);
 //Checking is user existing in the database or not
     $query = "SELECT * FROM `users` WHERE username='$username'
and password='".md5($password)."'";
 $result = mysqli_query($con,$query) or die(mysql_error());
```

```php
 $rows = mysqli_num_rows($result);
       if($rows==1){
    $_SESSION['username'] = $username;
          $query='UPDATE `users` SET `availability`=\'1\' WHERE
  `username`=\".$_SESSION['username']."'";
  //echo $query;
  $result = mysqli_query($con,$query);
          // Redirect user to index.php
     header("Location: index.php");
         }else{
 echo "<div class='form'>
<h3>Username/password is incorrect.</h3>
<br/>Click here to <a href='login.php'>Login</a></div>";
 }
    }else{
?>
     <div class="container-fluid p-3" style="background-color: #E8E9F3;">
          <h1 class="text-primary text-center p-3">Smart IoT Device for Women Safety</h1>
     </div>
     <div class="container">
          <div class="col-6 mx-auto mt-5">
               <form action="" method="post" name="login">
                    <h4 class="text-primary p-3 text-center">Login Here </h4>
                    <div class="form-group p-2">
                         <label for="username" class="text-primary">Username</label>
                         <input type="text" name="username" placeholder="Username" required
class="form-control" />
                    </div>
                    <div class="form-group p-2">
                         <label for="username" class="text-primary">Password</label>
                         <input type="password" name="password" placeholder="Password"
   required class="form-control" />
                    </div>
```

```
                    <div class="form-group text-center">
                        <input name="submit" type="submit" value="Login" class="btn btn-
primary"
/>                    </div>
            </form>
          </div>
    </div>
<?php } ?>
   </body>
   </html>
```

Availableusers.php:

```php
<?php
require('db.php
');
$query="SELECT * FROM `users` WHERE availability='1'";
//echo $query;
$result = mysqli_query($con,$query) or die(mysql_error());
while($row = mysqli_fetch_array($result,
MYSQL_ASSOC))
{
    echo $row['phoneno']."\n";
}

?>
```

Index.php:

```php
<?php
//include auth.php file on all secure pages
    //include("auth.php");
?>
<!DOCTYPE html>
<html>
<head>
<meta charset="utf-8">
    <title>Welcome Home</title>
    <link rel="stylesheet" href="./css/style.css" />
    <link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.4.1/css/bootstrap.min.css"
integrity="sha384-
Vkoo8x4CGsO3+Hhxv8T/Q5PaXtkKtu6ug5TOeNV6gBiFeWPGFN9MuhOf23Q9If
```

```
jh" crossorigin="anonymous">
    <style>
        @import url('https://fonts.googleapis.com/css?family=Poppins&display=swap');
        body {
            font-family: 'Poppins' !important;


        }
        a{
            font-weight: 600
            !important; font-size:
            1.3rem !important;
        }
    </style>
</head>
<body>
```

```html
<div class="container-fluid p-3" style="background-color: #E8E9F3;">
  <h1 class="text-primary text-center p-3">Smart IoT Device for Women Safety</h1>
</div>


<!--<div class="form">
  <p>Welcome <?php #echo $_SESSION['username']; ?>!</p>
  <p>This is Login page.</p>
  <p><a href="dashboard.php">Dashboard</a></p>
  <a href="logout.php">Logout</a>
</div>-->


<nav class="navbar navbar-expand-lg navbar-dark bg-dark">
  <a class="navbar-brand" href="#">Login as: <span><?php echo $_SESSION['username']; ?></span> </a>
  <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">
      <span class="navbar-toggler-icon"></span>
  </button>

  <div class="collapse navbar-collapse" id="navbarSupportedContent">
    <ul class="navbar-nav ml-auto">
      <li class="nav-item px-3 ">
        <a class="nav-link" href="logout.php">Logout</a>
      </li>
    </ul>

  </div>
</nav>
<div class="container text-center" style="margin-top:100px">
  <h4 class="p-2">Welcome to <span><?php echo $_SESSION['username']; ?></span> </h4>
  <h5 class="text-primary">Thank You for your Interest towards Women Safety</h5>
  <p style="font-weight:500;" class="mt-5">43As you are registered user. Now you will
```

notify with SMS Alerts whenever a Women is in Trouble</p>

</div>

</body>

</html>

Logout.php:

<?php
session_star

t();

// Destroying All Sessions

```php
require('db.php');
$query='UPDATE `users` SET `availability`=\'0\' WHERE
`username`=\".$_SESSION['username']."'";
//echo $query;
$result = mysqli_query($con,$query);
if(session_destroy())
{
// Redirecting To Home
Page header("Location:
login.php");
}
?>
```

CODE TEMPALTE FOR RASPBERRY PI :

```python
import time
import RPi.GPIO as
GPIO import requests
import serial
import
pynmea2
import time
count=0
con=0
# Pins
definitions
btn_pin = 16
#led_pin = 12

# Set up pins
GPIO.setmode(GPIO.BOARD)
GPIO.setup(btn_pin, GPIO.IN)
#GPIO.setup(led_pin,
```

```
GPIO.OUT)
serialPort = serial.Serial("/dev/ttyAMA0", 9600, timeout=0.5)
prev='http://maps.google.com/?q='+(str(0))+','+str(0)


link = "http://192.168.43.31/availableusers.php"
def convert_to_degrees(raw_value):
    decimal_value = raw_value/100.00
    degrees = int(decimal_value)
    mm_mmmm = (decimal_value - int(decimal_value))/0.6
    position = degrees + mm_mmmm
    position = "%.4f" %(position)
    return position


def parseGPS(str):
    if str.find('GGA') > 0:
        msg = pynmea2.parse(str)
```

```python
        if(float(msg.lat)>0):
            return(convert_to_degrees(float(msg.lat)),convert_to_degrees(float(msg.lon)))
        else:
            return
(0.0,0.0) def
getlink(count):
    #count=coun
    t+1
    time.sleep(1)
    str1='test'
    (a,b)=(0.0,0.0
    )
    try:
        str1 = serialPort.readline().decode()
    except:
        print('error')
    #print(str(str1))
    (a,b)=parseGPS(str1)
    #if()
        print(a,b)
        if(a>0):
            link='http://maps.google.com/?q='+(str(a))+','+str(b)
            prev=link

        else:
            link=pre
        v
        print(lin
        k)  return
        (link)


def send_sms(no,text):
    r=requests.get('http://www.kit19.com/ComposeSMS.aspx?username=587165&password=241
72&sender=RTLABS&to='+no+'&message='+text+'&priority=1&dnd=1&unicode=0')
```

```python
    print(r.text)
    print("sms sent")


# If button is pushed, light up
LED try:
    while True:
        time.sleep(
        1)
        str1='test'
        (a,b)=(0.0,0
        .0)
        try:
         str1 = serialPort.readline().decode()
        except:
         print('error')
 #print(str(str1))
        (a,b)=parseGPS(st
  r1) #if()
        print(a,b)
```

```python
    if(float(a)>0):
     link1='http://maps.google.com/?q='+(str(a))+','+str(b)
     prev=link1

    else:
     link1=pre
     v
     print(link
     1)

     #gpsmod.getlink(co
     n) con=con+1
     print(count)
     if GPIO.input(btn_pin)and count==0:
        count=1
        getrequest = requests.get(link)
        textData=str(getrequest.text)
        data=textData.split('\n')
        print(data)
        for phoneno in data:
           #print("send
           sms"+str(phoneno))
           if(len(phoneno)==10):
             print(link1)
             send_sms(phoneno,"Please help me.I am in danger Mylocation is at "+link1)
        break;
     else:
        print("no input")
        #GPIO.output(led_pin,
        GPIO.HIGH)

finally:
   GPIO.cleanup()
```
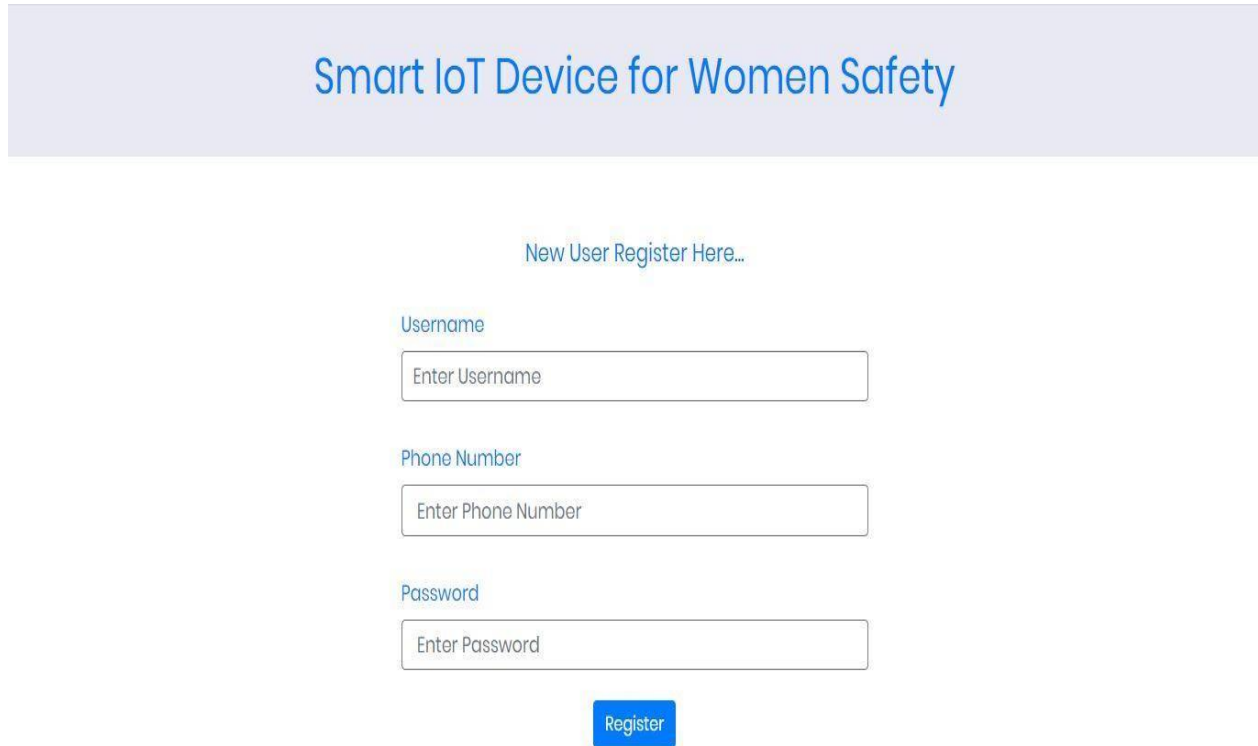
RESULTS

5.RESULTS

We created a website so that the people who want to register themselves for protection of women can provide their phone number. The register webpage image is shown below:

Figure 17:Registration Page

After successful registration the registered people must login through login page which is shown after completion of registration. In login page we have to provide credentials like username & password.

Figure 18:Log In Page

We have provided an extra functionality for user login because, if user was out of location, if user was busy with his work or he want to be work free. Then we shouldn't send a message to him. So whenever he was busy he can just logout from webpage so that, he won't get any alert messages.

Figure 19:User Log In Page

If we want to know the the available users phone numbers we can get it through another webpage.

List of Available Users are

User Name	Mobile Number
brahma	7981999638
sowmya	9966340505
chaitanya	9441561669
siri	7896312543

Figure 20: Available Users Page

5.1 NO INPUT FROM FORCE SENSOR:

When there is no input from force sensor the device loads the current location of victim and it displays a message that there is no input. So that it can't convert string to float. The device doesn't send a message to registered people.

```
Python 3.7.3 (/usr/bin/python3)
>>> %Run siws.py

 0.0 0.0
http://maps.google.com/?q=0,0
0
no input
0.0 0.0
http://maps.google.com/?q=0,0
0
no input
Traceback (most recent call last):
  File "/home/pi/Desktop/women safety sysy/final/siws.py", line 74, in <module>
    (a,b)=parseGPS(str1)
  File "/home/pi/Desktop/women safety sysy/final/siws.py", line 32, in parseGPS
    if(float(msg.lat)>0):
ValueError: could not convert string to float:

>>>
```

Figure 21:No INPUT given to Force Sensor

5.2 WHEN FORCE SENSOR IS PRESSED:

When force sensor is pressed the analog signal from force sensor is converted to digital signal by AD convertor. When there is a input from AD convertor the Raspberry pi gets the current location of victim by using GPS. Then the system loads the phone numbers of all registered people from database. The system sends an alert message to all registered people.

```
>>> %Run siws.py

16.5995 49.6673
http://maps.google.com/?q=16.5995,49.6673
Sent.c.
```

Figure 22:Force Sensor gets activated when pressed

Figure 23:SMS Output

CONCLUSION

CONCLUSION

Our project mainly focuses on providing safety to women.Our main theme was that every women can do their work at any time without any fear.As "SMART IOT DEVICE FOR WOMEN SAFETY" is set up for preventing threats to women in our society.It works on,when the force sensor gets activated by the women then the signals are transmitted to Raspberry Pi,then it collects the registered users data and sends alert message through SMS gateway along with the location using GPS.The users can readily save the victim.

FUTURE SCOPE

FUTURE SCOPE

The further research can be made to make the fully automated prototype version of our system into a consumer portable product. There is a scope sending the alert messages to the nearest people automatically without registering the member details into the web server and police station when ever any emergency is raised by using the GPRS system. We can enhance the product such that no need to activate the security buzzer manually, it can activate automatically by recording abnormal heart beat or body temperatures read by the system and such that nearby people can heard the buzzer sound and can react immediately to protect the victim. We can provide a high ended security system to the society to make sure of our people safety. It can be used for anyone's safety of our family members in absence of us.

REFERENCES

REFERENCES

[1] A.Jesudoss, Y.Nikhila, Smart solution for women safety using iot *in* International Journal of Pure and Mathematics, Volume 119 No.12, 2018.

[2] S.Krishna Priyanka, Tatavarthi Tarun, IOT for women safety in International Journal of Advanced Research in Science and Engineering, Vol.No.6,special issue(01), September 2017, BVCNSCS 2017.

[3] Mahejabeen Budebhai, IOT Based Child and Women Safety, International Journal of Computer Science and Mobile Computing, vol.7, Issue.8, August 2018.

[4] G C Harikiran, Smart security solution for women based on Internet of Things published in International Conference on Electrical, Electronics and Optimization Techniques, March 2016.

[5] Deepali, IOT Based Unified Approach for Women and Children Security usi ng Wireless and GPS, International Journal of Advanced Research in Computer Engineering & Technology, volume 5, Issue 8, August 2016.

[6] Kavya, IOt Based Women's Safety Gadget in International Journal of Innovative Research in Science, Engineering and Technology, volume 7, March 2018.

[7] A.H.Ansari, BalsarfPratiksha P, MaghadeTejal R, YelmameSnehal M,"Women Security System using GSM & GPS", International Journal of Innovative Research in Science, Engineering and Technology", Vol.6, Issue 3, March 2017.

[8] Azhaguramyaa V R, Sangamithra D, Sindhja B, "RFID Based Security System for Women", International Journal of Scientific & Engineering Research Volume 8 Issue 5, May-2017.

[9] TruptiRajendraShimpi, "Tracking and Security System for Women's using GPS & GSM, International Research Journal of Engineering and Technology (IRJET), Volume: 04 Issue:07 | July-2017.

[10] Jijesh J. J, Suraj S, D. R. Bolla, Sridhar N K and DineshPrasanna A, "A method for the personal safety in a realscenario," 2016 International Conference on ComputationSystem and Information Technology for Sustainable Solutions (CSITSS), Bangalore, 2016, pp. 440-444.

[11] Dr. Sridhar Mandapati, Sravya Pamidi, Sriharitha Am- bit,"A Mobile Based Women Safety Application (I SafeApps)", IOSR Journal of Computer Engineering (IOSRJCE): Jan – Feb. 2015.

[12] Orlando Pereira, Joao M. L. P. Caldeira, JoelJ.P.C Rodrigues "Body Sensor NetworkMobile Solutions for BiofeedbackMonitoring", Springer Science +BusinessMedia, LLC ,2010.

[13]Geetha Pratyusha Miriyala, P.V.V.N.D.P Sunil, Ramya Sree Yadlapalli,Vasantha Rama Lakshmi Pasam, Tejaswi Kondapalli and Anusha Miriyala. Smart Intelligent Security System for Women,International Journal of Electronics and Communication Engineering & Technology, 7(2), 2016, pp. 4146.

[14] R Sogi, Navya & Chatterjee, Priya & Nethra, U & Suma, V. (2018). SMARISA: A Raspberry Pi Based Smart Ring for Women Safety Using IoT. 451-454. 10.1109/ICIRCA.2018.8597424.

[15] M. Pramod, Ch V. Uday Bhaskar and K. Shikha.Iot wearable device for the safety and security of women and girl child. Volume 9, Issue 1,January 2018, pp. 8388, Article ID:IJMET_09_01_010

[16] Prof.Amol C Bhosale ,Swapnil N Gadwe, saloni D kale, Electronics jacket for women safety, International research journal of engineering and Technology(IRJET), Volume 4 may 2017.

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