CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION OF THE PROJECT

Nowadays software projects keep growing in both scale and complexity. Improvement of the software product quality is a challenge for every software project leader. A project leader has to manage a project with several issues involved such as negotiation with customers, project planning and scheduling, code implementation, test and release. It is difficult for a project leader to precisely estimate the project duration before it starts. He cannot possibly analyse all possible causes accurately if a problem is beyond his own background knowledge or previous experience. Data Mining (DM) techniques can assist software engineers to conduct the estimation and cause analysis of a project. A project leader can make the accurate estimation of a new project by learning from the information gained by applying data mining methods to previous projects. A leader can eliminate potential problems when a similar pattern appears in the current project to the one that caused problems in previous projects. Various DM techniques have been developed based on the works of Statistic, Artificial Intelligence, and Machine Learning and Database system for knowledge discovery. DM is the process of facilitating decision-making by identifying valid, novel, potentially useful, and ultimately understandable structures in data. Usually this kind of extracted knowledge is classification rules, characteristic rules, association rules, functional relationships, functional dependencies, causal rules, temporal knowledge or clusters according to the chosen DM technique and operation. DM techniques can analyse many kinds of data such as relational, object-oriented, text, temporal, spatial, combinatorial, web and multimedia. Data mining tools and applications have generated positive results, and are continuously stimulated by exploring new areas due to the benefits brought by this technology. There are many achievements of applying data mining techniques to various areas such as marketing, medical, and financial, although few of them can be currently seen in software engineering domain. There exist several difficulties in this domain, such as hard to find a data model to put through mining process and/or no suitable mining tools. This brings out the need to investigate the efficacy of data mining techniques applied in the software engineering domain.

1.2 ORGANIZATION PROFILE

At Ascox Techno Soft is a leading software development and web designing company which born on 2014n in Madurai, Tamil Nadu, India. We are the young and energetic team committed to the permit of excellence. Our successful projects with client requirements have represented our reputation as superior providers. Ascox Techno Soft has established multi-branches Chennai and Coimbatore for Continuous and better serve its Clients. Ascox Techno Soft's differentiation point meets with three philosophies.

- ✓ True Participation
- ✓ Perfect Understanding
- ✓ Patience in completing the job

In the past three years Ascox Techno Soft travelled more than 35 projects and has a large client's base of more than 20 clients all over India.

Our Mission and Vision

- ✓ Our Mission is to enriching the business growth of our clients with creative design and development to deliver high qualified solutions.
- ✓ Our Vision is to develop efficient software solutions to the most complex requirements with the highest levels of integrity. Professionalism and technological capabilities. When the project is specific and the result cannot fulfill your requirements-you need efficiently developed solutions for your software, being Ascox Techno Soft's clients, you will receive a perfect and expected solution.

CHAPTER 2

SYSTEM ANALYSIS

2. 1 EXISTING SYSTEM

- In the existing system, the process of predicting diabetes in individuals relied on traditional healthcare practices and manual analysis. In the earlier system, healthcare professionals and practitioners employed conventional diagnostic methods to assess a patient’s risk of diabetes based on symptoms, medical history, and physical examinations.
- The existing system methods, while essential, often lacked the ability to analyze vast amounts of patient data comprehensively. Healthcare experts primarily relied on their expertise and experience to make predictions, which could sometimes lead to varying levels of accuracy. Additionally, the earlier system faced challenges in managing and organizing extensive patient records, making it time-consuming and potentially error-prone.
- Moreover, the existing system approach did not benefit from the advantages of data mining and advanced technologies. There was a lack of sophisticated algorithms and computational models that could efficiently process large datasets, limiting the system’s predictive capabilities.
- As a result, the earlier system lacked the efficiency, accuracy, and convenience that modern technology can offer. It relied heavily on manual efforts, potentially leading to delays in diagnoses and treatments. Furthermore, it lacked the user-centric approach that the current project aims to provide, where individuals can actively participate in predicting their health conditions through the input of their own health information.

DISADVANTAGES OF EXISTING SYSTEM:

- Limited Predictive Accuracy: The existing system’s predictive accuracy may be compromised due to outdated or simplistic data analysis techniques. As healthcare is a complex domain with numerous factors influencing disease outcomes, relying on basic algorithms may lead to less accurate predictions.
- Inadequate Dataset Size: The existing system may suffer from limited dataset size, affecting the model’s ability to capture the full range of variations and patterns in

diabetic cases. A smaller dataset can lead to biases and reduced generalizability of the predictions.

- Lack of Real-time Data: Without real-time data integration, the existing system may not reflect current health trends or advancements in diabetes research. It may fail to consider crucial factors that could impact the predictions, leading to outdated results.
- Incomplete Feature Set: The system might be built on a limited set of features, neglecting some essential health parameters that could significantly impact the accuracy of diabetes predictions. This omission could lead to inadequate risk assessments and preventive recommendations.
- Inflexible Architecture: If the existing system lacks scalability and flexibility, it may struggle to accommodate updates, new features, or expanded datasets. This limitation hinders the system’s ability to evolve with changing healthcare requirements.
- Security Vulnerabilities: Inadequate data security measures can expose sensitive health information of users to potential breaches or unauthorized access, risking their privacy and confidentiality.
- Limited User Engagement: The current system may lack user-friendly interfaces or interactive elements, resulting in reduced user engagement. Users might be less inclined to input their health information if the system does not provide a seamless and appealing experience.
- Ethical Concerns: The existing system may not have implemented ethical guidelines or protocols for handling user data responsibly, leading to potential issues regarding data misuse or unauthorized sharing.
- Dependency on Historical Data: Relying solely on historical data for predictions might ignore dynamic changes in a user’s health status or lifestyle, affecting the accuracy of predictions for individuals with evolving health conditions.
- Lack of Expert Interpretation: In the absence of healthcare professionals’ insights, the existing system might fail to provide users with meaningful interpretations of their results, making it challenging for users to understand and act upon the predictions effectively.
- In summary, the current system’s drawbacks, such as limited predictive accuracy, data insufficiency, lack of real-time data, and security vulnerabilities, highlight the need for an improved and more robust diabetes prediction system in healthcare management.

2.2 PROPOSED SYSTEM:

- The proposed system aims to develop an advanced and accurate diabetes prediction solution by harnessing the power of data mining techniques in a comprehensive healthcare management system. By leveraging a Java-based application and a MySQL database, the system will offer users the ability to predict the likelihood of diabetes based on their health conditions. The primary dataset, the Pima Indian Diabetes Database, will be utilized to train the data mining algorithms, ensuring reliable and up-to-date predictions.
- The proposed system will adopt a modular and scalable architecture to accommodate future enhancements and ensure seamless integration with healthcare workflows. The key components of the architecture include: The system will feature a user-friendly interface allowing users to input their health information, such as age, body mass index (BMI), glucose levels, blood pressure, insulin, and other relevant parameters.
- The heart of the system will be the data mining model, which will employ rule based mining to analyze the dataset and derive valuable patterns and correlations. The system will use a MySQL database to store user data securely and retain the trained models for future use. Once the model processes the user’s input, the system will generate comprehensive analyzed results, indicating the likelihood of diabetes occurrence with relevant statistics.
- The proposed system will utilize the Pima Indian Diabetes Database, a well-established and publicly available dataset widely used in diabetes research. The dataset contains various health attributes of Pima Indian women, including their diabetic status. The system will undergo training and validation with this dataset to enhance its predictive accuracy.
- To ensure data privacy and security, the proposed system will implement user registration and authentication mechanisms. Each user will have a unique account, safeguarding their health information from unauthorized access. The system will provide users with clear and concise interpretations of the prediction results. It will explain the factors influencing the likelihood of diabetes occurrence and offer appropriate guidance on preventive measures and lifestyle changes to reduce the risk.
- In conclusion, the proposed "Diabetes Prediction using Data Mining in Healthcare Management System" is a sophisticated and user-centric solution, integrating cutting-edge data mining techniques and a well-established dataset to offer accurate diabetes

predictions. By prioritizing data privacy, interpretability, and real-time updates, the system seeks to empower users in making informed decisions about their health and well-being.

ADVANTAGES OF PROPOSED SYSTEM:

- Accurate Diabetes Prediction: The proposed system leverages advanced data mining algorithms and the Pima Indian Diabetes Database to enhance the accuracy of diabetes predictions. By analyzing a wide range of health attributes, the system can offer more precise and reliable results, aiding users in understanding their risk of diabetes.
- Early Detection and Prevention: With accurate predictions, users can identify potential diabetes risks at an early stage, enabling them to take proactive measures for prevention. Early detection is crucial for implementing lifestyle changes, seeking medical advice, and adopting healthier habits to reduce the impact of diabetes on their health.
- User-Friendly Interface: The system features a user-friendly interface that simplifies the process of inputting health information. Its intuitive design ensures that users can easily interact with the system, making it accessible to individuals with varying levels of technological expertise.
- Real-Time Updates: By incorporating real-time updates, the system can adapt to the latest medical research and advancements related to diabetes. Users can benefit from the most up-to-date information, leading to more relevant and accurate predictions.
- Secure Data Handling: The proposed system implements robust data security measures to safeguard user information. User registration and authentication ensure that only authorized individuals can access and modify their data, minimizing the risk of data breaches.
- Ethical Data Usage: The system adheres to strict ethical guidelines for handling user data responsibly. User consent is obtained, and data is anonymized and aggregated for research purposes while maintaining individual privacy.
- Time-Efficient Results: The data mining algorithms used in the system are optimized for efficiency, ensuring quick processing of user input and delivering prompt prediction results. Users do not have to wait for extended periods to receive their predictions.

- Cost-Effective Healthcare: By enabling early detection and preventive measures, the proposed system can contribute to cost-effective healthcare management. Preventing the onset or complications of diabetes can reduce the financial burden on individuals and healthcare systems.
- Increased Awareness and Empowerment: The system enhances users' awareness of their health status and empowers them to take control of their well-being. Armed with knowledge about their diabetes risk factors, users can make informed decisions to lead healthier lives.
- Medical Professional Support: While the system aids users in predicting their diabetes risk, it does not replace medical professionals. Instead, it can complement their expertise by providing valuable insights, encouraging users to seek further medical guidance when necessary.
- Research and Public Health: Aggregated and anonymized data from the system can contribute to research studies and public health initiatives related to diabetes prevention and management. By contributing to the pool of knowledge, the system can have a broader positive impact on society.
- In conclusion, the proposed "Diabetes Prediction using Data Mining in Healthcare Management System" offers numerous advantages, including accurate predictions, early detection, user-friendly interface, real-time updates, data security, and personalized recommendations. By empowering users with knowledge and promoting preventive healthcare measures, the system has the potential to improve individuals' well-being and reduce the burden of diabetes on society.

CHAPTER 3

SYSTEM STUDY

3.1 FEASIBILITY STUDY

Feasibility study is an important phase in the software development process. It enables the developer to have an assessment of the product being developed. It refers to the feasibility study of the product in terms of outcomes of the product, operational use and technical support required for implementing it. Feasibility study should be performed on the basis of various criteria and parameters.

The feasibility study of this project has revealed the project as follows: -

3.1.1 ECONOMIC FEASIBILITY

The project has shown the economic feasibility by the study of the fact that by using this software the increased number of the consumers can be given service effectively and efficiently and can save a lot time and saving time means saving money. The cost and benefit analysis has shown that cost that have incurred in developing the project is less than the benefits that the project is going to provide once it is developed, so this project has passed the feasibility test.

3.1.2 BEHAVIORAL FEASIBILITY

The working staff members are also interested in this project, as it will help them to do work with ease and efficiently without complexity, so they supported the development of this project with full enthusiasm. This shows the behavioral feasibility of the project.

3.1.3 TECHNICAL FEASIBILITY

Technical feasibility centers on the existing computer system (Hardware, Software etc) and to what extent it supports the existing system. As the existing system computer system is viable so there is no matter of technical feasibility that is the system is technically feasible.

3.1.4 TIME FEASIBILITY

It is the determination of whether a proposed project can be implemented fully within stipulated time frame. The project was decided to be done in three months and was thought to be feasible enough.

CHAPTER 4

SYSTEM SPECIFICATION

4.1 HARDWARE SPECIFICATION

Processor	: Intel(R) Pentium(R) CPU A1018 @ 2.10GHz
Installed memory (RAM)	: 4 GB
Hard Disk	: 160 GB
Operating System	: Windows (7)

4.2 SOFTWARE SPECIFICATION

Software Tool	: WAMP Server
Programming Language	: PHP
DBMS	: MySQL server

CHAPTER 5

SYSTEM DESCRIPTION

FRONTEND

5.1 INTRODUCTION TO PHP

PHP is now officially known as **“PHP: Hypertext Preprocessor”.** It is a server-side scripting language usually written in an HTML context. Unlike an ordinary HTML page, a PHP script is not sent directly to a client by the server; instead, it is parsed by the PHP binary or module, which is server-side installed. HTML elements in the script are left alone, but PHP code is interpreted and executed. PHP code in a script can query databases, create images, read and write files, talk to remote servers–the possibilities is endless. The output from PHP code is combined with the HTML in the script and the result sent to the user’s web-browser, therefore it can never tell the user whether the web-server uses PHP or not, because the entire browser sees is HTML.

PHP’s support for Apache and MYSQL further increases its popularity. Apache is now the most-used web-server in the world, and PHP can be compiled as an Apache module. MYSQL is a powerful free SQL database, and PHP provides a comprehensive set of functions for working with it. The combination of Apache, MYSQL and PHP is all but unbeatable.

That doesn’t mean that PHP cannot work in other environments or with other tools. In fact, PHP supports an extensive list of databases and web-servers. While in the mid-1990s it was ok to build sites, even relatively large sites, with hundreds of individual hard-coded HTML pages, today’s webmasters are making the most of the power of databases to manage their content more effectively and to personalize their sites according to individual user preferences.

5.1.1 REASONS FOR USING PHP

There are some indisputable great reasons to work with PHP. As an open source product, PHP is well supported by a talented production team and a committed user community. Furthermore, PHP can be run on all the major operating systems with most servers.

a) Learning PHP is easy

Basic is easy any interpreted language should be easy to learn. Since you are isolated from the system (no pointers to use, no memory to allocate). The other advantage that all modern interpreted languages share is good associative array constructs.

b) Its Performance

While we can build an application that serves millions of pages a day on a server, when we really look at the performance of the language it sucks. We are still orders of magnitude from real performance. Not only that, but since PHP is designed around a single process model our ability to share data structures or connection pool resources is left to native code libraries.

5.1.2 PHP Syntax

You cannot view the PHP source code by selecting “View source” in the browser – you will only see the output from the PHP file, which is plain HTML. This is because the scripts are executed on the server before the result is sent back to the browser.

5.1.3 BASIC PHP SYNTAX

A PHP scripting block always starts with <? PHP and ends with?>. A PHP scripting block can be placed any where in the document.

On servers with shorthand support enabled you can start a scripting block with <? And end with?>.However, for maximum compatibility, we recommend that you use the standard form (<?PHP)rather than the shorthand form.

A PHP file normally contains HTML tags, just like an HTML file, and some PHP scripting code

5.2 HTML

The structure of a website semantically along with cues for presentation, making it a markup language rather than a programming language.

HTML elements form the building blocks of all websites. HTML allows images and objects to be embedded and can be used to create interaction HTML or Hyper Text Markup Language is the standard markup language used to create web pages.

HTML was created in 1991 by Tim Berners-Lee at CERN in Switzerland. It was designed to allow scientists to display and share their research.

HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets (like <html>). HTML tags most commonly come in pairs like <h1> and </h1>, although some tags represent empty elements and so are unpaired, for example <img>. The first tag in a pair is the start tag, and the second tag is the end tag (they are also called opening tags and closing tags).

The purpose of a web browser is to read HTML documents and compose them into visible or audible web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page. HTML describes forms. It provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. It can embed scripts written in languages such as Java Script which affect the behavior of HTML web pages.

HTML is descriptive markup language. Library of various markup languages is defined in various browsers

5.3 CSS

CSS tutorial or CSS 3 tutorial provides basic and advanced concepts of CSS technology. Our CSS tutorial is developed for beginners and professionals. The major points of CSS are given below:

- CSS stands for Cascading Style Sheet.
- CSS is used to design HTML tags.
- CSS is a widely used language on the web.
- HTML, CSS and JavaScript are used for web designing. It helps the web designers to apply style on HTML tags.

Cascading Style Sheets(CSS) is a style sheet language used for describing the look and formatting of a document written in a markup language. While most often used to style web pages and user interfaces written in HTML and XHTML, the language can be applied to any kind of XML document, including plain XML, SVG and XUL. CSS is a corner stone specification of the web and almost all web pages use CSS style sheets to describe their presentation.CSS is designed primarily to enable the separation of document content from document presentation, including elements such as the layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple pages to share formatting, and reduce complexity and repetition in the structural content.

CSS can also allow the same markup page to be presented in different styles for different rendering methods, such as on-screen, in print, by voice (when read out by a speech-based browser or screen reader) and on Braille-based, tactile devices. It can also be used to allow the web page to display differently depending on the screen size or device on which it is being viewed. While the author of a document typically links that document to a CSS file, readers can use a different style sheet, perhaps one on their own computer, to override the one the author has specified.

With plain HTML you define the colors and sizes of text and tables throughout your pages. If you want to change a certain element you will therefore have to work your way through the document and change it. With CSS you define the colors and sizes in "styles". Then as you write your documents you refer to the styles. Therefore: if you change a certain style it will change the look of your entire site. Another big advantage is that CSS offers much more detailed attributes than plain HTML for defining the look and feel of your site

5.4JAVASCRIPT

JavaScript is a high-level, often just-in-time compiled language that conforms to the ECMA Script standard.[10] It has dynamic typing, prototype-based object-orientation, and first-class functions. It is multi-paradigm, supporting event-driven, functional, and imperative programming styles. It has application programming interfaces (APIs) for working with text, dates, regular expressions, standard data structures, and the Document Object Model(DOM).

The ECMA Script standard does not include any input/output (I/O), such as networking, storage, or graphics facilities. In practice, the web browser or other runtime system provides JavaScript APIs for I/O.

JavaScript engines were originally used only in web browsers but are now core components of some servers and a variety of applications. The most popular runtime system for this usage is Node.js.

Although Java and JavaScript are similar in name, syntax, and respective standard libraries, the two languages are distinct and differ greatly in design.

JavaScript is a cross-platform, object-oriented scripting language used to make web pages interactive (e.g., having complex animations, clickable buttons, popup menus, etc.).

There are also more advanced server-side versions of JavaScript such as Node.js, which allow you to add more functionality to a website than downloading files(such as real-time collaboration between multiple computers).Inside a host environment(for example, a web browser),JavaScript can be connected to the objects of its environment to provide programmatic control over them.

JavaScript contains a standard library of objects, such as Array, Date, and Math, and a core set of language elements such as operators, control structures, and statements. Core JavaScript can be extended for a variety of purposes by supplementing it with additional objects, for example:

Client-side JavaScript extends the core language by supplying objects to control a browser and its Document Object Model (DOM).For example, client-side extensions allow an application to place elements on an HTML form and respond to user events such as mouse clicks, form input, and page navigation.

Server-side JavaScript extends the core language by supplying objects relevant to running JavaScript on a server. For example, server-side extensions allow an application to communicate with a database, provide continuity of information from one invocation to another of the application, or perform file manipulations on a server.

BACKEND

5.5 INTRODUNCTION TO MYSQL

The database has become an integral part of almost every human's life. Without it, many things we do would become very tedious, perhaps impossible tasks. Banks, universities, and libraries are three examples of organizations that depend heavily on some sort of database system. On the Internet, search engines, online shopping, and even the website naming convention would be impossible without the use of a database.

A database that is implemented and interfaced on a computer is often termed database server. One of the fastest SQL (Structured Query Language) database servers currently on the market is the MYSQL server, developed by T.C.X. Data consult. MYSQL is free of charge for those wishing to use it for private and commercial use.

Those wishing to develop applications specifically using MYSQL should consult MYSQL's licensing section.

5.5.1 REASONS TO USE MYSQL

a) Scalability and Flexibility

The MYSQL database server provides the ultimate in scalability, sporting the capacity to handle deeply embedded applications with a footprint of only 1MB to running massive data ware houses holding terabytes of information. Platform flexibility is a stalwart feature of MYSQL with all flavors of Linux, UNIX, and Windows being supported.

b) High Performance

A unique storage-engine architecture allows database professionals to configure the MYSQL database server specifically for particular applications, with the end result being amazing performance results.

c) High Availability

Rock-solid reliability and constant availability are hallmarks of MYSQL, with customers relying on MYSQL to guarantee around-the-clock uptime. MYSQL offers a variety of high-availability options from high-speed master/slave replication configurations, to specialized Cluster servers offering instant failover, to third party vendors offering unique high-availability solutions for the MYSQL database server.

d) Robust Transactional Support

MYSQL offers one of the most powerful transactional database engines on the market. Features include complete ACID (atomic, consistent, isolated, durable) transaction support, unlimited row-level locking, distributed transaction capability, and multi-version transaction support where readers never block writers and vice-versa.

e) Web and data warehouse strengths

MYSQL is the de-facto standard for high-traffic web sites because Of its high-performance query engine, tremendously fast data inserts Capability, and strong support for specialized web functions like fast full text searches.

f) Strong Data Protection

Because guarding the data assets of corporations is the number one job of database professionals, MYSQL offers exceptional security features that ensure absolute data protection. In terms of database authentication, MYSQL provides powerful mechanisms for ensuring only authorized users have entry to the database server, with the ability to block users down to the client machine level being possible.

g) Management Ease

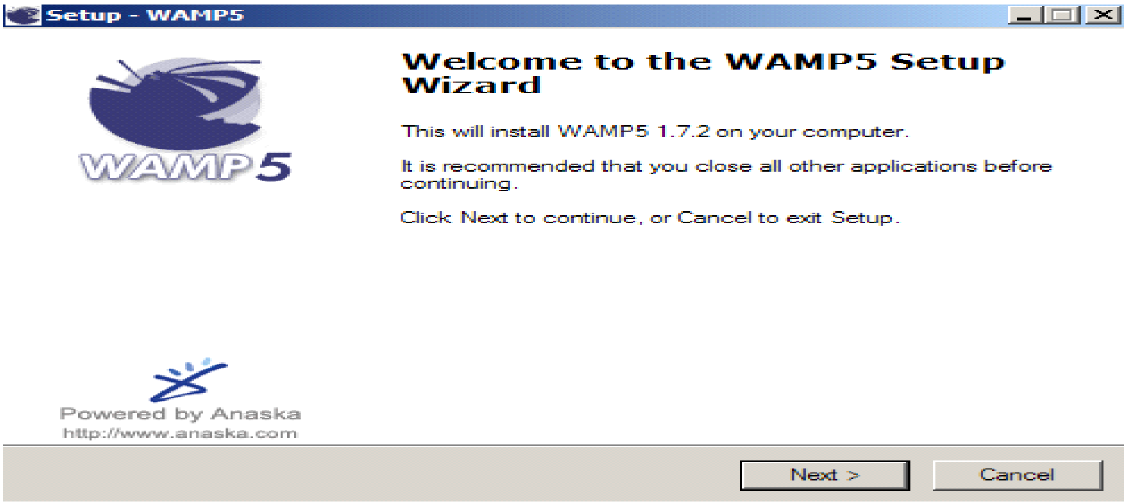
MYSQL offers exceptional quick-start capability with the average time from software download to installation completion being less than fifteen minutes. This rule holds true whether the platform is Microsoft Windows, Linux, Macintosh, or UNIX.

PHP Main Features of MYSQL

- Tested with a broad range of different compilers.
- Works on many different platforms.
- The MYSQL Server design is multi-layered with independent modules.
- Fully multi-threaded using kernel threads. It can easily use multiple CPUs if they are available.
- Provides transaction a land non-transactional storage engines.
- Uses very fast B-treed is k tables with index compression.
- Relatively easy to add other storage engines. This is useful if you want to provide an SQL interface for an in-house database.
- A very fast thread-based memory allocation system.
- Very fast joins using an optimize done-sweep multi-join.
- In-memory hash tables, which are used as temporary tables.
- SQL functions are implemented using a highly optimized class library and should be as fast as possible. Usually there is no memory allocation at all after query initialization.
- The server is available as a separate program for use in a client/server networked environment.

5.6 WAMP

a) Install WAMP by double clicking on the icon, an installation wizard will be opened.



Welcome to the WAMP5 Setup Wizard

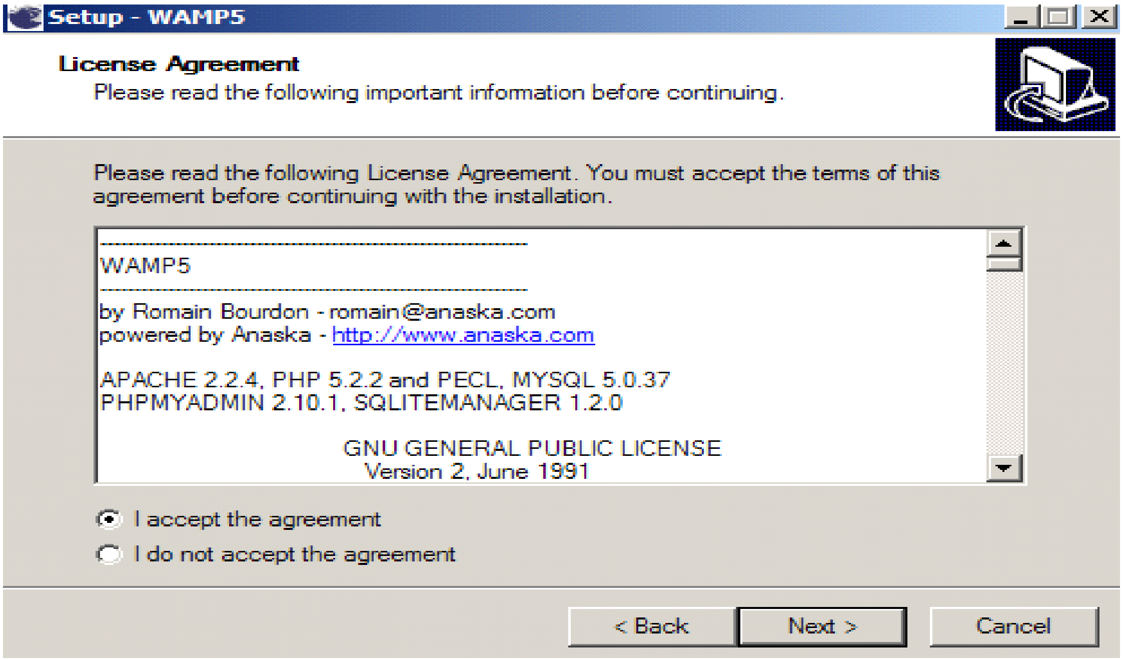
This will install WAMP5 1.7.2 on your computer.

It is recommended that you close all other applications before continuing.

Click Next to continue, or Cancel to exit Setup.

b) Click on next button to continue, and then again box will be appeared on the screen asking you for acceptance or not acceptance of the license agreement.

c) For this select option “I accept the terms in the license agreement”. Click on next button



License Agreement

Please read the following important information before continuing.

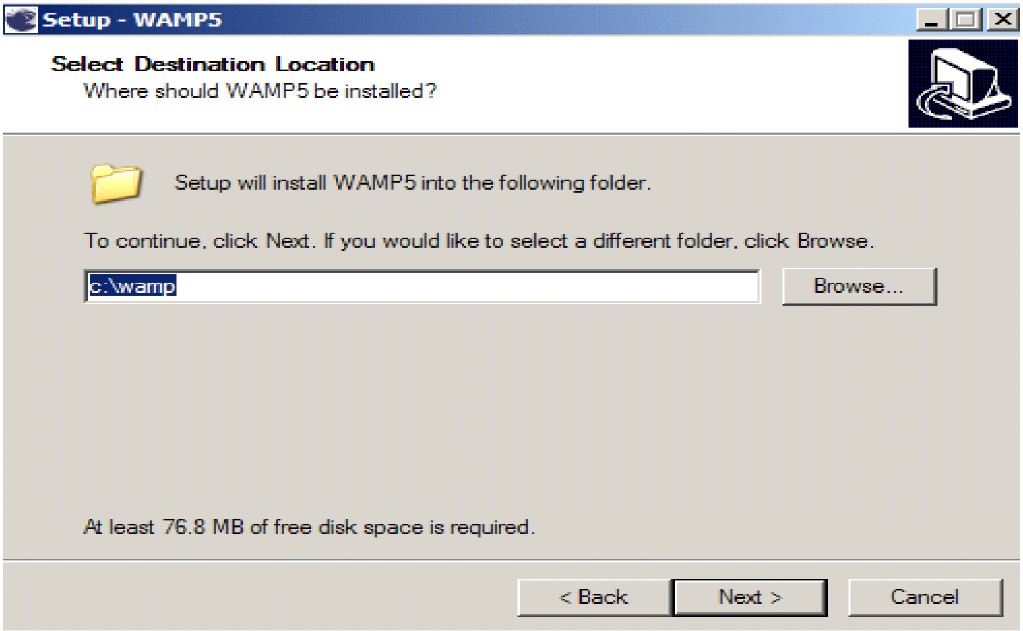
Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.

```
------------------------------------------------------------
WAMP5
------------------------------------------------------------
by Romain Bourdon - romain@anaska.com
powered by Anaska - http://www.anaska.com

APACHE 2.2.4, PHP 5.2.2 and PECL, MYSQL 5.0.37
PHPMYADMIN 2.10.1, SQLITEMANAGER 1.2.0

                    GNU GENERAL PUBLIC LICENSE
                      Version 2, June 1991
```

● I accept the agreement

○ I do not accept the agreement

d) Then again wizard will be opened asking you about the location of placing the folder. For selecting location click on browse and click next.



Setup - WAMP5

Select Destination Location

Where should WAMP5 be installed?

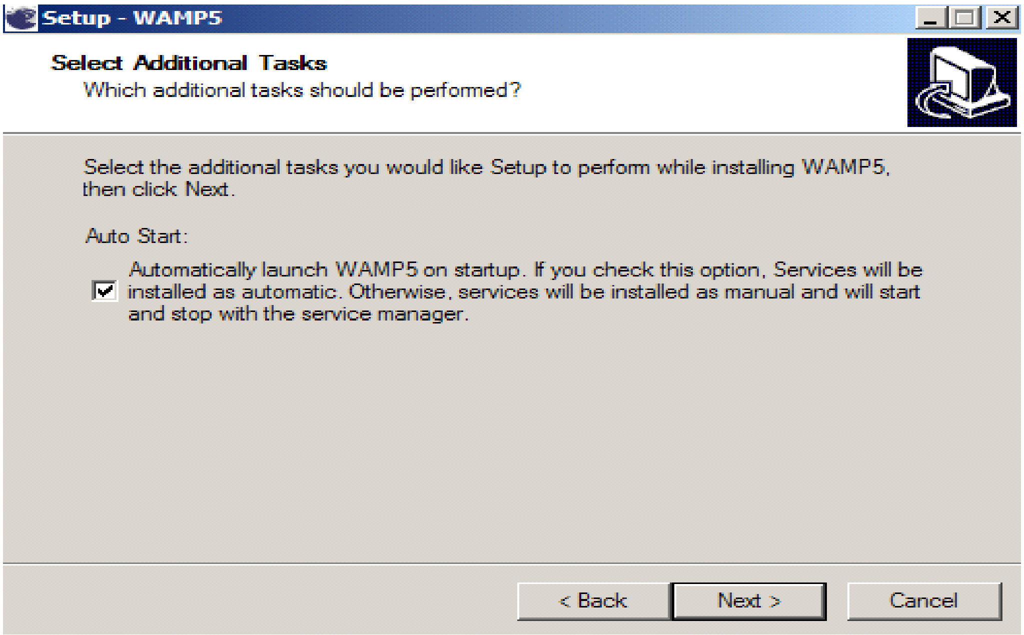
Setup will install WAMP5 into the following folder.

To continue, click Next. If you would like to select a different folder, click Browse.

c:\wamp

At least 76.8 MB of free disk space is required.

e)The next wizard will ask you about auto start the WAMP i.e. if you want to start the WAMP automatically then click on the checkbox and if do not want then it remain unchecked.



Setup - WAMP5

Select Additional Tasks

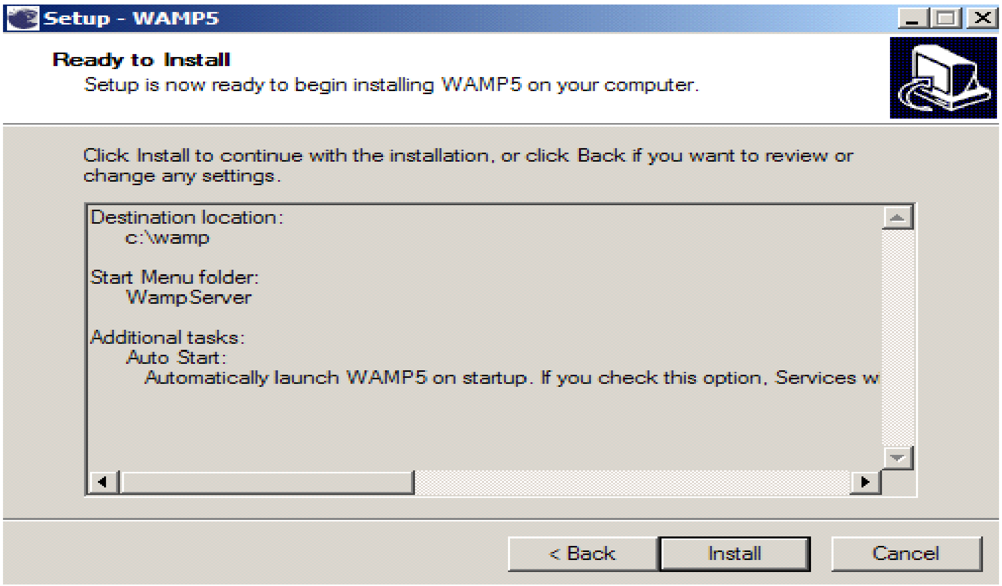
Which additional tasks should be performed?

Select the additional tasks you would like Setup to perform while installing WAMP5, then click Next.

Auto Start:

☑ Automatically launch WAMP5 on startup. If you check this option, Services will be installed as automatic. Otherwise, services will be installed as manual and will start and stop with the service manager.

f) Click on next button to precede further, the next wizard will display you the summary of the setting. Click on install button for installation.



Ready to Install

Setup is now ready to begin installing WAMP5 on your computer.

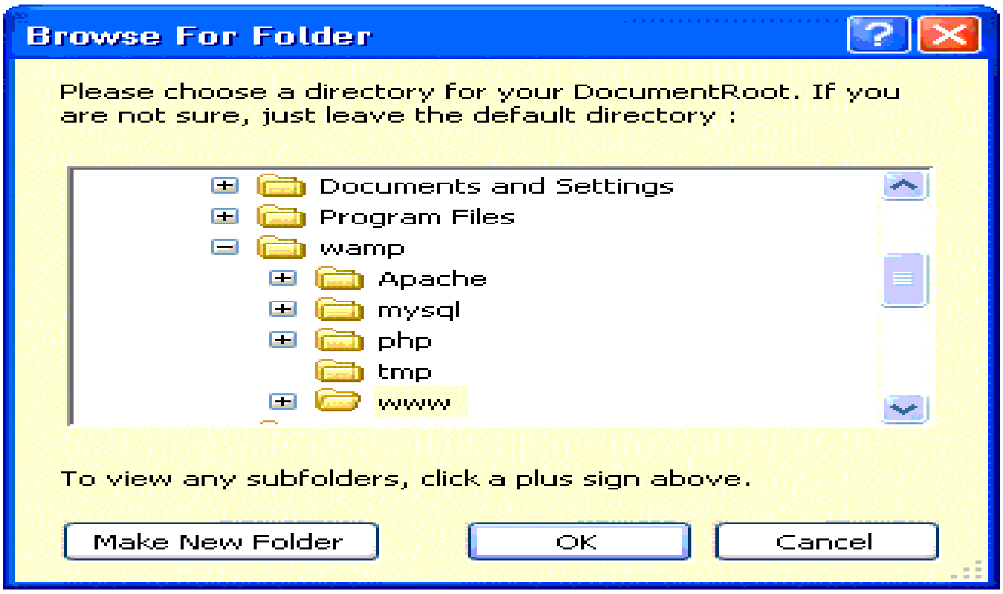
Click Install to continue with the installation, or click Back if you want to review or change any settings.

Destination location:
c:\wamp

Start Menu folder:
WampServer

Additional tasks:
Auto Start:
Automatically launch WAMP5 on startup. If you check this option, Services w

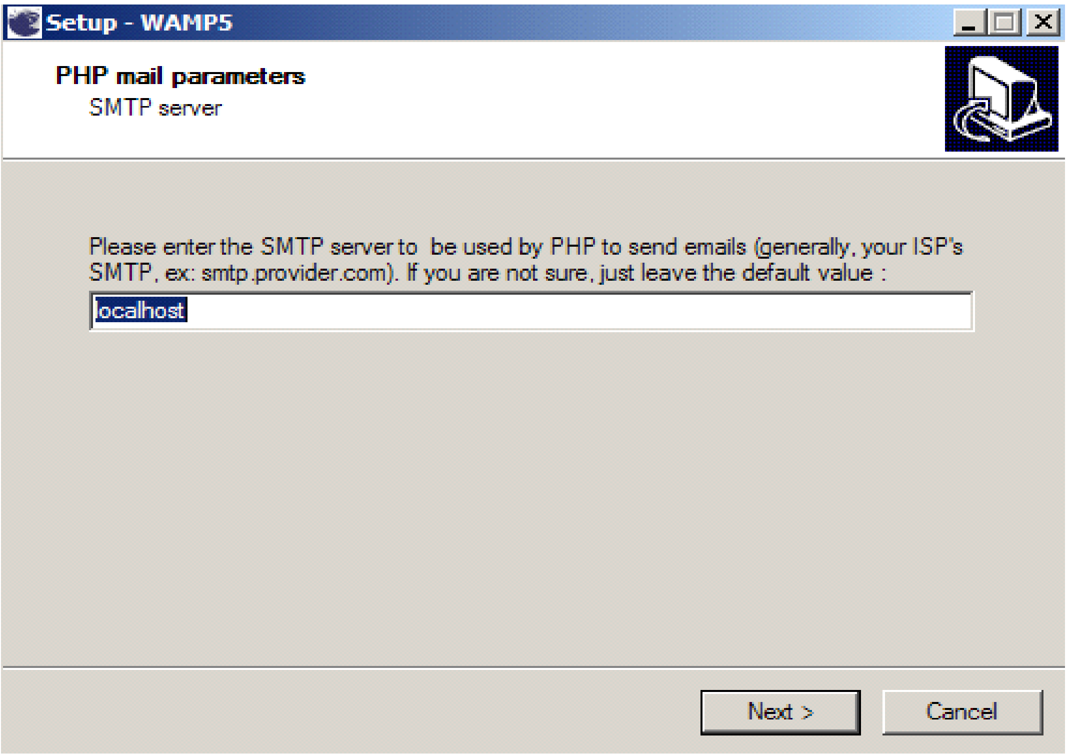
g) After installation the next wizard will be opened asking you about directory for your root folder .if you are not sure, just leave the default directory .for proceeding further click on next button.



Please choose a directory for your DocumentRoot. If you are not sure, just leave the default directory :

To view any subfolders, click a plus sign above.

- The next wizard will ask you about your server just fill local host and click on next



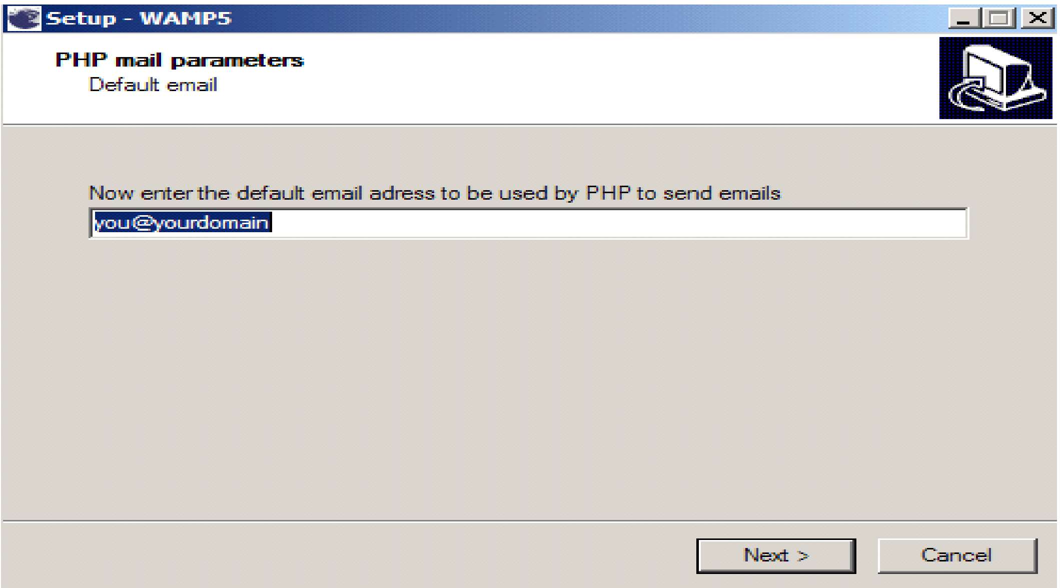
PHP mail parameters

SMTP server

Please enter the SMTP server to be used by PHP to send emails (generally, your ISP's SMTP, ex: smtp.provider.com). If you are not sure, just leave the default value :

localhost

- The next wizard will be appeared on the screen asking you about the email address for sending mails. Just leave the default email address if you are not sure. Click on then text button.



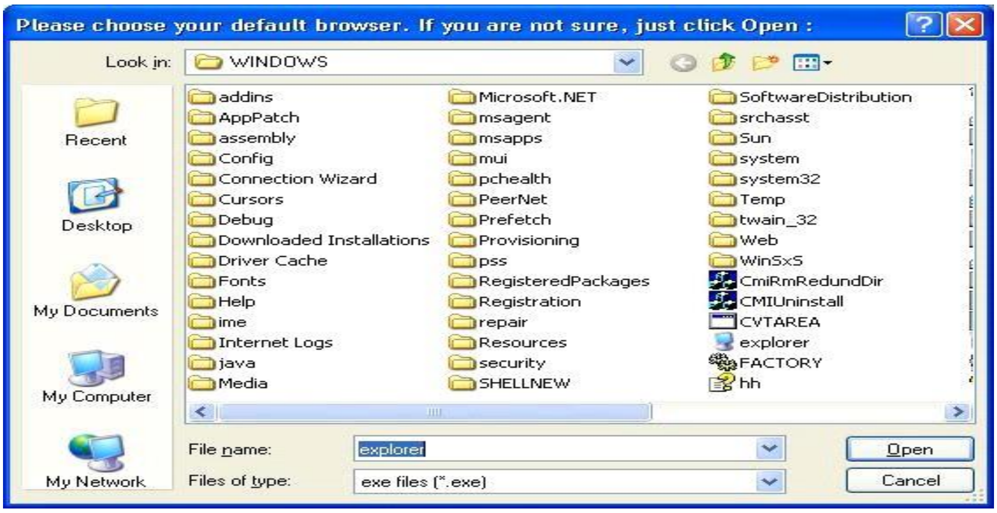
PHP mail parameters

Default email

Now enter the default email adress to be used by PHP to send emails

you@yourdomain

- This wizard will ask you about the browser by default browser is internet explorer you can set default browser according to your requirement. click on next button.



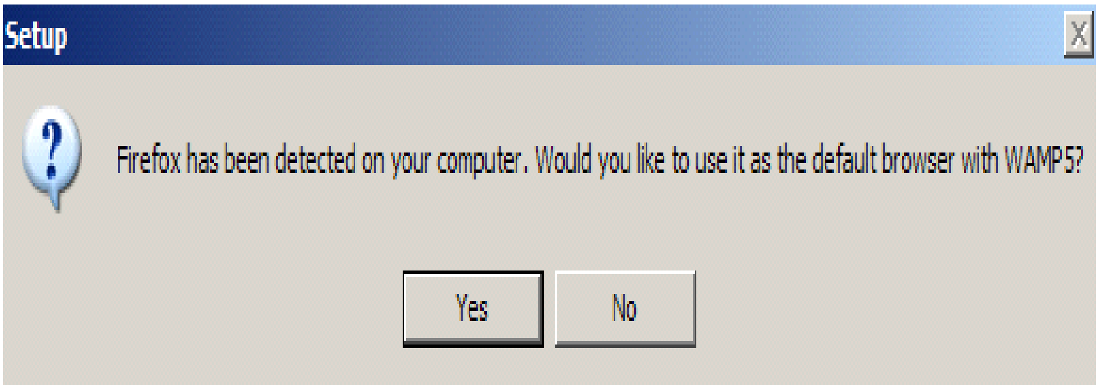
Please choose your default browser. If you are not sure, just click Open :

Look in: WINDOWS

File name: explorer

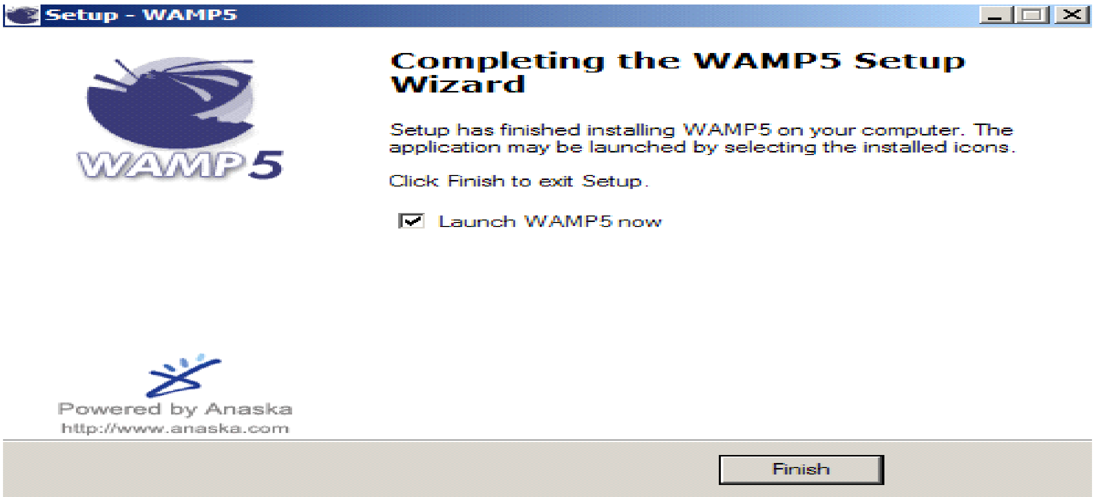
Files of type: exe files (*.exe)

- On clicking next a popup menu will displayed asking you “would you like to install the new WAMP homepage?” click on yes option?



Firefox has been detected on your computer. Would you like to use it as the default browser with WAMP5?

- Finally click on finish after complete installation of WAMP on your system.



Completing the WAMP5 Setup Wizard

Setup has finished installing WAMP5 on your computer. The application may be launched by selecting the installed icons.

Click Finish to exit Setup.

☑ Launch WAMP5 now

CHAPTER 6

SYSTEM DESIGN

6.1 INTRODUCTION

Design is the first step in the development phase for any techniques and principles for the purpose of defining a device, a process or system in sufficient detail to permit its physical realization. Once the software requirements have been analyzed and specified the software design involves three technical activities - design, coding, implementation and testing that are required to build and verify the software. The design activities are of main importance in this phase, because in this activity, decisions ultimately affecting the success of the software implementation and its ease of maintenance are made. These decisions have the final bearing upon reliability and maintainability of the system. Design is the only way to accurately translate the customer's requirements into finished software or a system. Design is the place where quality is fostered in development. Software design is a process through which requirements are translated into a representation of software. Software design is conducted in two steps. Preliminary design is concerned with the transformation of requirements into data.

6.2 INPUT DESIGN

Input design is one of the most expensive phases of operation of computerized system and is often the major problem of a system. In the project, the input design is made in various windows forms with various methods. In the input design, user-oriented inputs are converted into a computer based system format. It also includes determining the record media, method of input, speed of capture and entry on to the screen. Online data entry accepts commands and data through a keyboard. The major approach to input design is the menu and the prompt design. In each alternative, the user's options are predefined. The data flow diagram indicates logical data flow, data stores, source and destination. Input data are collected and organized into a group of similar data. Once identified input media are selected for processing. In this software, importance is given to develop Graphical User Interface (GUI), which is an important factor in developing efficient and user-friendly software. For inputting user data, attractive forms are designed. User can also select desired options from the menu, which provides all possible facilities. Also the important input format is designed in such a way that accidental errors are avoided. The user has to input only just the minimum data required, which also helps in avoiding the errors that the users may make. Accurate designing of the input format is very important in developing efficient software. The goal or input design is to make entry as easy, logical and free from errors. Input stages include following processes

- Data Recording
- Data Transcription
- Data Conversion
- Data Verification
- Data Control
- Data Transmission
- Data Correction

6.3 OUTPUT DESIGN

1. Output design refers to the results and information that are generated by the
2. System for many end users.

In the output design, the emphasis is on producing a hard copy of the information requested or displaying the output on the screen in a predetermined format. Two of the most output media today are printers and the screen. Most users now access their reports from a hard copy or screen display. Computer's output is the most important and direct source of information to the user, efficient, logical, output design should improve the systems relations with the user and help in decision- making. As the outputs are the most important source of information to the user, better design should improve the system's relation and also should help in decision-making.

The output device's capability, print capability, response time requirements etc. should also be considered form design elaborates the way output is presented and layout available for capturing information. It's very helpful to produce the clear, accurate and speedy information for end users. Outputs from computer systems are required primarily to communicate the results of processing to users. They are also used to provide a permanent copy of this result for latter consultation. Computer output is the most important and direct source of information to the users. Designing computer output should proceed in an organized well throughout the manner. The right output must be available for the people who find the system easy to use. The output has been defined during the logical design stage. If not, they should define at the beginning of the output designing terms of types of output connect, format, response etc.

The various types of the outputs are

1. External Outputs
2. Internal Outputs
3. Operational Outputs
4. Interactive Outputs
5. Turn Around Outputs.

6.4 DATABASE DESIGN

Database Design is a collection of processes that facilitate the designing, development, implementation and maintenance of enterprise data management systems

It helps produce database systems

- That meet the requirements of the users
- Have high performance.

The main objectives of database designing are to produce logical and physical designs models of the proposed database system.

The logical model concentrates on the data requirements and the data to be stored independent of physical considerations. It does not concern itself with how the data will be stored or where it will be stored physically.

The physical data design model involves translating the logical design of the database onto physical media using hardware resources and software systems such as database management systems.

6.5 NORMALIZATION

First Normal Form:

The normalization process involves getting our data to conform to progressive normal forms, and a higher level of normalization cannot be achieved unless the previous levels have been satisfied (though many experienced designers can create normalized tables directly without iterating through the lower forms). The first normal form (or 1NF) requires that the values in each column of a table are atomic. By atomic we mean that there are no sets of values within a column. One method for bringing a table into first normal form is to separate the entities contained in the table into separate tables. In our case this would result in Book, Author, Subject and Publisher tables.

Second Normal Form:

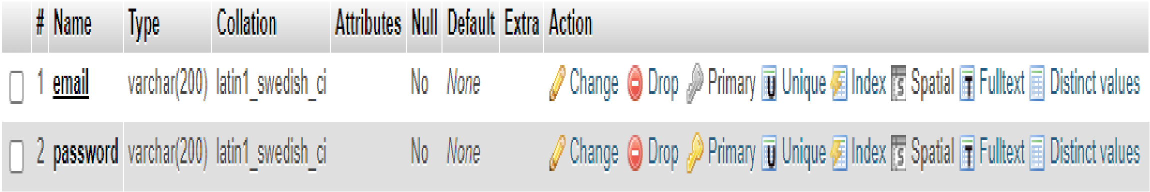
Where the First Normal Form deals with atomicity of data, the Second Normal Form (or 2NF) deals with relationships between composite key columns and non-key columns. As stated earlier, the normal forms are progressive, so to achieve Second Normal Form, your tables must already be in First Normal Form. The second normal form (or 2NF) any non-key columns must depend on the entire primary key. In the case of a composite primary key, this means that a non-key column cannot depend on only part of the composite key.

Third Normal Form:

Third Normal Form (3NF) requires that all columns depend directly on the primary key. Tables violate the Third Normal Form when one column depends on another column, which in turn depends on the primary key (a transitive dependency).One way to identify transitive dependencies is to look at your table and see if any columns would require updating if another column in the table was updated. If such a column exists, it probably violates 3NF.

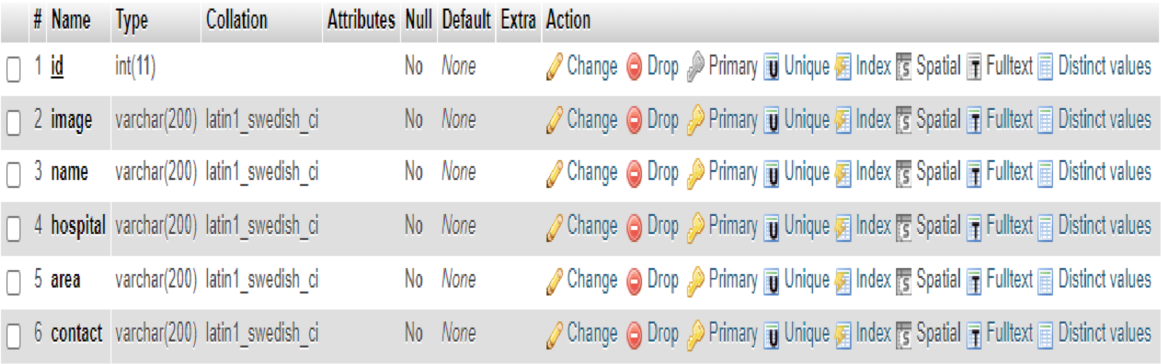
6.6 TABLE DESIGN

ADMIN TABLE



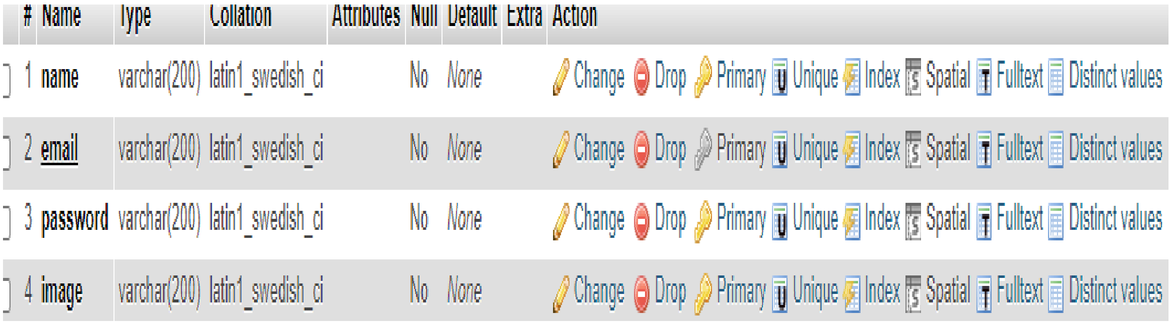
	#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
□	1	email	varchar(200)	latin1_swedish_ci		No	*None*		Change Drop Primary Unique Index Spatial Fulltext Distinct values
□	2	password	varchar(200)	latin1_swedish_ci		No	*None*		Change Drop Primary Unique Index Spatial Fulltext Distinct values

DOCTOR



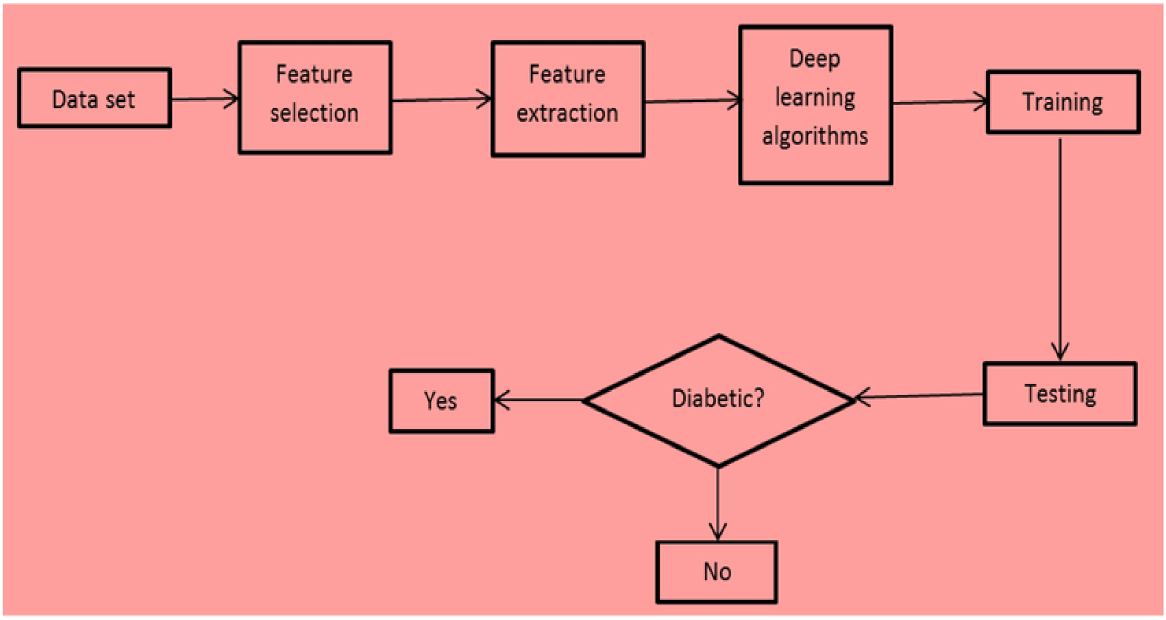
	#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
□	1	id	int(11)			No	*None*		Change Drop Primary Unique Index Spatial Fulltext Distinct values
□	2	image	varchar(200)	latin1_swedish_ci		No	*None*		Change Drop Primary Unique Index Spatial Fulltext Distinct values
□	3	name	varchar(200)	latin1_swedish_ci		No	*None*		Change Drop Primary Unique Index Spatial Fulltext Distinct values
□	4	hospital	varchar(200)	latin1_swedish_ci		No	*None*		Change Drop Primary Unique Index Spatial Fulltext Distinct values
□	5	area	varchar(200)	latin1_swedish_ci		No	*None*		Change Drop Primary Unique Index Spatial Fulltext Distinct values
□	6	contact	varchar(200)	latin1_swedish_ci		No	*None*		Change Drop Primary Unique Index Spatial Fulltext Distinct values

USERS

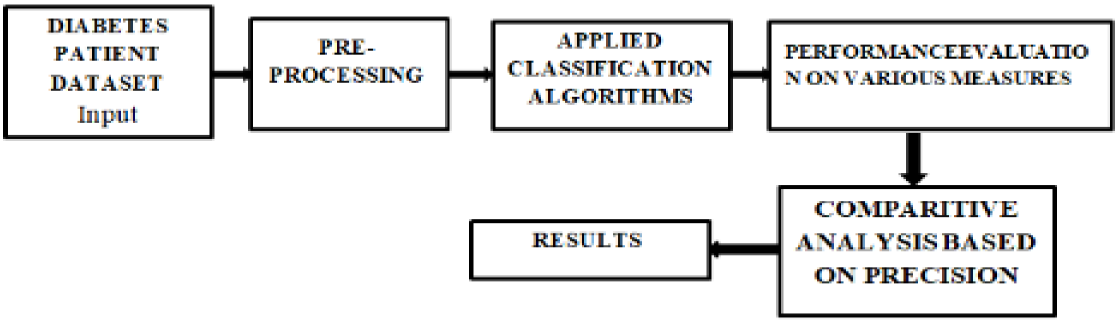


	#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
□	1	name	varchar(200)	latin1_swedish_ci		No	*None*		Change Drop Primary Unique Index Spatial Fulltext Distinct values
□	2	email	varchar(200)	latin1_swedish_ci		No	*None*		Change Drop Primary Unique Index Spatial Fulltext Distinct values
□	3	password	varchar(200)	latin1_swedish_ci		No	*None*		Change Drop Primary Unique Index Spatial Fulltext Distinct values
□	4	image	varchar(200)	latin1_swedish_ci		No	*None*		Change Drop Primary Unique Index Spatial Fulltext Distinct values

6.7 ARCHITECTURE DIAGRAM



6.8 DATA FLOW DIAGRAM


DIABETES PATIENT DATASET Input
PRE-PROCESSING
APPLIED CLASSIFICATION ALGORITHMS
PERFORMANCEEVALUATIO N ON VARIOUS MEASURES
COMPARITIVE ANALYSIS BASED ON PRECISION
RESULTS

CHAPTER 7

MODULE DESCRIPTION

Admin:

In this Module, Admin can view the Doctor details and the patient details. The doctor detail consists of fields such as name, contact and specialist in. The Admin module serves as the central administrative control panel for the “Diabetes Prediction using Data Mining in Healthcare Management System.” The module allows authorized administrators to view and manage doctor and patient details. Key functionalities of the Admin module are as follows:

View Doctor Details: Admin can access and view the details of registered doctors in the system. The doctor details include essential information such as name, contact information, and their specialization or area of expertise.

View Patient Details: Admin can also access and view the patient details stored in the system. These details may include information related to each patient’s medical history, health parameters etc..

Input Dataset:

The Input Dataset module is responsible for managing the dataset used for training the data mining model. In this data set we are taken 9 columns and in the dataset, which are described below.

Pregnancies: Number of times pregnant

Glucose: Plasma glucose concentration a 2 hours in an oral glucose tolerance test

Blood Pressure: Diastolic blood pressure (mm Hg)

Skin Thickness: Triceps skin fold thickness (mm)

Insulin: 2-Hour serum insulin (mu U/ml)

BMI: Body mass index (weight in kg/(height in m)^2)

Diabetes Pedigree Function: Diabetes pedigree function

Age: Age (years)

Outcome: **Class Distribution:** (class value 1 is interpreted as “tested positive for diabetes”)

Users:

Intended Users who wants to predict the possibility of disease they are suffered, they will give the information about their conditions. The System will show the analyzed Results from the training datasets to the Users. The Users module is designed to cater to the needs of individuals using the system to predict their diabetes risk. The new users can register their accounts, providing essential information like name, age, gender, and contact details. The users input their health parameters, such as age, BMI, glucose levels, blood pressure, insulin, and other relevant details into the system. Once the data mining model processes the user’s input, the module displays the analyzed prediction results, indicating the likelihood of diabetes occurrence. Users can access their personalized dashboards, displaying past prediction results, health trends, and other relevant information.

Doctor:

Doctor has to register their details and during login doctor has to verify their identity. Then doctor will upload the case base dataset. Then he will set some rules for identifying diabetes. Then he will enter the new patient details. Then the entered data go for case base reasoning for matching results. Then entered data will be analyzed through rule based reasoning. Finally the diagnosis result will be predicted. Disease Prediction will analyzed from training datasets through Data mining techniques.

The Doctor module caters to medical professionals who may collaborate with the system to offer expert advice to users. The Medical professionals, after obtaining consent from users, can access their health data and prediction results to provide medical guidance. The module allows doctors to interpret prediction results, explaining the factors influencing the likelihood of diabetes and offering medical advice.

CHAPTER 8

SYSTEM TESTING

The completion of a system will be achieved only after it has been thoroughly tested. Though this gives a feel the project is completed, there cannot be any project without going through this stage. Hence in this stage it is decided whether the project can undergo the real time environment execution without any break downs, therefore a package can be rejected even at this stage.

8.1 TESTING METHODS

Software testing methods are traditionally divided into black box testing and white box testing. These two approaches are used to describe the point of view that a test engineer takes when designing test cases.

8.2 BLACK BOX TESTING

Black box testing treats the software as a "black box," without any knowledge of internal implementation. Black box testing methods include: equivalence partitioning, boundary value analysis, all-pairs testing, fuzz testing, model-based testing, traceability matrix, exploratory testing and specification-based testing.

8.3 WHITE BOX TESTING

White box testing, by contrast to black box testing, is when the tester has access to the internal data structures and algorithms (and the code that implement these).White box testing methods can also be used to evaluate the completeness of a test suite that was created with black box testing methods. This allows the software team to examine parts of a system that are rarely tested and ensures that the most important function points have been tested.

8.4 GREY BOX TESTING

Grey box testing involves having access to internal data structures and algorithms for purposes of designing the test cases, but testing at the user, or black-box level. Manipulating input data and formatting output do not qualify as "grey box," because the input and output are clearly outside of the "black-box" that we are calling the system under test. This distinction is particularly important when conducting integration testing between two modules of code written by two different developers, where only the interfaces are exposed for test. Grey box testing may also include reverse engineering to determine, for instance, boundary values or error messages.

8.5 ACCEPTANCE TESTING

Acceptance testing can mean one of two things:

1. A smoke test is used as an acceptance test prior to introducing a build to the main testing process.
2. Acceptance testing performed by the customer is known as user acceptance testing (UAT).

8.6 REGRESSION TESTING

Regression testing is any type of software testing that seeks to uncover software regressions. Such regression occurs whenever software functionality that was previously working correctly stops working as intended. Typically regressions occur as an unintended consequence of program changes. Common methods of regression testing include re-running previously run tests and checking whether previously fixed faults have re-emerged.

8.7 NON FUNCTIONAL SOFTWARE TESTING

Special methods exist to test non-functional aspects of software.

- Performance testing checks to see if the software can handle large quantities of data or users. This is generally referred to as software scalability. This activity of Non Functional Software Testing is often times referred to as Load Testing.
- Stability testing checks to see if the software can continuously function well in or above an acceptable period. This activity of Non Functional Software Testing is often times referred to as indurations test.
- Usability testing is needed to check if the user interface is easy to use and understand.
- Security testing is essential for software which processes confidential data and to prevent system intrusion by hackers.

CHAPTER 9

SYSTEM IMPLEMENTION

The purpose of System Implementation can be summarized as follows: making the new system available to a prepared set of users (the deployment), and positioning on-going support and maintenance of the system within the Performing Organization (the transition). At a finer level of detail, deploying the system consists of executing all steps necessary to educate the Consumers on the use of the new system, placing the newly developed system into production, confirming that all data required at the start of operations is available and accurate, and validating that business functions that interact with the system are functioning properly.

Transitioning the system support responsibilities involves changing from a system development to a system support and maintenance mode of operation, with ownership of the new system moving from the Project Team to the Performing Organization. A key difference between System Implementation and all other phases of the lifecycle is that all project activities up to this point have been performed in safe, protected, and secure environments, where project issues that arise have little or no impact on day-to-day business operations.

Once the system goes live, however, this is no longer the case. Any miscues at this point will almost certainly translate into direct operational and/or financial impacts on the Performing Organization. It is through the careful planning, execution, and management of System Implementation activities that the Project Team can minimize the likelihood of these occurrences, and determine appropriate contingency plans in the event of a problem.

Implementation involves careful planning, investigation of the current system and is constraints on implementation, design of methods to achieve of changeover, end evolution, of changeover methods.

- Testing the developed software with sample data.
- Debugging of any errors if identified.
- Creating the files of the system with actual data.
- Making necessary changes to the system with actual data.

Implementation includes all the activities that are necessary to replace the existing system with the proposed system. A proper implementation is essential to provide a reliable system to meet the requirements. The system has been successfully implemented in the organization with full cooperation of the management. Finally the system is handed over to the organization. It is not been created separately for qualified or trained users for operating the system but it is developed in a user friendly manner.

CHAPTER 10

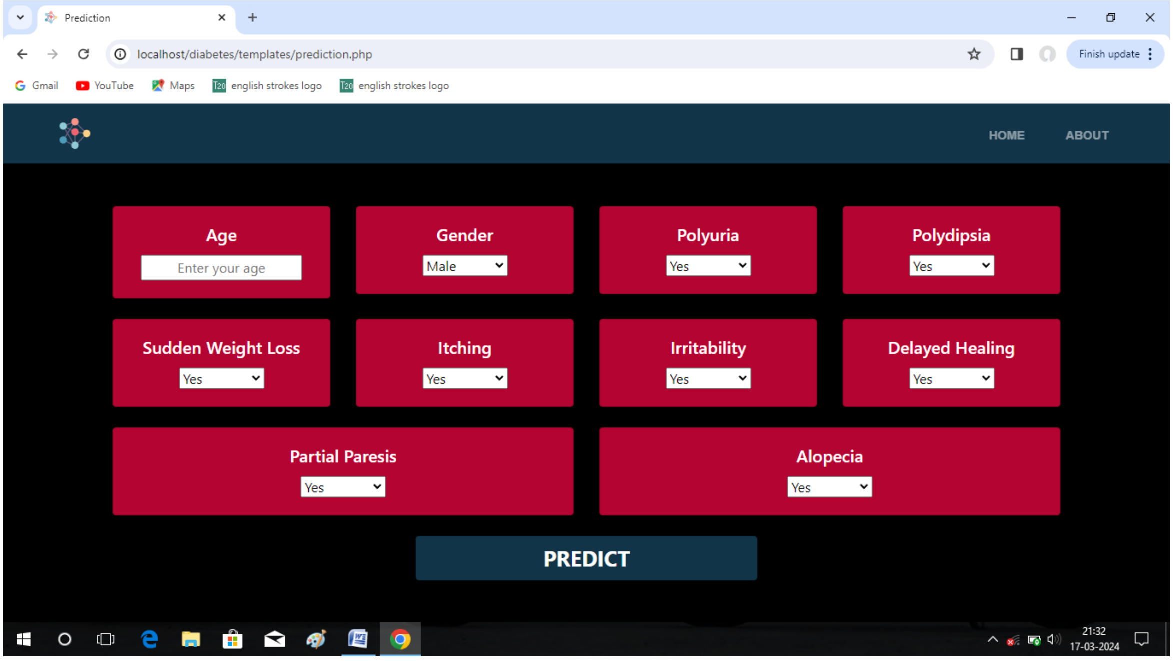
CONCLUSION

In machine learning approach the adoption of the random forest classifier that employs a variety of decision trees, improves the result of classification. As it consists of various decision trees and takes the average of all decision tree subsets, resulting in increased accuracy. Moreover, in deep learning approach, I got an accuracy more than 95. To enhance the proposed system, I can add features such as I can suggest the patients or provide treatment for the detected symptom according to the severity of the patient’s disease.

APPENDIX 1

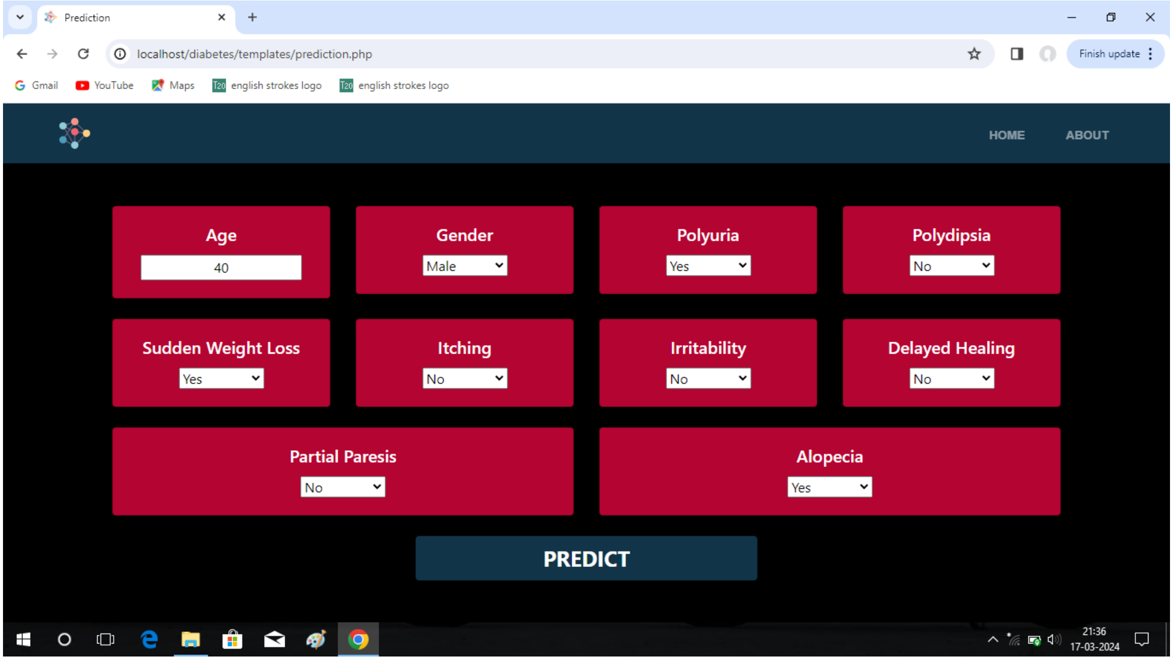
SCREEN SHOT

HOME PAGE



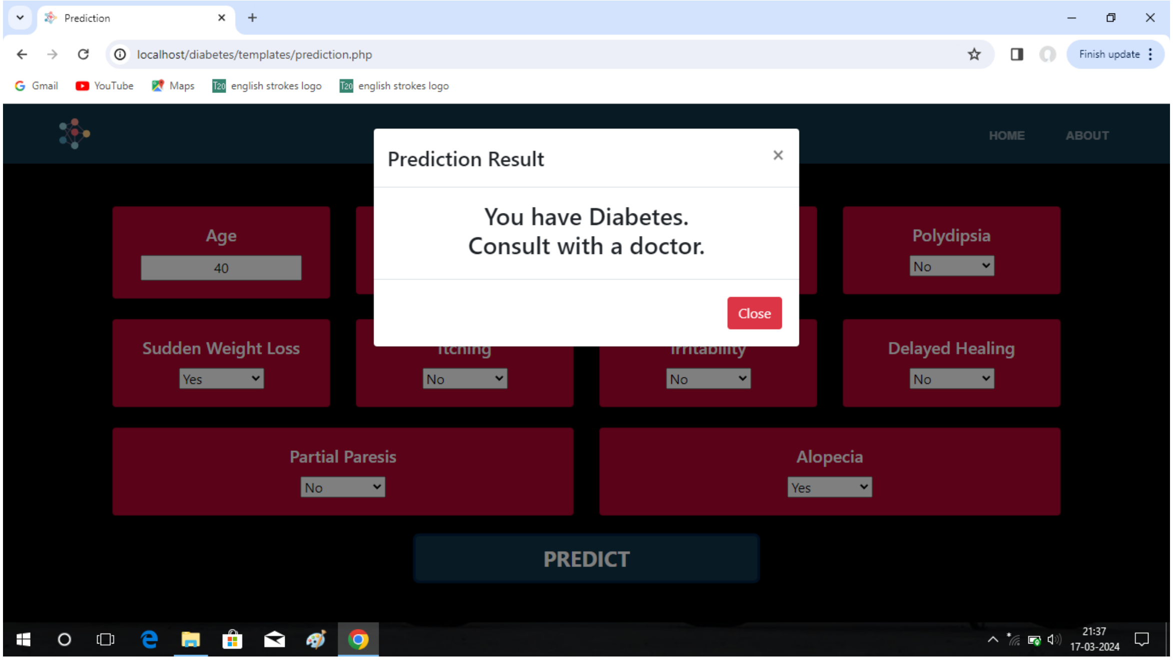
Age: Enter your age
Gender: Male
Polyuria: Yes
Polydipsia: Yes
Sudden Weight Loss: Yes
Itching: Yes
Irritability: Yes
Delayed Healing: Yes
Partial Paresis: Yes
Alopecia: Yes

PATIENT



Age: 40
Gender: Male
Polyuria: Yes
Polydipsia: No
Sudden Weight Loss: Yes
Itching: No
Irritability: No
Delayed Healing: No
Partial Paresis: No
Alopecia: Yes

RESULT



localhost/diabetes/templates/prediction.php

Prediction Result

You have Diabetes.
Consult with a doctor.

Age: 40

Polydipsia: No

Sudden Weight Loss: Yes

Itching: No

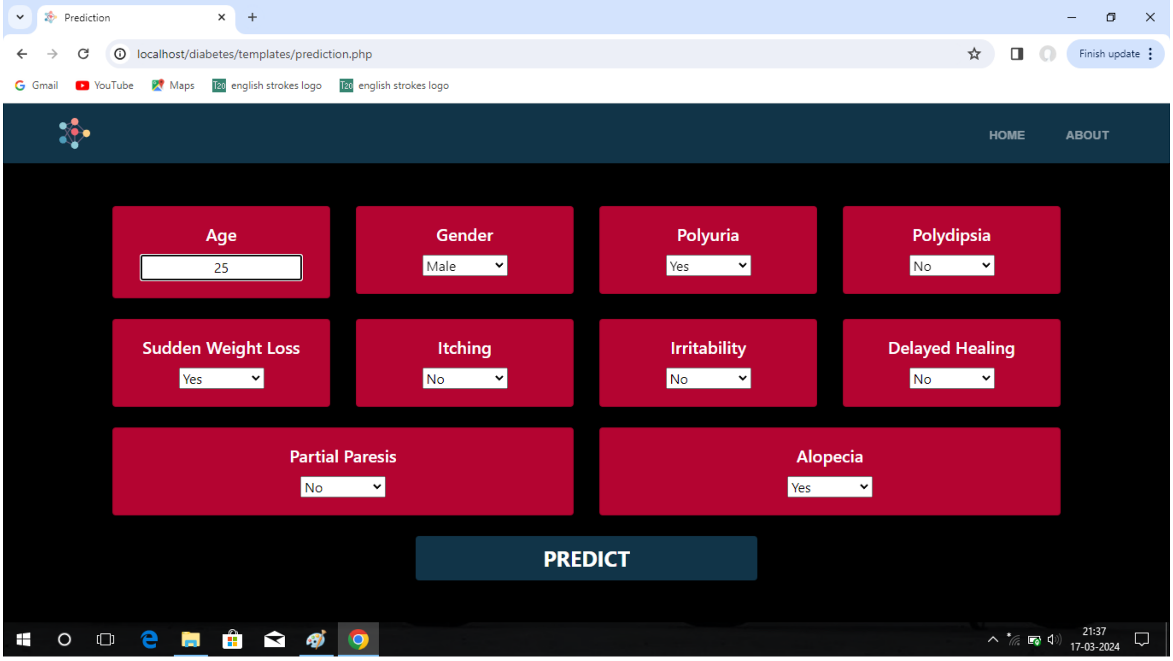
Irritability: No

Delayed Healing: No

Partial Paresis: No

Alopecia: Yes

AGE



localhost/diabetes/templates/prediction.php

Age: 25

Gender: Male

Polyuria: Yes

Polydipsia: No

Sudden Weight Loss: Yes

Itching: No

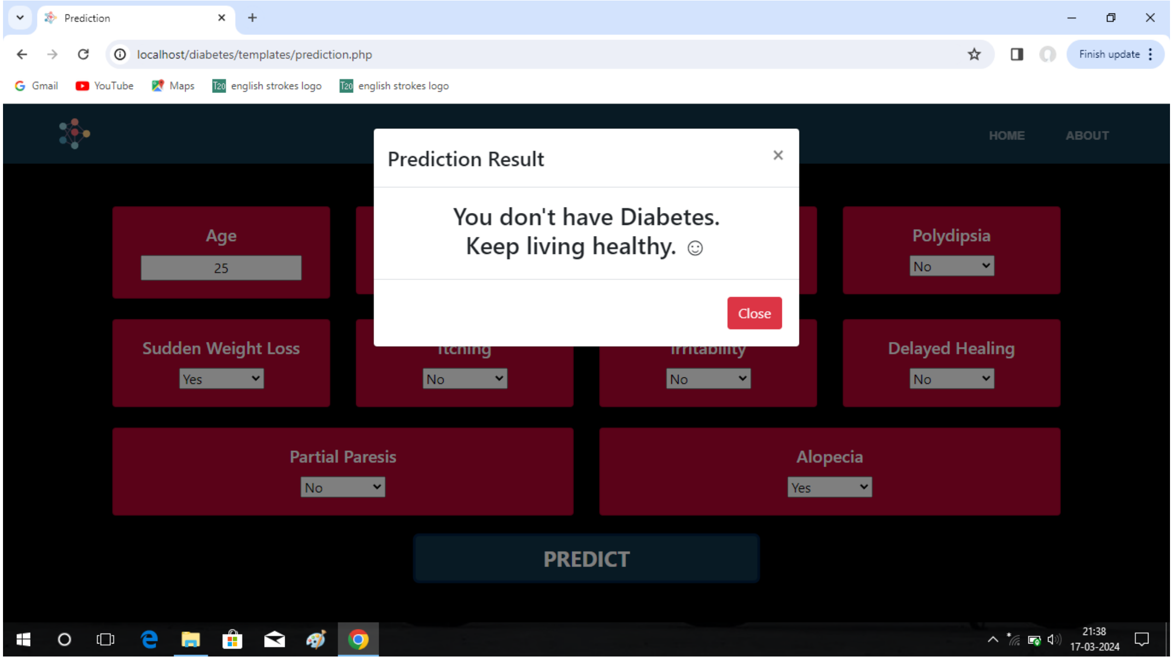
Irritability: No

Delayed Healing: No

Partial Paresis: No

Alopecia: Yes

RESULT



Prediction Result

You don't have Diabetes.
Keep living healthy. ☺

Close

Age: 25

Polydipsia: No

Sudden Weight Loss: Yes

Itching: No

Irritability: No

Delayed Healing: No

Partial Paresis: No

Alopecia: Yes

APPENDIX 2

SOURCE CODE

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no">
    <title>Diabetes Prediction</title>

    <!-- Styles -->
    <link href="https://fonts.googleapis.com/css?family=Montserrat:500,700&display=swap&subset=latin-ext" rel="stylesheet">
    <link href="https://fonts.googleapis.com/css?family=Open+Sans:400,400i,600&display=swap&subset=latin-ext" rel="stylesheet">
    <link href="styles/css/styles.css" rel="stylesheet">
    <link href="indexStyle.css" rel="stylesheet">
    <link href="styles/css/fontawesome-all.css" rel="stylesheet">
    <link href="styles/css/swiper.css" rel="stylesheet">
    <link href="styles/css/magnific-popup.css" rel="stylesheet">
    <link href="styles/css/bootstrap.css" rel="stylesheet">

    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css">




<!-- Favicon  -->

    <link rel="icon" href="templates/logo.svg">

</head>


<body data-spy="scroll" data-target=".fixed-top">


    <!-- Preloader -->


    <div class="spinner-wrapper">

        <div class="spinner">

            <div class="bounce1"></div>

            <div class="bounce2"></div>

            <div class="bounce3"></div>

        </div>

    </div>
    <!-- end of preloader -->


    <!-- Navbar -->
    <nav class="navbar navbar-expand-md navbar-dark navbar-custom fixed-top">
        <!-- Text Logo - Use this if you don't have a graphic logo -->
        <!-- <a class="navbar-brand logo-text page-scroll" href="index.html">Aria</a> -->
        <!-- Image Logo -->
        <a class="navbar-brand logo-image" href="/"><img src="templates/logo.svg" alt="alternative" style="width: 40px; height: 40px;"></a>

        <!-- Mobile Menu Toggle Button -->
        <button class="navbar-toggler" type="button" data-toggle="collapse" data-target="#navbarsExampleDefault" aria-controls="navbarsExampleDefault" aria-expanded="false" aria-label="Toggle navigation">
            <span class="navbar-toggler-awesome fas fa-bars"></span>
            <span class="navbar-toggler-awesome fas fa-times"></span>
        </button>
        <!-- end of mobile menu toggle button -->
    <div class="collapse navbar-collapse" id="navbarsExampleDefault">
      <ul class="navbar-nav ml-auto">
        <li class="nav-item">
          <a class="nav-link page-scroll" href="index.php">HOME <span
class="sr-only">(current)</span></a>
        </li>
        <li class="nav-item">
          <a class="nav-link page-scroll"
href="templates/prediction.php">PREDICT</a>
        </li>
        <li class="nav-item">
          <a class="nav-link page-scroll"
href="templates/login.php">LOGIN</a>
        </li>
        <li class="nav-item">
          <a class="nav-link page-scroll" href="#contact">ABOUT</a>
        </li>
      </ul>

    </div>
  </nav> <!-- end of navbar -->
  <!-- end of navbar -->



 <!-- Header -->
  <header id="header" class="header">
      <div class="header-content">
          <div class="container">
              <div class="row">
                  <div class="col-lg-12">
                      <div class="text-container">
                          <h1><span id="js-rotating">Diabetes Prediction, Using
Machine Learning</span></h1>
                          <p class="p-heading p-large"></p>
                          <a class="btn-solid-lg page-scroll"
href="templates/prediction.php">Predict</a>
                         <!--  <a class="btn-solid-lg page-scroll"
href="templates/register.php">Sign Up</a>-->

                      </div>
                  </div> <!-- end of col -->
              </div> <!-- end of row -->
          </div> <!-- end of container -->
      </div> <!-- end of header-content -->
  </header> <!-- end of header -->
  <!-- end of header -->


  <!-- Description -->
  <!-- Team -->
  <section id="team" class="pb-5">
      <div class="container">
          <div class="row">
              <!-- Team member -->
              <div class="col-xs-12 col-sm-12 col-md-6 col-lg-6">
                  <div class="image-flip">
                      <div class="mainflip flip-0">
                          <div class="frontside">
                              <div class="card">
                                  <div class="card-body text-center">
                                      <p><img class=" img-fluid" src="https://icon-
library.com/images/registration-icon/registration-icon-6.jpg"></p>
                                      <h4 class="card-title">Predict & Do more</h4>
                                      <p class="card-text"></p>
                  </div>
                </div>
              </div>
              <div class="backside">
                <div class="card">
                  <div class="card-body text-center mt-4">
                    <h4 class="card-title">Register</h4>
                    <p class="card-text">This is basic card with image on top, title, description and button.This is basic card with image on top, title, description and button.This is basic card with image on top, title, description and button.</p>
                    <button class="submit btn btn-primary" type="button" style="width: 200px; font-size:15px;font-weight:bold;">Register</button>
                  </div>
                </div>
              </div>
            </div>
          </div>
        </div>
        <!-- ./Team member -->
        <!-- Team member -->
        <div class="col-xs-12 col-sm-12 col-md-6 col-lg-6">
          <div class="image-flip" ontouchstart="this.classList.toggle('hover');">
            <div class="mainflip">
              <div class="frontside">
                <div class="card">
                  <div class="card-body text-center">
                    <p><img class=" img-fluid" src="https://nanohub.org/app/site/groups/33013/uploads/5387109-machine-learning-icon-iot-slam-machine-learning-icon-300_300_preview.png" alt="card image"></p>
                    <h4 class="card-title">Explore our model</h4>
                    <p class="card-text"></p>

                  </div>
                </div>
              </div>
              <div class="backside">
                <div class="card">
                  <div class="card-body text-center mt-4">
                    <h4 class="card-title">Learn about our model</h4>
```

```
                        <p class="card-text">This is basic card with image on top, title, description and button.This is basic card with image on top, title, description and button.This is basic card with image on top, title, description and button.</p>
                        <button class="submit btn btn-primary" type="button" style="width: 200px; font-size:15px;font-weight:bold;">Learn about the model</button>
                    </div>
                </div>
            </div>
        </div>
    </div>
</div>
<!-- ./Team member -->
<!-- Team member -->
<div class="col-xs-12 col-sm-12 col-md-12">
    <div class="image-flip" ontouchstart="this.classList.toggle('hover');">
        <div class="mainflip">
            <div class="frontside">
                <div class="card">
```

```
 <div class="card-body text-center">
                                <p><img class=" img-fluid" src="https://library.kissclipart.com/20180831/qie/kissclipart-diabetes-icon-clipart-diabetes-mellitus-blood-gluc-adf0fd1c89977f44.png" alt="card image"></p>
                                <h4 class="card-title">Learn about Diabetes</h4>
                                <p class="card-text"></p>


                            </div>
                        </div>
                    </div>
                    <div class="backside">
                        <div class="card">
                            <div class="card-body text-center mt-4">
                                <h4 class="card-title">Learn about Diabetes</h4>
                                <p class="card-text">This is basic card with image on top, title, description and button.This is basic card with image on top, title, description and button.This is basic card with image on top, title, description and button.</p>
                                <button class="submit btn btn-primary" type="button" style="width: 200px; font-size:15px;font-weight:bold;">Learn about Diabetes</button>
                            </div>
                            </div>
                        </div>
                    </div>
                </div>
            </div>
            <!-- ./Team member -->
            <!-- Team member -->
        </div>
    </div>
</section>
<!-- Team -->

<!-- Footer -->
<div id=contact class="footer">
    <div class="container">
        <div class="row">
```

```
<!--   <img class="card-image" src="styles/images/" width="150" height="150" alt="alternative"> -->


            <div class="col-md-6 col-lg-6 text-center text-lg-left text-xl-left">
                <div class="text-container about">
                    <h4>Developed by:</h4>
                    <h2 class="white">Dipto</h2>
                    <p class="white">Email: diptoprodipto@gmail.com</p>
                </div> <!-- end of text-container -->
            </div> <!-- end of col -->
            <br>
            <div class="col-md-6 col-lg-6 text-center">
                <div class="text-container">
                    <h4>Connect</h4>


                    <a href="#" class="fa fa-github" style="font-size: 30px; text-decoration: none;"></a>
                    <a href="#" class="fa fa-linkedin" style="font-size: 30px; text-decoration: none;"></a>
                    <a href="#" class="fa fa-google" style="font-size: 30px; text-decoration: none;"></a>
```

```
                        <a href="#" class="fa fa-facebook" style="font-size: 30px;
text-decoration: none;"></a>


                        <!--
                        <ul class="list-unstyled li-space-lg white">
                            <li>
                                <a class="white" href="">LinkedIn</a>


                            </li>
                            <li>
                                <a class="white" href="">Github</a>


                            </li>
                            <li>
                                <a class="white" href="">Kaggle</a>
                            </li>
                        </ul>
                        -->
                    </div> <!-- end of text-container -->
                </div> <!-- end of col -->
```

```
<!--
<div class="col-md-2">
    <div class="text-container">
        <h4>Tools Used</h4>
        <ul class="list-unstyled li-space-lg">
            <li>
                <a class="white" href="https://www.ichec.ie/about/infrastructure/kay">ICHEC Kay</a>
            </li>
            <li>
                <a class="white" href="https://public.tableau.com/profile/kunal.goyal#!/vizhome/lendingclub_15949916461750/Dashboard1">Tableau</a>
            </li>
            <li class="media">
                <a class="white" href="https://www.lendingclub.com/info/statistics.action">Lending Club</a>
            </li>
        </ul>
    </div>
</div> -->
```

```
            </div> <!-- end of row -->

        </div> <!-- end of container -->

    </div> <!-- end of footer -->

    <!-- end of footer -->




    <!-- Scripts -->

    <script src="styles/js/jquery.min.js"></script> <!-- jQuery for Bootstrap's JavaScript plugins -->

    <script src="styles/js/popper.min.js"></script> <!-- jQuery for Bootstrap's JavaScript plugins -->

    <script src="styles/js/bootstrap.min.js"></script> <!-- jQuery for Bootstrap's JavaScript plugins -->

    <script src="styles/js/jquery.easing.min.js"></script> <!-- jQuery for Bootstrap's JavaScript plugins -->

    <script src="styles/js/jquery.magnific-popup.js"></script> <!-- jQuery for Bootstrap's JavaScript plugins -->

    <script src="styles/js/morphext.min.js"></script> <!-- jQuery for Bootstrap's JavaScript plugins -->

    <script src="styles/js/isotope.pkgd.min.js"></script> <!-- jQuery for Bootstrap's JavaScript plugins -->
    <script src="styles/js/validator.min.js"></script> <!-- jQuery for Bootstrap's JavaScript plugins -->

    <script src="styles/js/scripts.js"></script> <!-- jQuery for Bootstrap's JavaScript plugins -->


</body>


</html>
```

REFERENCES AND BIBLIOGRAPHY

- All about frontend controls in php http://www.msdn.microsoft.com

- Wikipedia for various diagrams & testing methods http://www.wikipedia.org/

- Cool text for Images and Buttons http://cooltext.com/

- K-State Research Exchange for samples in report writing http://krex.k-state.edu/dspace/handle/2097/959

- Smart Draw for drawing all the Diagrams used in this report. http://www.smartdraw.com/

- Sample Ecommerce Application http://www.NewEgg.com

- Ajax Toolkit controls http://asp.net/ajax.com