AUTOMATED HEART RATE MONITORING SYSTEM

PROJECT REPORT

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ABSTRACT

Automated Heart Rate Monitoring system is a module in a application, Developed to analyse and help in case of Emergency. It takes the Heart Rate details and sort in a way to analyse and find the best results to pre-
-vent problems. The application is actually a suite of applications devel-
-oped using HTML ans JAVASCRIPT.

It is simple to understand and can be used by anyone who is not even fa-
-miliar with smart watches. It is user friendly and just asks the user to follow step by step operations by giving him few options. It is fast and can perform many operations.

This software package has been developed using the powerful coding tool of HTML at Front End and JAVASCRIPT at Back End. The software is very user friendly . The package contains different modules like Registra-
-tion. This version of the software has multi-user approach. For further en-
-hancement or development of the package, user's feedback will be consid-
-ered.

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1.0 Business Case

AUTOMATED HEART RATE MONITORING SYSTEM

THE PROJECT

- This project is designed to monitor heart patients or any people who need to measure the heart rate.
- It automatically sends an emergency call/message in case of an abnormal heart reading.

BENEFITS

- Detects abnormal heart readings
- Has high accuracy
- Fast
- Safe and reliable
- Age specific

DATE

16/03/2022

SUBMITTED BY

RAAVI VENKATESH
LAGAN MEHTA
AKASH KANDASWAMY

HISTORY

- Nowadays smart watches have many features including heart rate monitors but none of them have emergency alerts in case of abnormal readings.
- Many smart watches also have a low accuracy PPG sensor.

APPROACH

Software Requirements:

- Windows 8+ or higher version of OS
- Any latest wearable OS
- Any programming language code editor

Hardware Requirements:

- Smart Watch
- PPG sensor
- Laptop or PC

LIMITATIONS

- High cost of accurate sensors
- Limited Features
- Developing Stage
- Cannot operate in no network area
- Emergency calls or messages may not deliver in time

2 Stakeholder and User Description

PROJECT NAME	AUTOMATED HEART RATE MONITORING SYSTEM			
PREPARED BY	RAAVI VENKATESH, LAGAN MEHTA, AKASH.K			
DATE	23/03/2022			
PROJECT STAKE HOLDER NAME	SPECIFIC INFORMATION NEEDS	PROJECT INTERESTS	IMPACT ON PROJECT	ROLE
	Types & Frequency of Communication	Specific areas of interest and participation	Positive, Negative, Influencer, Supporter, Readblock	Decision Maker, Collaborator, Consultant, Information, Recipient
PROJECT SPONSOR	Allocating resources and financial support	Financial	Supporter	Budget Management
PROJECT MANAGER	Managing progress, solving problem	Technical and business project managers	Supporter	Decision making
DEVELOPER	Design Program, programming	Skilled and experience programmer	Positive	Participant
EMPLOYEE HEAD	Assigning the work, Forming the Workflow	Group Head & Team Leader	Supporter	Consultant
EMPLOYEE	Work on assigned task	Co-operating with colleagues	Positive	Collaborator
COLLEAGUES	Performing the Task	Co-operating with other members	Positive	Collaborator
CLIENTS AND CUSTOMERS	Checking the Demand and Complaints	Record arrangement and review	Negative	Participant

2.1 Project Model

Justification of using Agile Development Methodology:

1. Reduces Technical Debt:

Technical debt refers to the maintenance tasks required to support the existing product. Those tasks include defect resolution, refactoring, and testing.

2. Easily and Quickly Adapt to Change:

Teams not only adapt to change in Agile, they are encouraged to embrace the practice. Agile acknowledges that customer needs change and that teams mist be able to adapt.

3. Using Agile for Mobile Application Development and Testing Creates Total Alignment and Transparency:

An Agile software development process requires a level of collaboration and involvement that one would not find in a traditional waterfall project.

4. Agile Software Development and Test Minimize Risk:

Although teams do their best to plan the phases of a waterfall project, there is often a level of uncertainty that isn't typically found in Agile software development.

5. Higher Quality Product:

Waterfall methodology can negatively impact the quality of the product. In a waterfall methodology, project phases may be so full of features that developers must rush to complete them and little time is left for testing

6. **Predictable Delivery Dates:**

Waterfall projects revolve around lengthy project cycles that make it difficult for teams to predict a release date accurately.

3.1 REQUIREMENTS

FUNCTIONAL REQUIREMENT:

- Registration Page
- Syncing Data
- Logic Module
- Emergency Module
- Contact Module

NON-FUNCTIONAL REQUIREMENT:

- Authentication
- Data Security
- Performance
- Maintenance

SURVEY:

- High Representativeness
- Good Statistical Significance
- Precise Results

4.1 PROJECT PLAN
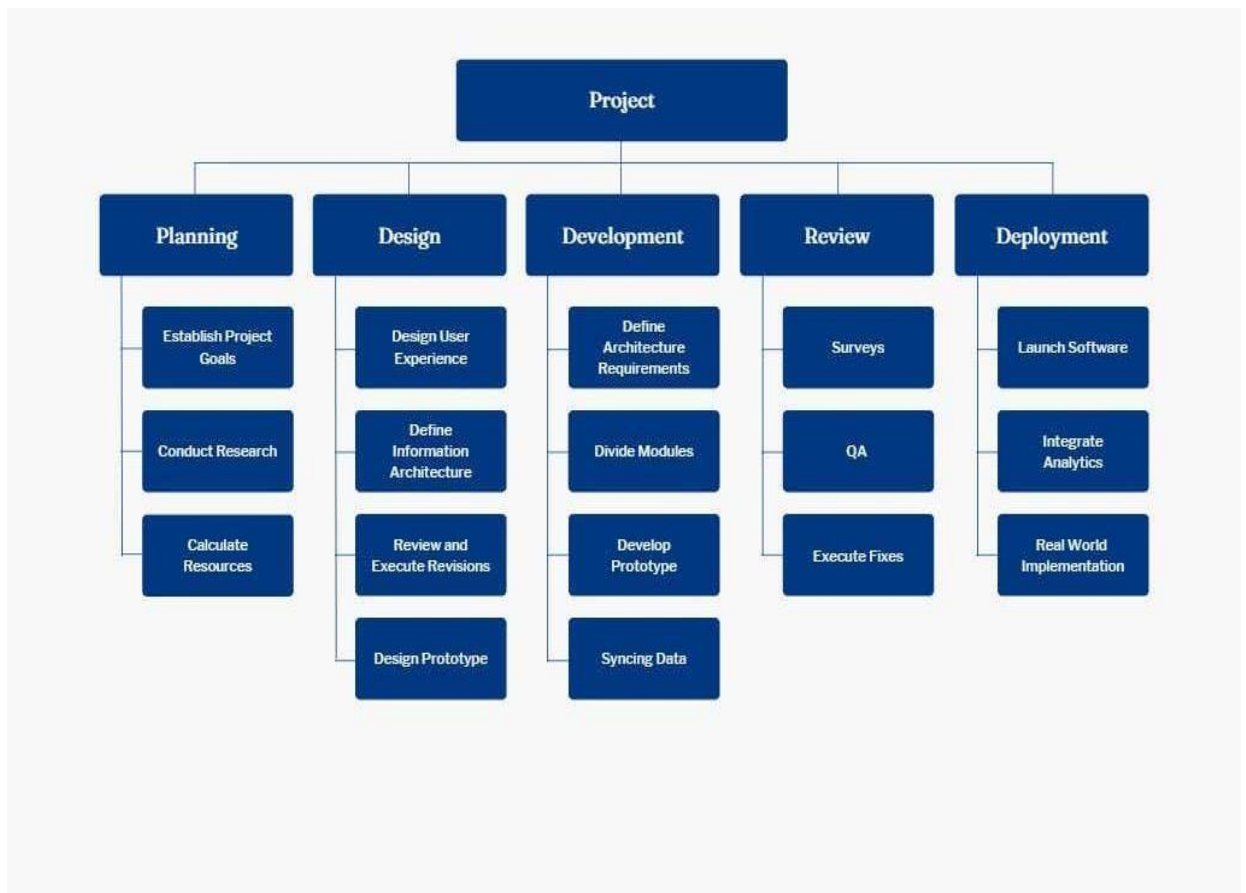
Software and Hardware Requirements for Development:

Core i7 8th Generation Processor or above
8 Gb of RAM or higher
Windows 10 Single Language or Pro27-inch Monitor or above
Reliable Internet Connection
Web installed and Environment variable should be done

PROJECT PLAN

COST ESTIMATION

In order to achieve efficient and effective management of software projects, it is important to estimate the size and cost of the project. For the size and cost estimation of our Chatbot project, we will use Function Point Analysis (FPA) and COCOMO model to predict the development effort of the statistical analysis package. Function point analysis and the COCOMO model are an accepted standard for the measurement of software size in softwareengineering.

Function Points Analysis

The FPA is a reliable method for measuring the size of computer software. It essentially measures functionality that the user requests and receives. It also measures the software development and maintenance cost and size independently of the technology used for implementation

The general approach that FPA follows is

> Count the number of inputs, outputs, inquiries, master files, and interfaces required, then calculate the Unadjusted Function Points (UFP)

- Calculate the adjusted function point (AFP) by multiplying these counts by an adjustment factor; the UFP and the product complexity adjustment.

> Calculate the Source Lines of Code (SLOC) with the help of the AFP and the Language Factor (LF)

1. Calculation of the unadjusted function points (UFP):

The FPA measures functionality that the user requires. The specific user functionality is a measurement of the functionality delivered by the application as for user request. The 5 function types identified are

● external input which receives information from outside the application boundary,

● external output which presents information of the information system,

● external enquiries which is special kind of an external output. An external inquiry presents information of the information system based on a uniquely identifying search criterion,without applying additional processing (such as calculations).

● internal logical files contains permanent data that is relevant other user The information system references and maintains the data and

● external interface files also contains permanent data that is relevant to theuser. The information system references the data,but the data is maintained by another information system

For each function identified above the function is further classified as Simple,average or complex and a weight is given to each. The sum of the weights quantifies the size of information processing and is referred to asthe Unadjusted Function points.

The table below shows the function types and the weighting factors for the varying complexities.

Function type	Simple	Average	Comple
Internal Logical File	7	10	15
External Interface File	5	7	10
External Input	3	4	6
External Output	4	5	7
External Inquiry	3	4	6

Using these definitions above, the files types in my project can be counted asfollows:

		Weighting Factor			Count
		Simple	Average	Complex	
Inputs	Member Login	3			
	Member Registration		4		
	Select question for data analysis		4		
	Select answer for option analysis		4		15
Outputs	Member login confirmation	3			
	Member Registration confirmation	3			
	List of possible enquiry				
	Graph/Table of user choice analysis	3			
	Live Customer Support enquiry	3			12
Inquiries	Validate member information		4		
	View accepted documentation list		4		8
Files	User Input Database		10		
	User Response Database		10		20
Interfaces	Application server to database			10	
	User to application server			10	20
Total UFP					75

2. Calculate Adjusted Function Point
To calculate the Complexity adjustment value, several factors have to be considered, such as Backup and recovery, code design for reuse, etc. All the factors and their estimated values in this project are shown in the following table.The adjusted function point denoted by FP is given by the formula:

FP = total UFP * (Complexity adjustment factor)

Total complexity adjustment value is counted based on responses to questions called complexity weighting factors in the table below. Each complexity weightingfactor is assigned a value (complexity adjustment value) that ranges between 0 (not important) to 5 (absolutely essential).

Table Adjusted Function Points

Number	Complexity Weighting Factor	Value
1	Backup and recovery	1
2	Data communications	2
3	Distributed processing	2
4	Performance	5
5	Existing operating environment	3
6	On-line data entry	3
7	Input transaction over multiple screens	1
8	Information domain values complex	5
9	Application designed for change	4
	Total complexity adjustment value	26

3. Calculate the Source Lines of Code (SLOC) and the formulas used

€

· Total Unadjusted Function Points (UFP) = 75
· Product Complexity Adjustment (PC) = 0.65 + (0.01 *26) = 0.91
· Total Adjusted Function Points (FP) = UFP * PC = 68.25
· Language Factor (LF) for C++ assumed as = 50
· Source Lines of Code (SLOC) = FP * LF = 3413

Cost Drivers:

	Very Low	Low	Nominal	High	VeryHigh
Product Attributes					
Required Software Reliability	0.75				
Size of Application Database			1.00		
Complexity of The Product	0.70				

Hardware Attributes	
Memory Constraints	1.00
Personnel attributes	
Applications experience	0.91
Programming language experience	1.14
Project Attributes	
Application of software engineering methods	1.00
Use of software tools	1.24
Required development schedule	1.08

COCOMO Model

The COCOMO model is a good measure for estimating the number of person- months required to develop software. Our project, Muzi : Smart Enquiry Campus Chatbot is an Utility program. The table below presents the COCOMO formulae fordifferent types of programs:

TDEV	Programmer Productivity	Development Time (Month)
Application Programs **Utility Programs** System Programs	$PM = 2.4 * (KDSI)^{1.05}$ **$PM = 3.0 * (KDSI)^{1.12}$** $PM = 3.6 * (KDSI)^{1.20}$	$PM = 2.5 * (PM)^{0.38}$ **$PM = 2.5 * (PM)^{0.35}$** $PM = 2.5 * (PM)^{0.32}$

Using the above formula for the application programs,

The programmer productivity and the development time are as follows:KDSI = 2.5 KLO

$PM = 2.4 * (2.5)^{1.05} = 6$ person-month

$TDEV = 2.5 * (6.28)^{0.38} = 5.02$ month

4.1.2 Job Description and Responsibilities

NAME	ROLE	RESPONSIBILITIES
RAAVI	PROJECT MANAGER	MANAGE THE PROJECT
AKASH	BUSINESS ANALYST	DISCUSS AND DOCUMENT REQUIRMENTS
LAGAN	TECHNICAL LEAD	DESIGN THE END-END ARCHITECTURE
RAAVI	UX DESIGNER	DESIGN THE USER INTERFACE
LAGAN	BACKEND DEVELOPER	DESIGN, DEVELOP AND UNIT TEST SERVICE
AKASH	DATA ANALYST	DESIGN AND ANALYSIS OF DATA
ALL	TESTER	DEFINE TEST CASES AND PERFORM TESTS

5.1 Risk Management

Risk from Outer World :

Presence of Similar kind of service provides.
Competitive prices from Different kind of Websites.
High cost of sensors.
Low Website speed.

Server End :

Disk failure of the database
system.Slow data iteration.

Improper connection to the internet.

Solution :

Installation of the server across the globe.
Using of better disk drive and time to time server maintenance.
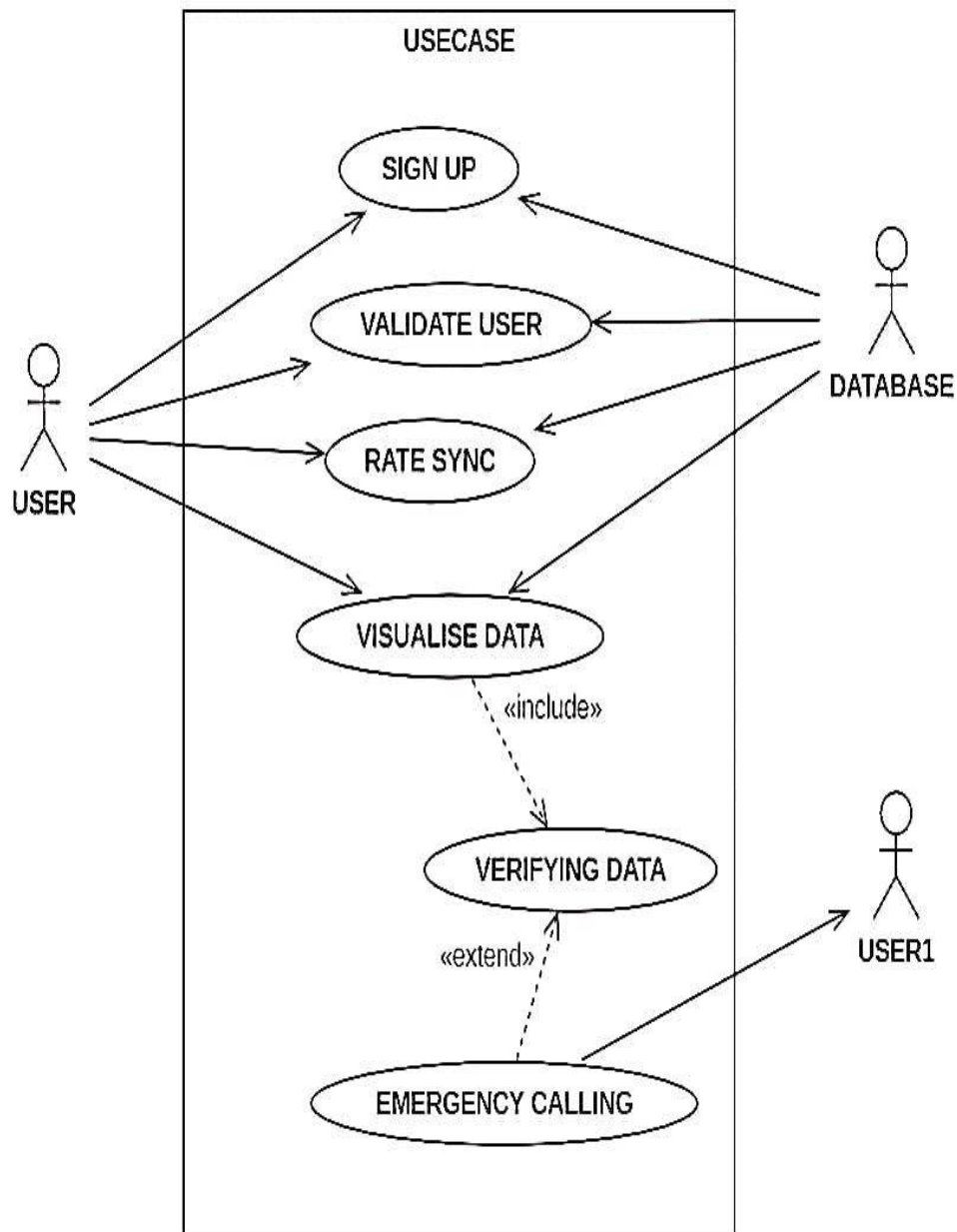**Using of better algorithm for the iteration data.**

RISK MATRIX

PROBABILITY	IMPACT CRITERIA			
	NEGLIGIBLE	MARGINAL	CRITICAL	CATASTROPHIC
CERTAIN	SENSOR			
LIKELY		INCORRECT DETAILS		
POSSIBLE		INCORRECT MODE	NETWORK INTERRUPTION	
UNLIKELY			SYNCING ERROR	
RARE			WATCH MALFUNCTION	INCORRECT READING

6.1 UML Diagrams

6.1.1 Use case Diagram :

7.1.1 Class Diagram :

CLASS DIAGRAM

SIGN UP PAGE
+CreateUser:void() +DisplayDetails:void()

MODES
+getInputmode:void() +selectingmode:void +displayMode:void()

Data visualization
+getReading:void() +Verifydata:void() +Validatingdata:void()

USER
-UserName:string -UserAge:int +UserMode:string
+submitCreadentials():void +setinputdetails:void() +Modedetails:void()

Emergency Calling
+Emergency.no:int(10)
+verifyemergency:void()

8.1 Structural UML Diagrams :

8.1.1 Sequence Diagram :
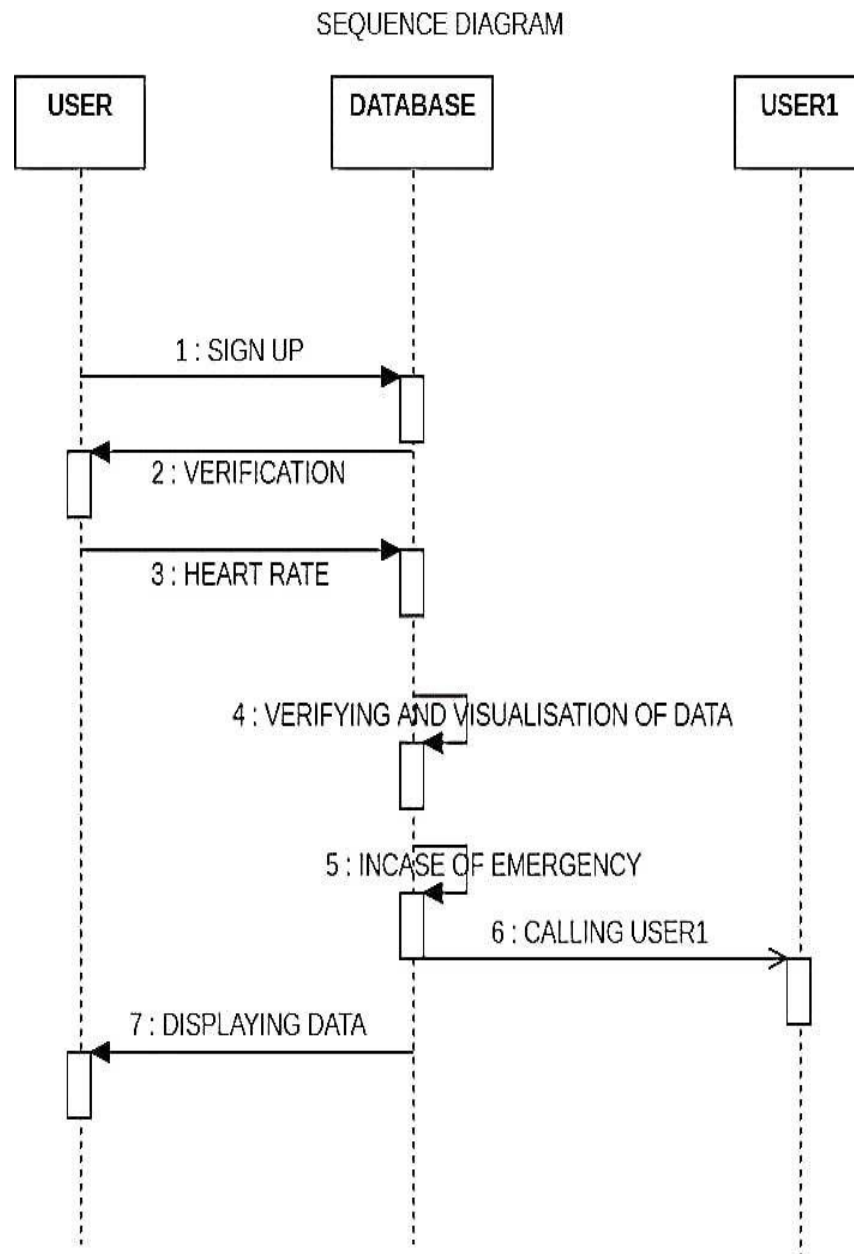
SEQUENCE DIAGRAM

Sequence Diagram Description

1. LIFE LINE:
   A) USER
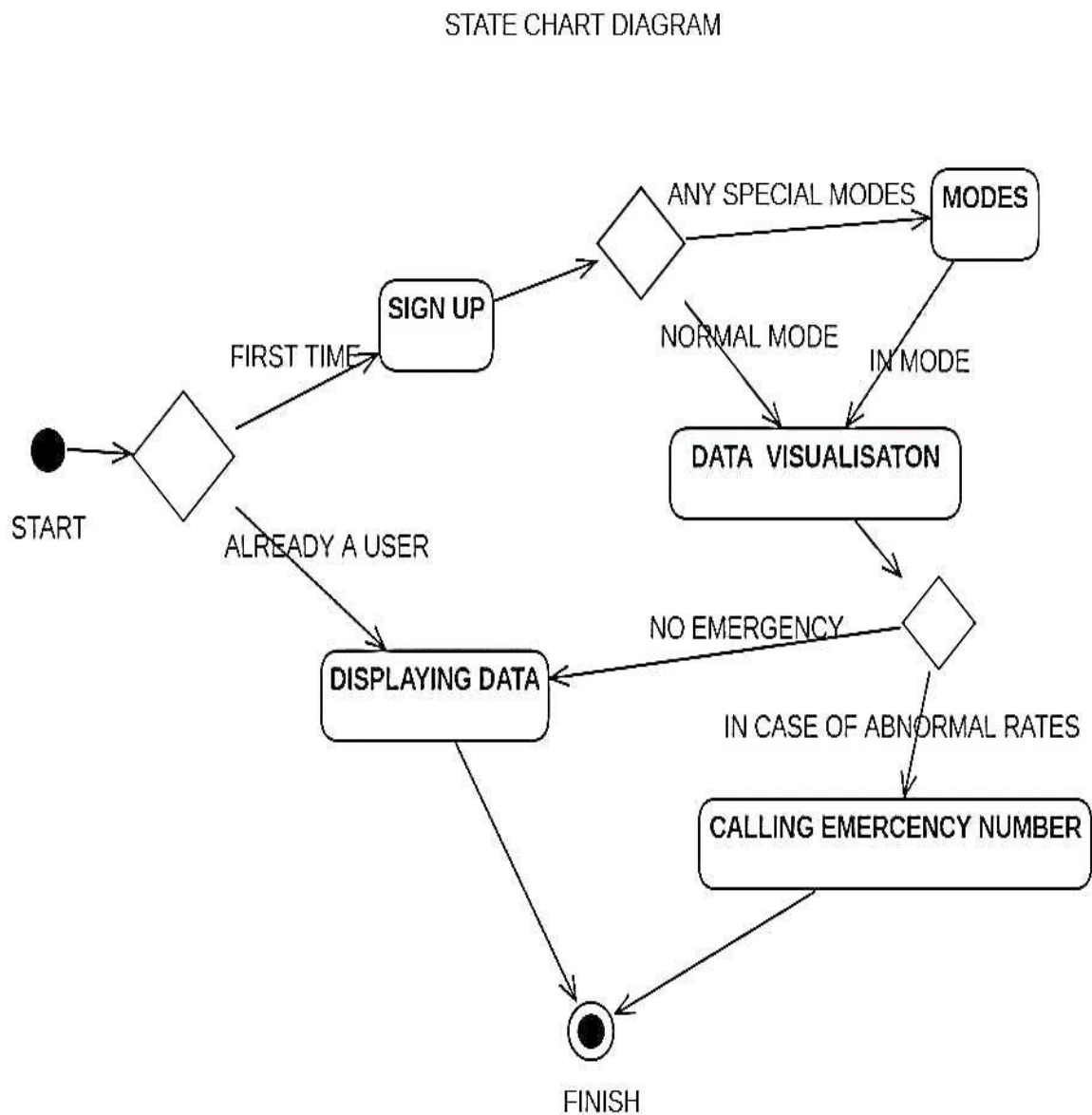   B) DATABASE
   C) USER1

2. MESSAGE AND TYPES:
   A) **Recursive Message:** Recursive mes- sage is a kind of message that represents the invocation of message of the same lifeline. It's target points to an activation on top of the activation where the message was invoked from.
   B) **Create Message**: A message defines a particular communication between Lifelines of an Interaction and is a kind of message that represents the instantiation of (target) lifeline.
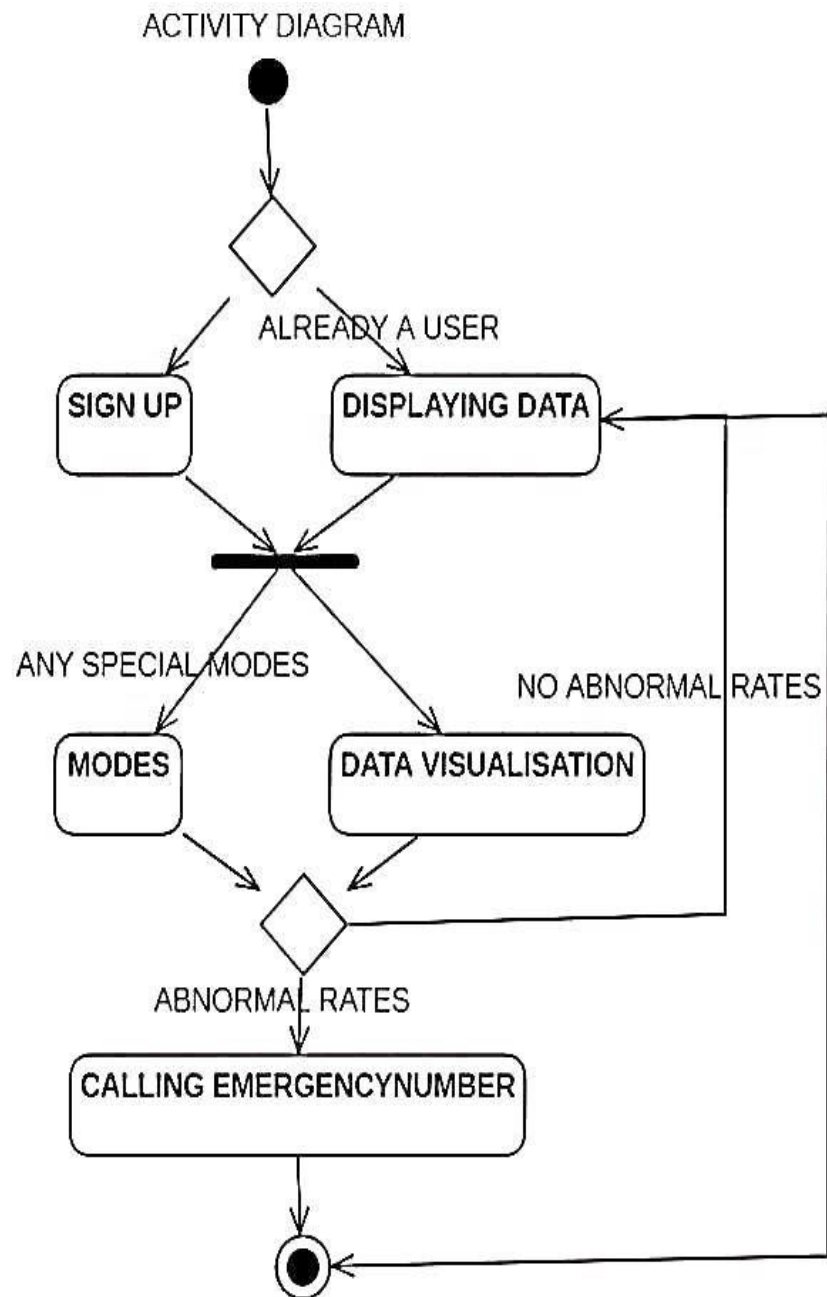
3. DESCRIPTION:
In this after the registration part the database collects the heart rates and analyse according to the results of the analysis it will call for Emergency number and Help the user.

8.1.3 State chart Diagram :

STATE CHART DIAGRAM

Activity Diagram

ACTIVITY DIAGRAM

ALREADY A USER

SIGN UP

DISPLAYING DATA

ANY SPECIAL MODES

NO ABNORMAL RATES

MODES

DATA VISUALISATION

ABNORMAL RATES

CALLING EMERGENCYNUMBER

STATE CHART DESCRIPTION

1) STATES:
   ### A) Sign up:
   This state goes when user is new to this application.
   This contains the name,number,gender and age whichhelps in analysis of the user health.
   ### B) Displaying data:
   This option is for who is already a user or the signup once . which show the data analysis of the user
   ### C) Data visualization:
   This is the basic analysis of data and showing using Graphic user interface . which makes a user to observe andfollow the tip.
   ### D) Modes:
   The heart rates changes according to task we do so according to the user work and stats we can change the mode which increases the accuracy of the analysis.which reduces the errors occurs due to bad rate reading.
   ### E) Calling Emergency number:
   This will enable itself which makes the user not to suffer during emergency which will automatically call the number which can send the help immediately.
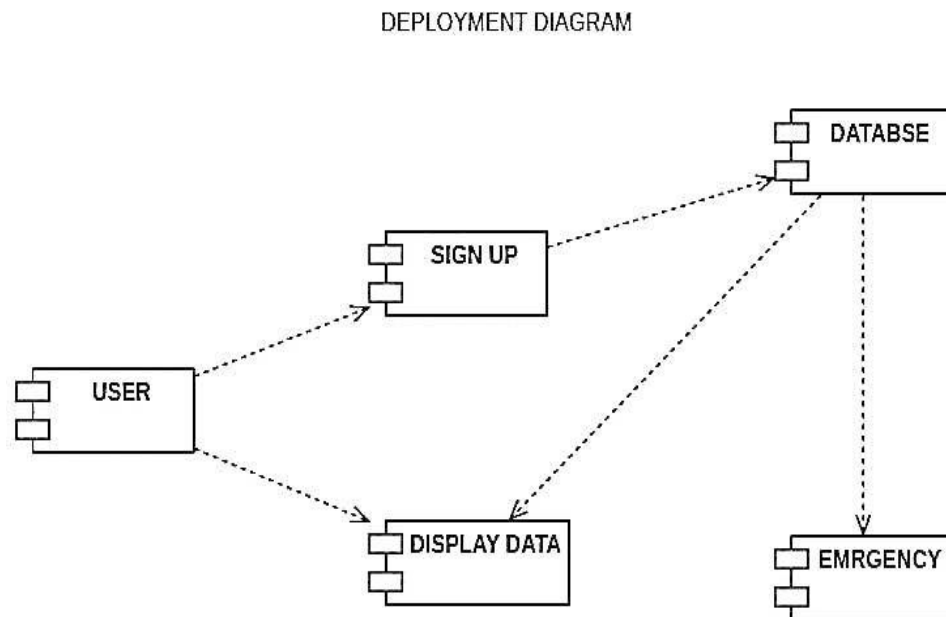
2) Transition:
   There are only two transition in this application which from start to the sign up and direct data page and other is from the Database to the calling server.

9.1.1 Dataflow Diagram :

DATAFLOW DIAGRAM
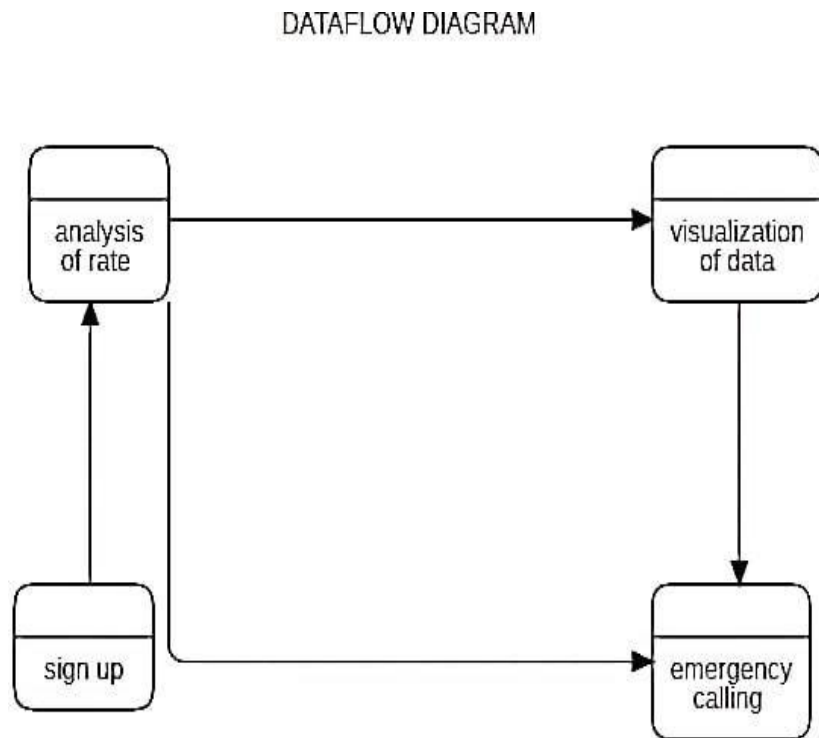
10.1 Deployment Diagram :
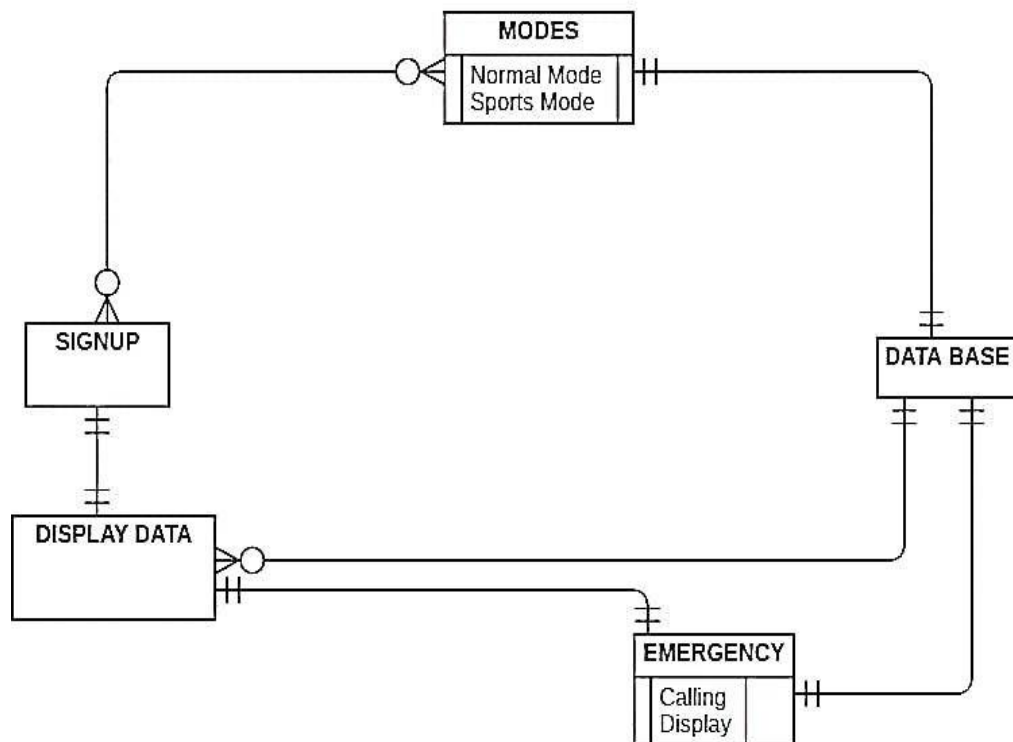
DEPLOYMENT DIAGRAM

Deployment Diagram:

This Diagram shows how the clients/servers are connected to the Database. Hard-ware or Software Object shown by three Dimensional box called Node. Some of examples are Maintenance Server, Web Server, Agents, Application Server etc.

11.1.1 Entity- Relationship Diagram :

ER DIAGRAM

ER Diagram:

ER diagram stands for Entity Relationship Diagram, also known as ERD is a diagram that displays the relationship of entity sets stored in a database. In other words, ER diagrams help to explain the logical structure of databases. ER diagrams are created based on three basic concepts: entities, attributes and relationships.

12.1.1 Component Diagram :
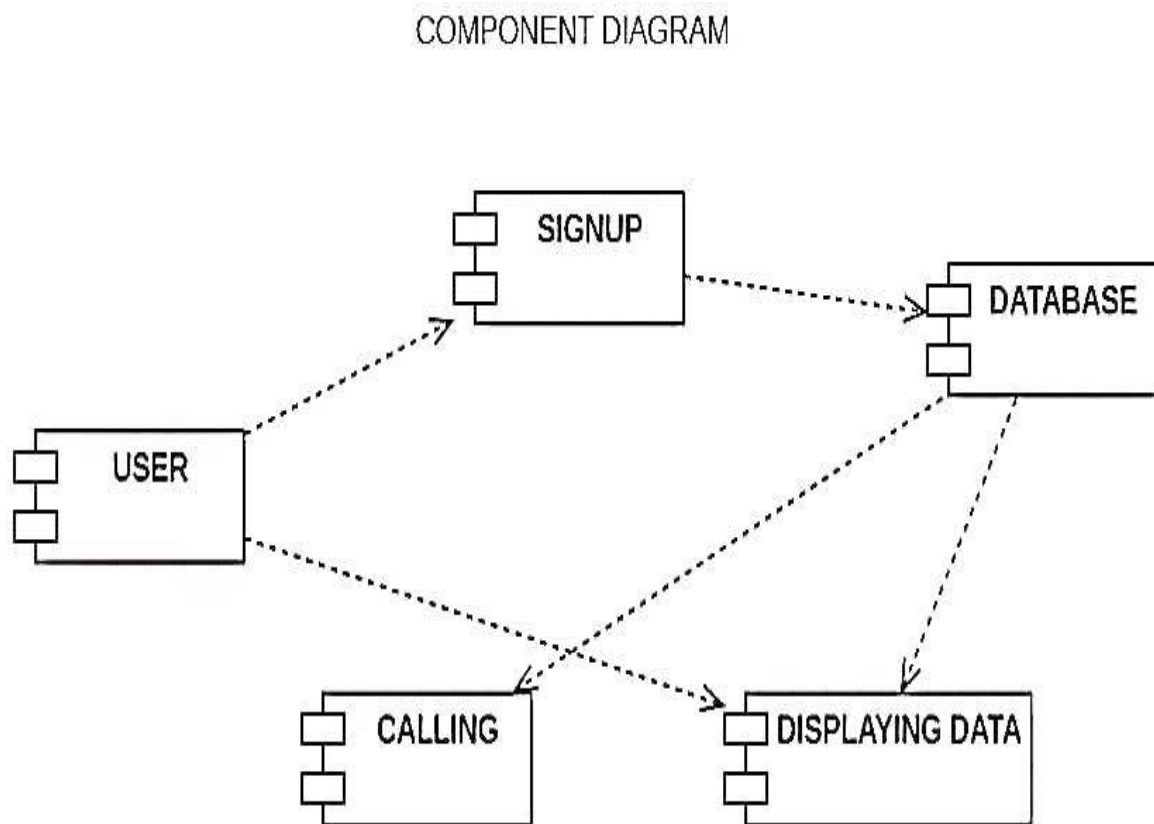
COMPONENT DIAGRAM

COMPONENT DIAGRAM :

A component diagram, also known as a UML component diagram, describes the organization and wiring of the physical components in a Railway Reservation System. Component diagrams are often drawn to help model implementation details and double-check that every aspect of the system's required functions is covered by planned development.

MODULES

13.1.1 Module & Module Description :

USER MODULE :

· The Login Module is a portal module that allows users to type a user name and password to log in.
· You can add this module on any module tab to allow users to log in to thesystem.
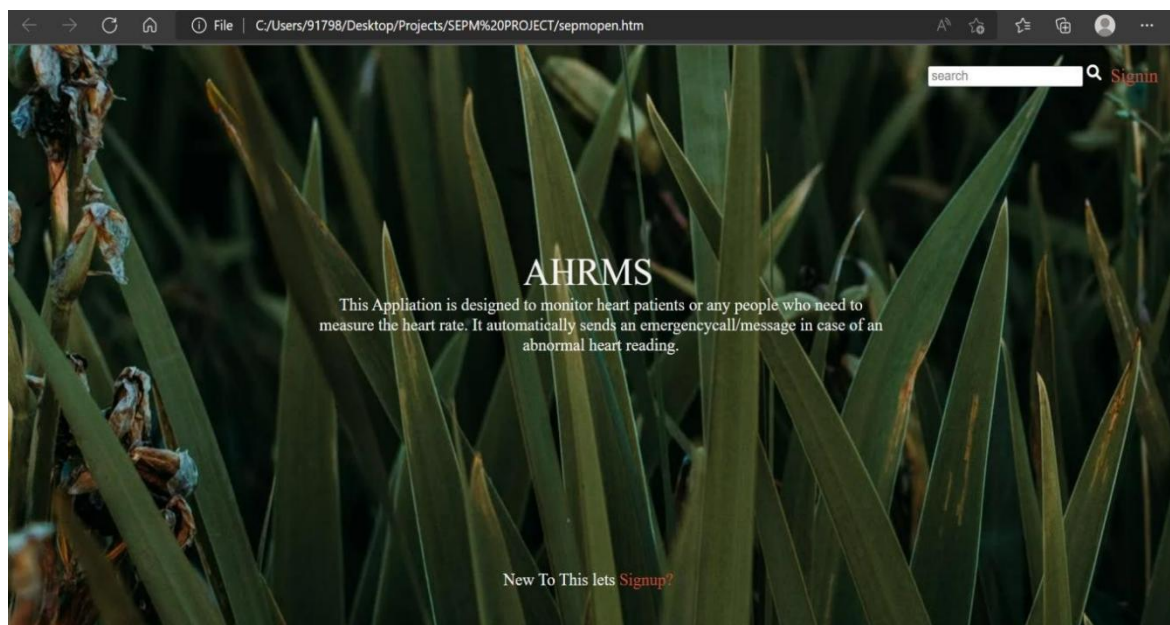· If user hasn't yet registered for this site then the user can Register and Log-in.

DATA MODULE :

. This module contains the data analysis and gives the user tips and the basic output for it
.
. This module take the data from the sync option from the smart watches and store it to analysis

14.1 IMPLEMENTATION

14.1.1 Module Implementation:
HOME PAGE:

Sign-up module:

Data module:

CODING

HTML:

```html
<!doctype html>
    <!DOCTYPE html>
    <html>
    <head>
        <meta charset="utf-8">
        <meta name="viewport" content="width=device-width, initial-scale=1">
        <title>AHRMS</title>
        <link rel="stylesheet" href="sepmopen.css">
        <script src="https://kit.fontawesome.com/c5a222954a.js" crossorigin="anonymous"></script>
    </head>
    <body>
    <div class="signin"><a href="sepm.htm">Signin</a></div>
    <div class="search">
        <form>
    <input type="search" id="search" name="search" placeholder="search">
    </form>
        </div>
        <div class="seasym"><i class="fa-solid fa-magnifying-glass"></i></div>
    <div class="head">AHRMS</div>
    <div class="base">This Appliation is designed to monitor heart patients or any people who need to measure the heart rate. It automatically sends an emergencycall/message in case of an abnormal heart reading.</div>
    <div class="signup">New To This lets <a href="sepm0.htm">Signup?</a>
    </body>
    </html>
```

For Module-2:

```html
<link rel="stylesheet" href="sepm0.css">
<link href='https://fonts.googleapis.com/css?family=Bebas Neue' rel='stylesheet'>
<title>AHRMS</title>
<div class="container">
  <header class="header">
   <h1 id="title" class="text-center">Registration</h1>
  </header>
  <form id="survey-form">
   <div class="form-group">
    <label id="name-label" for="name">Name</label>
    <input
     type="text"
     name="name"
     id="name"
     class="form-control"
```

```html
      placeholder="Enter  your name"
      required
    />
  </div>
  <div class="form-group">
   <label id="email-label"  for="email">Email</label>
   <input
     type="email"
     name="email"
     id="email"
     class="form-control"
     placeholder="Enter your Email"
     required
   />
   <div class="form2">
   <label id="Gender-label"  for="gender">Gender</label>
   <input
     type="gender"
     name="gender"
     id="gender"
     class="form-control"
     placeholder="Enter your Gender(M/F/O)"
     required
   />
  </div>
  </div>
  <div class="form-group">
   <label id="number-label"  for="number"
    >Age<span   class="clue">(optional)</span></label
   >
   <input
     type="number"
     name="age"
     id="number"
     min="10"
     max="99"
     class="form-control"
     placeholder="Age"
   />
  </div>
  <div class="form-group">
  <label for="city"><i class="address-label"></i>  City</label>
       <input type="text" class="form-control" name="Address"
placeholder="No.1 ABC Street, Delhi, India">
  </div>
  <div class="form-group">
   <p>Would you recommend this watch to a friend?</p>
   <label>
    <input
      name="user-recommend"
```

```html
        value="definitely"
        type="radio"
        class="input-radio"
        checked
       />Definitely</label>
     <label>
      <input
       name="user-recommend"
       value="maybe"
       type="radio"
       class="input-radio"
      />Maybe</label
    >

     <label
      ><input
       name="user-recommend"
       value="not-sure"
       type="radio"
       class="input-radio"
      />Not sure</label
    >
    </div>

    <div class="form-group">
     <p>Any comments or suggestions?</p>
     <textarea
       id="comments"
       class="input-textarea"
       name="comment"
       placeholder="Enter your comment here..."
      ></textarea>
    </div>

    <div class="form-group">
     <button type="submit" id="submit" class="submit-button">
      <a href="sepm.htm">Submit</a>
     </button>
    </div>
   </form>
</div>
```

For module-3:

```html
<!doctype html>
 <!DOCTYPE html>
 <html>
 <head>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1">
```

```html
  <title>AHRMS</title>
  <link rel="stylesheet" href="sepm.css">
 </head>
 <body>
  <form>
  <div class="age">
  <label for="age">Age</label>
  <br><input type="age" name="age" id="age">
 </div>
  <div class="rate1">
  <label for="rate1">Heart Rate 1</label>
  <br><input type="number" name="rate1" id="rate1">
 </div>
  <div class="rate2">
  <label for="rate2">Heart Rate 2</label>
  <br><input type="number" name="rate2" id="rate2">
 </div>
 <div class="rate3">
  <label for="rate3">Heart Rate 3</label>
  <br><input type="number" name="rate3" id="rate3">
 </div>
 <div class="rate4">
  <label for="rate4">Heart Rate 4</label>
  <br><input type="number" name="rate4" id="rate4">
 </div>
 <div class="eno">
  <label for="emer">Emergency Number</label>
  <br><input type="number" name="emer" id="enumber">
 </div>
</form>
  <button onclick="reading()">GET THE REPORT</button>
  <div class="pri">
  <p id="print"></p>
 </div>
  <script src="sepm.js"></script>
 </body>
 </html>
```

Css code:

For module-1:

```css
body{
        background-image: url("https://images.pexels.com/photos/1408218/pexels-
photo-1408218.jpeg?auto=compress&cs=tinysrgb&w=1260&h=750&dpr=2");
        color: whitesmoke;
}
.signin{
        font-size: 20px;
        float: right;
        margin-right: 8px;
        margin-top: -190px;
}
```

```css
.search{
        float: right;
        margin-top: -189px;
        margin-right: 90px;
}
.seasym{
        float: right;
        color: white;
        margin-top: -190px;
        margin-right: 70px;
}
.head{
        font-style: bold;
        text-align: center;
        font-size: 40px;
        margin-top: 210px;
}
.base{
        font-size: 18px;
        text-align: center;
        width: 50%;
        height: 50%;
        margin-left: 330px;
}
.signup{
        font-size: 18px;
        text-align: center;
        margin-top: 220px;
}
a {
  color: #c84d3a;
  text-decoration: none;
}
```

For module-2:

```css
*,
*::before,
*::after {
  box-sizing: border-box;
}

body {
  font-family: 'Poppins', sans-serif;font-
  size: 1rem;
  font-weight: 400;
  line-height: 1.4;
  color: #ffffff;
  margin: 0;
```

```css
}
body::before {
  content: '';
  position: fixed;
  top: 0;
  left: 0;
  height: 100%;
  width: 100%;
  z-index: -1;
  background: #48416c;
  background-image: url("https://images.pexels.com/photos/1408218/pexels- photo-
1408218.jpeg?auto=compress&cs=tinysrgb&w=1260&h=750&dpr=2");
}

h1 {
  font-family: 'Bebas Neue';
  font-size: 80px;
  font-weight:  400;
  line-height:  1.2;
}

p {
  font-size:  1.125rem;
}

h1,
p {
  margin-top:  0;
  margin-bottom:  0.5rem;
}

label { display:
  flex;
  align-items: center; font-
  size: 1.125rem; margin-
  bottom: 0.5rem;
}

input, button,
select,
textarea {
margin: 0;
  font-family: inherit;
  font-size: inherit;
  line-height: inherit;
}

button { border:
  none;
```

```css
}

.container {
  width: 100%;
  margin: 3.125rem auto 0 auto;
}

@media (min-width: 576px) {
  .container {
    max-width: 540px;
  }
}

@media (min-width: 768px) {
  .container {
    max-width: 720px;
  }
}

.header {
  padding: 0 0.625rem;
  margin-bottom: 1.875rem;
}

.description { font-
  style: italic;
  font-weight: 200;
  text-shadow: 1px 1px 1px rgba(0, 0, 0, 0.4);
}

.clue {
  margin-left: 0.25rem;
  font-size: 0.9rem;
  color: #e4e4e4;
}

.text-center {
  text-align: center;
}

form {
  background: #ba6b57;
  padding: 2.5rem 0.625rem;
  border-radius: 0.25rem;
}

@media (min-width: 480px) {
  form {
    padding: 2.5rem;
  }
```

```css
}

.form-group {
  margin: 0 auto 1.25rem auto;
  padding: 0.25rem;
}

.form-control {
  display: block;
  width: 100%;
  height: 2.375rem;
  padding: 0.375rem 0.75rem;
  color: #495057; background-
  color: #fff;
  background-clip: padding-box;
  border: 1px solid #ced4da;
  border-radius: 0.25rem;
  transition: border-color 0.15s ease-in-out, box-shadow 0.15s ease-in-out;
}
.form2{
  margin-top: 20px;
}
.form-control:focus {
  border-color: #80bdff;
  outline: 0;
  box-shadow: 0 0 0 0.2rem rgba(0, 123, 255, 0.25);
}

.input-radio,
.input-checkbox { display:
  inline-block; margin-right:
  0.625rem;min-height:
  1.25rem; min-width:
  1.25rem;
}

.input-textarea {
  min-height: 120px;
  width: 100%;
  padding: 0.625rem;
  resize: vertical;
}

.submit-button {
  display: block;
  width: 100%;
  padding: 0.75rem;
  background: #743a34;
  color: inherit;
  border-radius: 2px;
```

```css
    cursor: pointer;
}
a{
    color: whitesmoke; text-
    decoration: none;
}
```

```css
 body{
        background-image:    url("https://images.pexels.com/photos/1408218/pexels-
photo-1408218.jpeg?auto=compress&cs=tinysrgb&w=1260&h=750&dpr=2");
        margin: auto;
        font-size: 18px;
        margin-top: 30px;
        color: white;
}
button{
        background-color: #ba6b57;
        margin: 60px;
        margin-left: 595px;
        width: 100px;
        color: #100100;
}
.age{
        margin-top: 10px;
        text-align: center;
}
.rate1{
        margin-top: 10px;
        margin-left:  260px;
}
.rate2{
        margin-top: -43px;
        margin-left:  460px;
}
.rate3{
        margin-top: -43px;
        margin-left:  660px;
}
.rate4{
        margin-top: -43px;
        margin-left:  860px;
}
.eno{
        margin-top: 20px;
        text-align: center;
}
form {
    background: blur
```

```css
    padding: 0.3rem 0.635rem;
}
.pri{
        text-align: center;
}
```

JAVASCRIPT:

```javascript
function reading(){
        age=    parseInt(document.getElementById("age").value);
        r1=    parseInt(document.getElementById("rate1").value);
        r2=    parseInt(document.getElementById("rate2").value);
        r3=    parseInt(document.getElementById("rate3").value);
        r4= parseInt(document.getElementById("rate4").value);
        emer= parseInt(document.getElementById("enumber").value);
        avg= (r1 + r2 + r3 + r4)/4;
        maxHR = 220 - age;
        if(age>=12 && age<=19){
                if(r1<60||r1>200||r2<60||r2>200||r3<60||r3>200||r4<60||r4>200){
                        print="Predicted Maximum HR: 200"+
                        "<br>Predicted Lowest HR:60"
                        +"<br>calling emergency numbers:"+emer;

                }
                else{

                        print="your average heart rate:"+avg
                        +"<br>Check your heart rate time to time and maintain good
diet";
                }
        }
        if(age>20 && age<=25){
                if(r1<60||r1>200||r2<60||r2>200||r3<60||r3>200||r4<60||r4>200){
                        print="Predicted Maximum HR: 200"+
                        "<br>Predicted Lowest HR:60"
                        +"<br>calling emergency numbers:"+emer;
                }
                else{
                if(avg>maxHR || avg < 60){
                        print="Target Heart Rate (HR) Zone (60-85%): ** 120 – 170"
                        +"<br>Predicted Maximum HR: 200"
                        +"<br>your average heart rate:"+avg
                        +"<br>calling emergency numbers:"+emer;
                }
                else if(avg>120 && avg<170){
                        print="Target Heart Rate (HR) Zone (60-85%): ** 120 – 170"
                        +"<br>Predicted Maximum HR: 200"
                        +"<br>your average heart rate:"+avg
                        +"<br>Keep moving on. . . ";
                }
                else if(avg>170 && avg<200){
```

```
                        print="Target Heart Rate (HR) Zone (60-85%): ** 120-170"
                        +"<br>Predicted Maximum HR: 200"
                        +"<br>your average heart rate:"+avg
                        +"<br>Check your heart rate time to time and maintain good
diet";
                }
                else{
                        print="Target Heart Rate (HR) Zone (60-85%): ** 120 – 170"
                        +"<br>Predicted Maximum HR: 200"
                        +"<br>your average heart rate:"+avg
                        +"<br>You need to start an exercise program, you may need
to slowly build up to your target heart rate zone";
                }
        }
        }
        if(age>26 && age<=30){
                if(r1<60||r1>200||r2<60||r2>200||r3<60||r3>200||r4<60||r4>200){
                        print="Predicted Maximum HR: 200"+
                        "<br>Predicted Lowest HR:60"
                        +"<br>calling emergency numbers:"+emer;
                }
                else{
                if(avg>maxHR || avg < 60){
                        print="Target Heart Rate (HR) Zone (60-85%): 117-166"
                        +"<br>Predicted Maximum HR: 195"
                        +"<br>your average heart rate:"+avg
                        +"<br>calling emergency numbers:"+emer;
                }
                else if(avg>117 && avg<166){
                        print="Target Heart Rate (HR) Zone (60-85%): 117-166"
                        +"<br>Predicted Maximum HR: 195"
                        +"<br>your average heart rate:"+avg
                        +"<br>Keep moving on. . . ";
                }
                else if(avg>166 && avg<195){
                        print="Target Heart Rate (HR) Zone (60-85%): 117-166"
                        +"<br>Predicted Maximum HR: 195"
                        +"<br>your average heart rate:"+avg
                        +"<br>Check your heart rate time to time and maintain good
diet";
                }
                else{
                        print="Target Heart Rate (HR) Zone (60-85%): 117-166"
                        +"<br>Predicted Maximum HR: 195"
                        +"<br>your average heart rate:"+avg
                        +"<br>You need to start an exercise program, you may need
to slowly build up to your target heart rate zone";
                }
        }
        }
```

```
if(age>31 && age<=40){
        if(r1<60||r1>200||r2<60||r2>200||r3<60||r3>200||r4<60||r4>200){
                print="Predicted Maximum HR: 200"+
                "<br>Predicted Lowest HR:60"
                +"<br>calling emergency numbers:"+emer;
        }
        else{
        if(avg>maxHR || avg < 60){
                print="Target Heart Rate (HR) Zone (60-85%): 108-153"
                +"<br>Predicted Maximum HR: 180"
                +"<br>your average heart rate:"+avg
                +"<br>calling emergency numbers:"+emer;
        }
        else if(avg>108 && avg<153){
                print="Target Heart Rate (HR) Zone (60-85%): 108-153"
                +"<br>Predicted Maximum HR: 180"
                +"<br>your average heart rate:"+avg
                +"<br>Keep moving on. . . ";
        }
        else if(avg>153 && avg<180){
                print="Target Heart Rate (HR) Zone (60-85%): 108-153"
                +"<br>Predicted Maximum HR: 180"
                +"<br>your average heart rate:"+avg
                +"<br>Check your heart rate time to time and maintain good
diet";
        }
        else{
                print="Target Heart Rate (HR) Zone (60-85%): 108-153"
                +"<br>Predicted Maximum HR: 180"
                +"<br>your average heart rate:"+avg
                +"<br>You need to start an exercise program, you may need
to slowly build up to your target heart rate zone";
        }
    }
    }
    if(age>41 && age<=50){
        if(r1<60||r1>200||r2<60||r2>200||r3<60||r3>200||r4<60||r4>200){
                print="Predicted Maximum HR: 200"+
                "<br>Predicted Lowest HR:60"
                +"<br>calling emergency numbers:"+emer;
        }
        else{
        if(avg>maxHR || avg < 60){
                print="Target Heart Rate (HR) Zone (60-85%): 102-145"
                +"<br>Predicted Maximum HR: 170"
                +"<br>your average heart rate:"+avg
                +"<br>calling emergency numbers:"+emer;
        }
        else if(avg>102 && avg<145){
                print="Target Heart Rate (HR) Zone (60-85%): 102-145"
```

```
                        +"<br>Predicted Maximum HR: 170"
                        +"<br>your average heart rate:"+avg
                        +"<br>Keep moving on. . . ";
            }
            else if(avg>145 && avg<170){
                        print="Target Heart Rate (HR) Zone (60-85%): 102-145"
                        +"<br>Predicted Maximum HR: 170"
                        +"<br>your average heart rate:"+avg
                        +"<br>Check your heart rate time to time and maintain good
diet";
            }
            else{
                        print="Target Heart Rate (HR) Zone (60-85%): 102-145"
                        +"<br>Predicted Maximum HR: 170"
                        +"<br>your average heart rate:"+avg
                        +"<br>You need to start an exercise program, you may need
to slowly build up to your target heart rate zone";
            }
        }
        }
        if(age>51 && age<=60){
            if(r1<60||r1>200||r2<60||r2>200||r3<60||r3>200||r4<60||r4>200){
                        print="Predicted Maximum HR: 200"+
                        "<br>Predicted Lowest HR:60"
                        +"<br>calling emergency numbers:"+emer;
            }
            else{
            if(avg>maxHR || avg < 60){
                        print="Target Heart Rate (HR) Zone (60-85%): 96-136"
                        +"<br>Predicted Maximum HR: 160"
                        +"<br>your average heart rate:"+avg
                        +"<br>calling emergency numbers:"+emer;
            }
            else if(avg>96 && avg<136){
                        print="Target Heart Rate (HR) Zone (60-85%): 96-136"
                        +"<br>Predicted Maximum HR: 160"
                        +"<br>your average heart rate:"+avg
                        +"<br>Keep moving on. . . ";
            }
            else if(avg>137 && avg<160){
                        print="Target Heart Rate (HR) Zone (60-85%): 96-136"
                        +"<br>Predicted Maximum HR: 160"
                        +"<br>your average heart rate:"+avg
                        +"<br>Check your heart rate time to time and maintain good
diet";
            }
            else{
                        print="Target Heart Rate (HR) Zone (60-85%): 96-136"
                        +"<br>Predicted Maximum HR: 160"
                        +"<br>your average heart rate:"+avg
```

```
                        +"<br>You need to start an exercise program, you may need
to slowly build up to your target heart rate zone";
                }
        }
        }
        if(age>61 && age<=70){
                if(r1<60||r1>200||r2<60||r2>200||r3<60||r3>200||r4<60||r4>200){
                        print="Predicted Maximum HR: 200"+
                        "<br>Predicted Lowest HR:60"
                        +"<br>calling emergency numbers:"+emer;
                }
                else{
                if(avg>maxHR || avg < 60){
                        print="Target Heart Rate (HR) Zone (60-85%): 90-128"
                        +"<br>Predicted Maximum HR: 150"
                        +"<br>your average heart rate:"+avg
                        +"<br>calling emergency numbers:"+emer;
                }
                else if(avg>90 && avg<128){
                        print="Target Heart Rate (HR) Zone (60-85%): 90-128"
                        +"<br>Predicted Maximum HR: 150"
                        +"<br>your average heart rate:"+avg
                        +"<br>Keep moving on. . . ";
                }
                else if(avg>129 && avg<150){
                        print="Target Heart Rate (HR) Zone (60-85%): 90-128"
                        +"<br>Predicted Maximum HR: 150"
                        +"<br>your average heart rate:"+avg
                        +"<br>Check your heart rate time to time and maintain good
diet";
                }
                else{
                        print="Target Heart Rate (HR) Zone (60-85%): 90-128"
                        +"<br>Predicted Maximum HR: 150"
                        +"<br>your average heart rate:"+avg
                        +"<br>You need to start an exercise program, you may need
to slowly build up to your target heart rate zone";
                }
        }
        }
        document.getElementById("print").innerHTML = print;
}
```

15.1 DESIGNING TEST SUITS

15.1.1 Web Application Testing:

WEB TESTING, or website testing is checking your web application or website for porensal bugs before its made live and is accessible to generalpublic. Web Testing checks for functionality, usability, security, performance of the web application or website.

During this stage issues such as that of web application security, the functioning of the site, in access to handicapped as well as regular usersand its ability to handle traffic is checked.

Functionality Testing:

This is used to check if your product as as per the specifications you ended for a as well as the functional requirements you charred out for a an your de velopmental documentation. Web based Testing Activites includes:

Test all links in your webpages are working correctly and make sure thereare no broken inks. Links to be checked will include:

Usability testing:

Usability Testing has now become a vital part of any web based project canbe carried out by testers like you or a small focus group sort the anger audience of the web application

Test the site Navigation:

Menus, buttons or Links to different pages on your son should be easilyvisible and consistent on all webpages Test the Comments

Content should be legible with no spelling or grammatical mistakes ifpresent should contain an "alt" text

Interface Testing:

Three areas to be sted here are-Application, Web and Database Server

Application Test requests are sent correctly the Database and output at the client side is displayed correctly. if any must be caught by application and must be only shown to the administrator and not the end Web Server: Test Web server is handing all application requests without any service denial

Database Server: Make sure queries sent to the database give expectedresults.

Test system response when connection between the three lap erApplication, Web and Database) cannot be shed and agent

Database Testing:

Database is one critical component of your web application and stress mustbe laid to test it thoroughly. Testing activities will include

Performance Testing:

This will ensure your site works under all loads. Software Testing activitieswill in clude but not limited to

Website application response times at different connection speeds Load test your web application to determine its behaviour under normal and peak

loads Stress test your web site to determine its break point when pushed tobeyond

Test if any errors are shown while executing queries

Data Integrity is maintained while creating, updating or deleting data indatabase.

Check response time of queries and fine tune them if necessary. Test dataretrieved from your database is shown accurately in your web application

normal loads at peak time. Test if a crash occurs due to peak load, howdoes the site recover from such an event

Make sure optimization techniques like gzip compression, browser andserver side cache enabled to reduce load times

Compatibility

Compatibilty tests ensures that your web application displays correctlyacross different devices. This would include

Security testing:

Security Testing is vital for e-commerce website that store sensitive customer in formation like credit cards. Testing Activities will include

Test unauthorized access to secure pages should not be permitted

Browser Compatibility Test: Same website in different browsers will displaydifferently. You need to test if your web application is being displayed correctly across browsers, JavaScript, AJAX and authentication is working fine. You may also check for Mobile Browser Compatibility.

The rendering of web elements like buttons, text fields etc. changes with change in Operating System. Make sure your website works fine for variouscombination of Operating systems such as Windows, Linux, Mac and

Browsers such as Firefox, In temet Explorer, Safari etc.

Restricted files should not be downloadable without appropriate access

Check sessions are automatically killed after prolonged user inactivity onuse of SSL certificates, website should re-direct to encrypted SSL pages.

Crowd Testing:

You will select a large number of people (crowd) to execute tests which other-wise would have been executed a select group of people in the company. Crowdsourced testing is an interesting and upcoming conceptand helps unravel many a unnoticed defects

15.1.1 Master Test Plan Diagram :
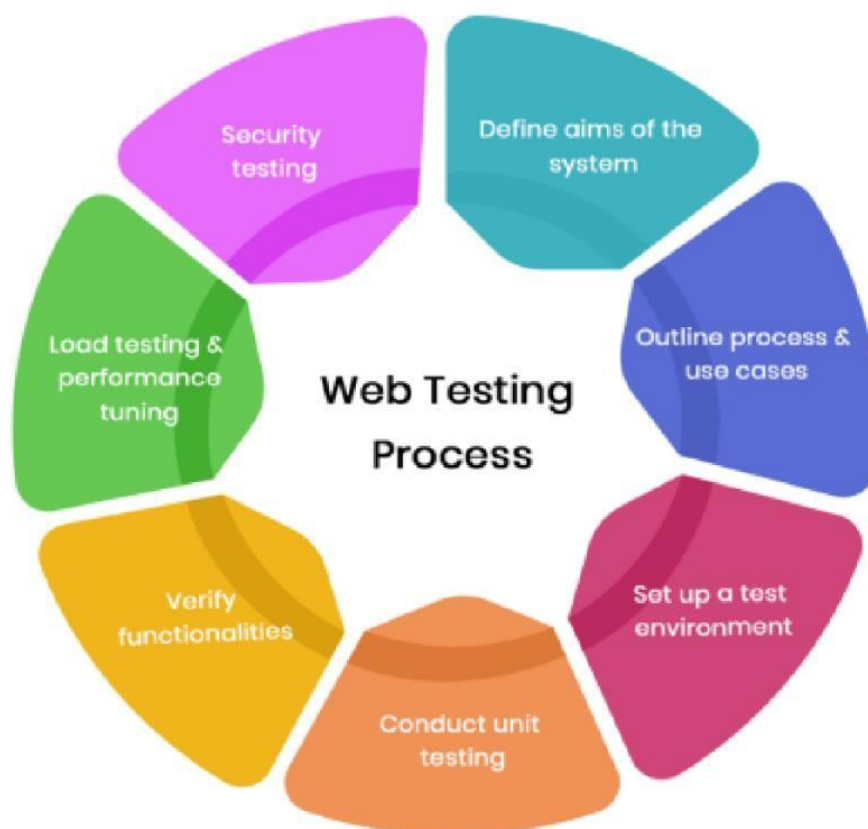
15.1.3 Master Test Plan

Testing Objective: **Focusing on load management, security and web site loading time.**

Test Items:

- **Testing Objective**
- **Functionality Testing**
- **Usability Testing**
- **Interface Testing**
- **Database Testing**
- **Compatibility Testing**
- **Performance Testing**
- **Security TestingCrowed Testing**

Features To be Tested   **Login, Sign/up Process and website faster loading time.**

Features Not To be Tested   **Usability Testing,**

Method   **Manual Testing**

17.1.1 Manual Testing

Testing	Input	Description	Result
Login And Sign Up	**specified ids**	**Implementing bot and specified ids to Login and Sign up**	**PASS**
Load Up time	**Website on Local**	**Testing website with opening and host performing simultaneously on system**	**PASS**
Database test	Test cases	Implementing test andverifying output	PASS
All the data Specification	Test cases	Implementing data in java Script Checking the speedof it	PASS
Attributes used	Filling form	By filling the registration Form in sign up page	PASS

Test case1:

Sample Input:

Age: 23
Heart Rate 1:120
Heart Rate 2:132
Heart Rate 3:50
Heart Rate 4:30
Emergency Number:108

Expected output:

Predicted Maximum HR: 200
Predicted Lowest HR:60
calling emergency numbers:108

Output:

Test case2:

Sample Input:

Age: 14
Heart Rate 1:120
Heart Rate 2:132
Heart Rate 3:120
Heart Rate 4:120
Emergency Number:108

Expected output:

your average heart rate:123
Check your heart rate time to time and maintain good diet

Output:

Test case3:

Sample Input:

Age: 45
Heart Rate 1:100
Heart Rate 2:120
Heart Rate 3:120
Heart Rate 4:100
Emergency Number:108

Expected output:

Target Heart Rate (HR) Zone (60-85%): 102-145
Predicted Maximum HR: 170
your average heart rate:110
Keep moving on. . .

Output:

Test case4:

Sample Input:

Age: 32
Heart Rate 1:100
Heart Rate 2:120
Heart Rate 3:120
Heart Rate 4:130
Emergency Number:108

Expected output:

Target Heart Rate (HR) Zone (60-85%): 108-153
Predicted Maximum HR: 180
your average heart rate:117.5
Keep moving on. . .

Output:

19.1 EFFORTS AND RESOURCES

19.1.1 Website development process

Conclusion:

To over come these issues we have developed this website.

The development process for this website is characterized by the efforts made by whole team and It also requires lots hardware and software infrastructures. The hardware may include PC with core i7 processor, 16 GB RAM and Graph - icCard at least MX150, and software like HTML,CSS ,JAVA- SCRIPT Etc.

The integration effort Comprises not only the design and realization of interfaces, but also test of those interfaces. Themore complex the subsystem are, the more-effort is requiredfor the interface test since the necessary test drivers stubs should be equally complex.

19.1.2 RESOURCES

Wikipedia:For Several references on various topics.
Geeks For Geeks : For learning technical Concepts.
W3Schools For Diagram and related things.
Engineering for Change