A Project Report on

Health Care System Project

Submitted in partial fullment of the requirements for the award
of the degree of

Bachelor of Engineering

in

Computer Engineering

by

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Under the Guidance of

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Approval Sheet

        This Project Report entitled "**Health Care System Project**" Submitted **Manan Doshi** (17202004),**Mugdha Asgekar**(16102023),**Shilpa Chandra**(16102004))is approved for the par-tial ful llment of the requirement for the award of the degree of Bachelor of Engineering in **Computer Engineering** from **University of Mumbai.**

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Date::

CERTIFICATE

This is to certify that the project entitled Health Care System Project" submitted by **Manan Doshi** (17202004),**Mugdha Asgekar** (16102023),**Shilpa Chandra**(16102004) for the partial ful llment of the requirement for award of a degree Bachelor of Engineering in **Computer Engineering**,to the University of Mumbai,is a bona de work carried out during academic year 2017-2018.

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Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, We have adequately cited and referenced the orig-inal sources. We also declare that We have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsi ed any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

(Signature)

Manan Doshi (17202004)
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Date:

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Abstract

In recent years, healthcare needs have shifted from treating acute conditions to meeting an unprecedented chronic disease burden. In the era of "The internet" people take advice from GOOGLE regarding their health problems and get results from varied unreliable sources. In our project we try to overcome this problem as we are making a software application where an individual will get all the necessary help in best way possible in single environment.

Our application will do the necessary predictions according to the varied individual groups based on their gender and age groups. In this application we will take personal health information (PHI) and symptoms if any. Through various technologies that are used, we will provide precise prediction and guidance to the person after which he can take suitable prescriptions within the right time. We will study the data patterns and provide insights to the users based on that he or she take precautions. We will provide visual representations of your health track.

This project will focus on specially in rural and urban environments .This study looks at the role of Community Doctor's in improving access to healthcare services in rural and urban environments. We will utilize the available statistical methods to improve the quality of treatment and the life of entire ailing population

CONTENTS

1.Introduction:

Problems faced:

In the growing fast pace of life, people often neglect their healthcare. Why wait until you get admitted to the hospital? Reasons for neglection might include the lack of time invested , being casual or ignorant of the symptoms, confusion related to proper diagnosis or hesitant to share personal and private problems.Incorrect advice from the wrong sources can worsen the situation for the person .An Individual might have a serious chronic condition he is unaware of but he simply deals with it as thought it is an acute or a minor cure then it will further deteriorate his health .eg
: A person is often having a cold. He will come to a conclusion that its just a viral fever. But what if he has Sinus? Wouldn't it be great if the condition could be known earlier?

❖
Our project will overcome the problems faced and come up with a software platform that is a boon for every individual who wants to lead a healthy lifestyle.

All a person has to do is fill in his details and past patient record and symptoms if any.Through the various technologies we are using , "The Project" will predict for any minor or major health conditions that could be possible so that you can accordingly go for a health check up at just the right time before health could worsen.

- According to your weight, height, age we will predict what should be your suitable eating habits , possible health conditions due to aging.
- We give transparent clarity to the individual regarding to his health.
- Through data analysis , we will provide optimum insights based of individual groups (females, males, elderly)

2.Literature Review

<u>Paper 1: Predictive analytics in health care using machine learning tools and techniques</u>
<u>DOI('10.1109/ICCONS.2017.8250771)</u>

● When we have a huge data set on which we would like to perform predictive analysis or pattern recognition, machine learning is the way to go . This paper depicts the study on various prediction techniques and tools for Machine Learning in practice.

● In our project we will take various health data sets and analyse it. And predict the disease of the patient according to the symptoms.

3.TECHNOLOGIES SETUP AND ENVIRONMENT

Laravel (MODEL VIEW CONTROLLER)Framework: Laravel is a free, open-source[3] PHP web framework, created by Taylor Otwell and intended for the development of web applications following the model–view–controller (MVC) architectural pattern and based on Symfony. Some of the features of Laravel are a modular packaging system with a dedicated dependency manager, different ways for accessing relational databases, utilities that aid in application deployment and maintenance, and its orientation toward syntactic sugar.

Step 1: create Laravel project using cmd in htdocs folder by running cmd as a administrator

Steps to create basic Laravel Project as follows:-

The command is :" composer create-project laravel/laravel clinicapi"
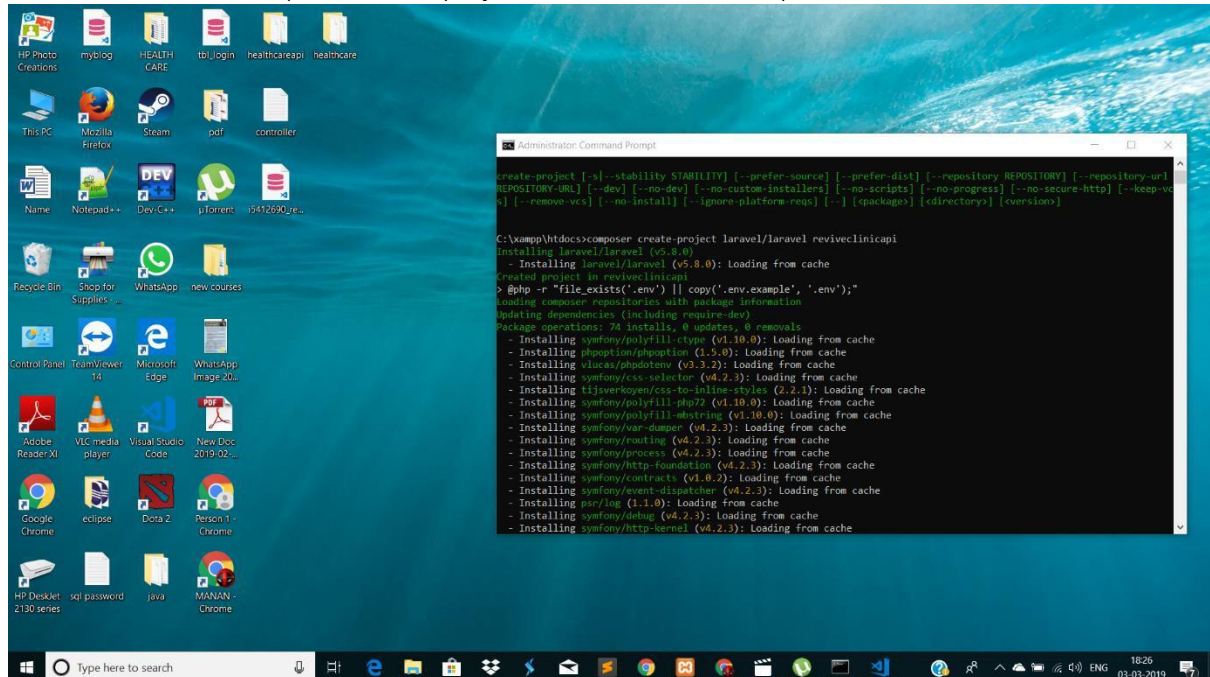
Step 2: Mean while import the data base in php my admin
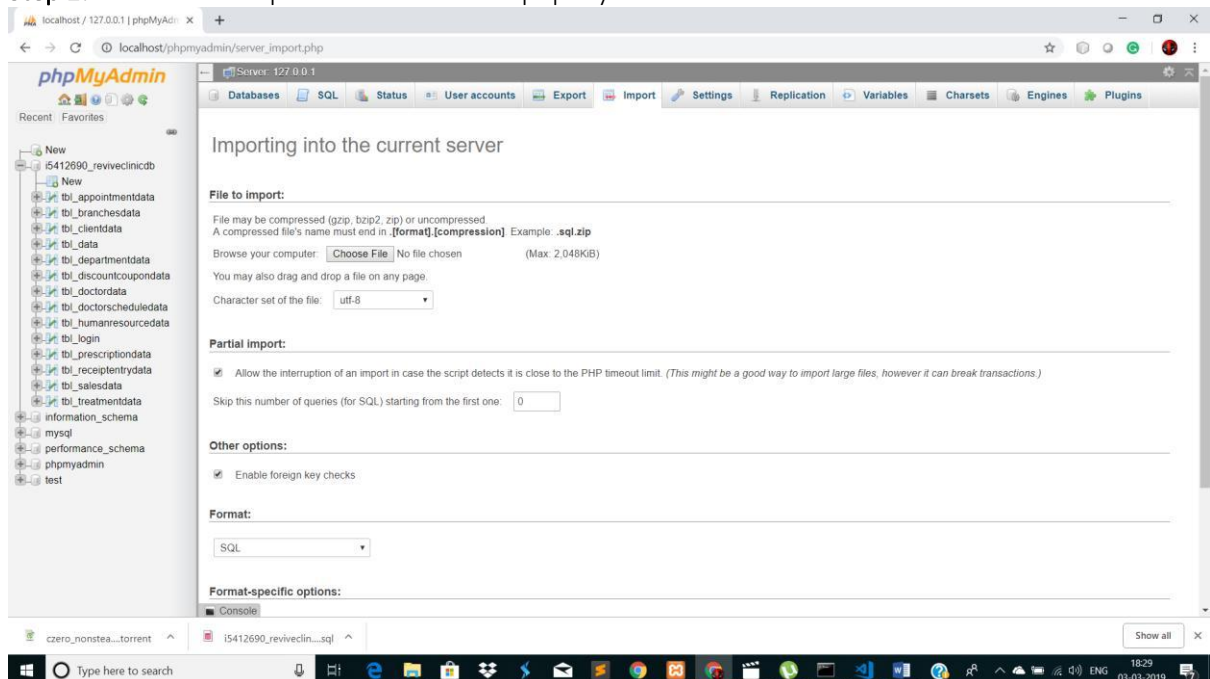
Step 3:go to the project file and make the controller using the following command "cd reviveclinicapi"

"php artisan make:controller ClinicController –resource"

Here the resource means all the resource related to controller are invoke such as index,invoke,update,put,get.

Step4: Make the model using the -m which means the migration file is also created along with it using the following command
"php artisan make:model revive -m"
Model created successfully.
Created Migration: 2019_03_03_130254_create_revives_table
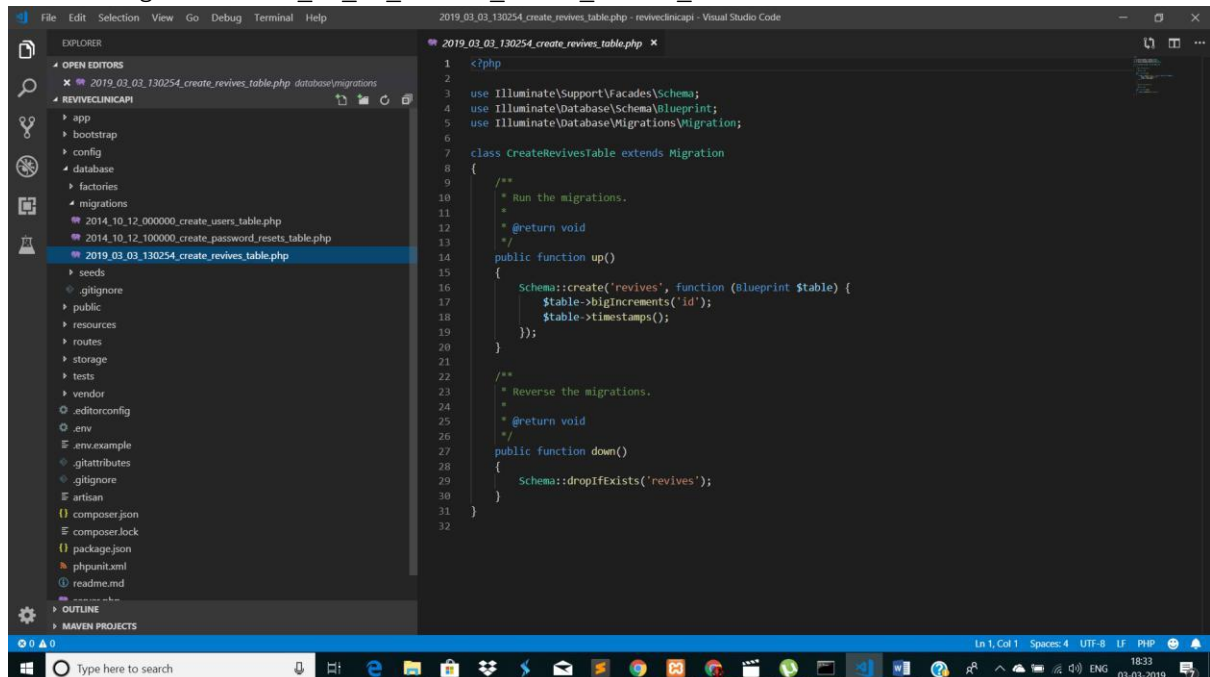
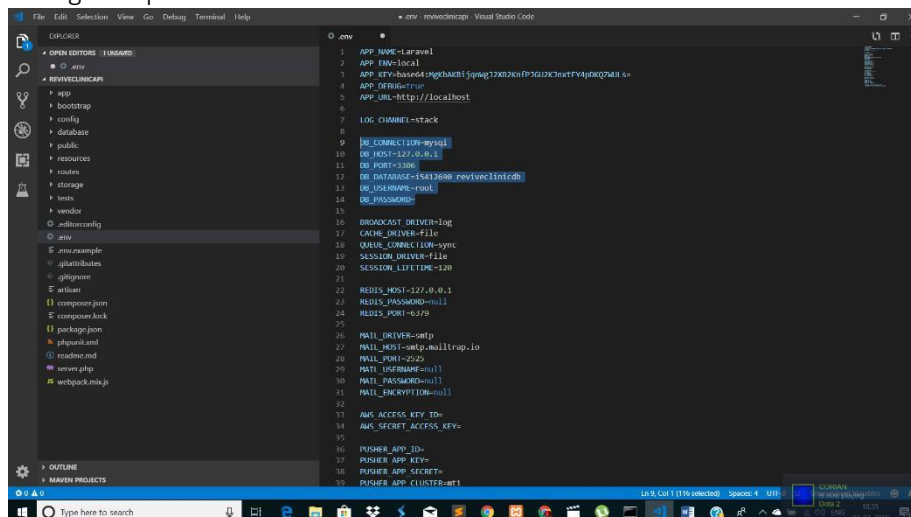**Step5:**connect to the databse by accessing the .env file and do the necessary changes
Change the database name
Change the user name
Change ths password

Step6: Goto the app folder then provide folder than appserviceprovide file
And at the header section type use illuminat\support\Facades\Schema;
Then in the boot function type
{
Schema::defaultStringLength(191);

}
Step7: Then to make the address unique we just need to config the public file in httdocs folder of the laravel project so in the url we just need to type "localhost/projectname "

4.Machine Learning:

Machine learning tool we have used is jupyter lab(via anaconda).
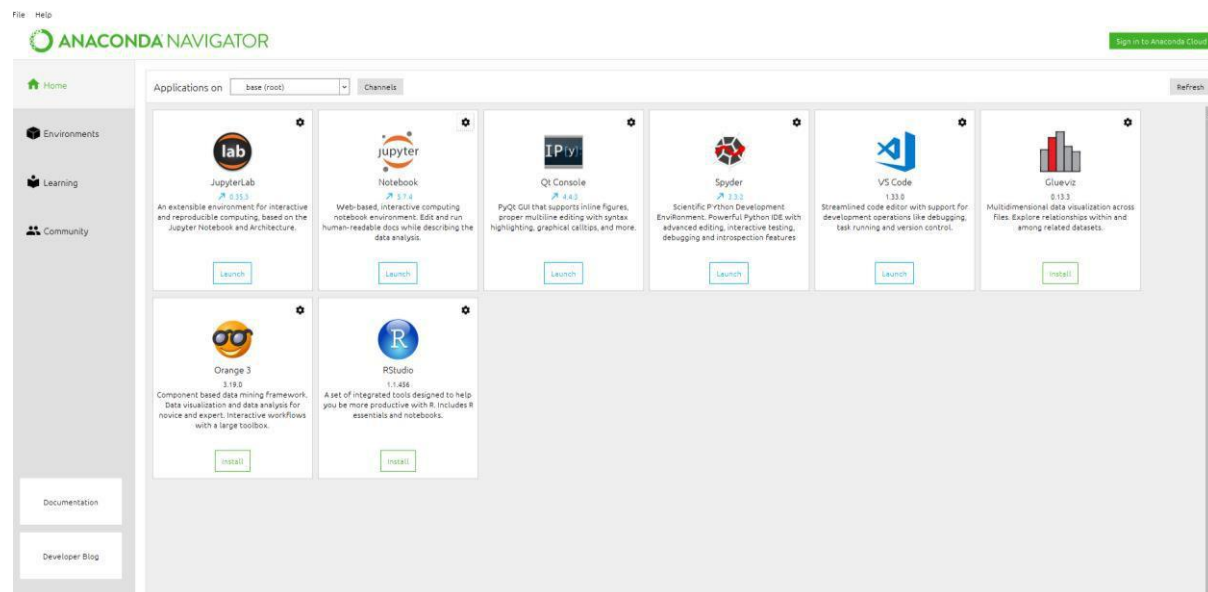
We have two datasets one for training and the other one for testing.

In our dataset we have features that are symptoms and the target variable is disease.
The ML in our project is to predict the disease of the patient.
The following algorithms used to predict disease

    4.1: Decision tree classifier
    4.2: Naïve Bayes
    4.3: Random Forest.

The main purpose to use three models is so that we can predict a disease in three ways(for a better prediction)

GUI is made through using tkinter which is a library imported in python.
The user will have to fill in 5 symptoms from the list provided and use the model through which it wants to predict the disease.

4.1:Decision Tree Classifier:

1. Place the best attribute of the dataset at the **root** of the tree.
2. Split the training set into **subsets**. Subsets should be made in such a way that each subset contains data with the same value for an attribute.
3. Repeat step 1 and step 2 on each subset until you find **leaf nodes** in all the branches of the tree.
4. In decision trees, for predicting a class label for a record we start from the **root** of the tree. We compare the values of the root attribute with record's attribute. On the basis of comparison, we follow the branch corresponding to that value and jump to the next node.
5. We continue comparing our record's attribute values with other **internal nodes** of the tree until we reach **a leaf node** with predicted class value.

REASON OF USING:

Decision trees are one of the most popular algorithms used in machine learning, mostly for classification. Our brain works like a decision tree every time we ask ourselves a question before making a decision. For example: *are you having cold? Then you may have fever also !*

4.2: Naïve Bayes :

It works on conditional **probability**. Conditional probability is the probability that something will happen, *given that something else has already occurred*. Using the conditional probability, we can calculate the probability of an event using its prior knowledge.

Below is the formula for calculating the conditional probability.

$$P(H \mid E) = \frac{P(E \mid H) * P(H)}{P(E)}$$

where

- P(H) is the probability of hypothesis H being true. This is known as the prior probability.
- P(E) is the probability of the evidence(regardless of the hypothesis).
- P(E|H) is the probability of the evidence given that hypothesis is true.
- P(H|E) is the probability of the hypothesis given that the evidence is there.

## 4.3:Random Forest Classifier:

Random Forest pseudocode:

1. Randomly select **"k"** features from total **"m"** features.
    1. Where **k << m**
2. Among the **"k"** features, calculate the node **"d"** using the best split point.
3. Split the node into **daughter nodes** using the **best split**.
4. Repeat **1 to 3** steps until "l" number of nodes has been reached.
5. Build forest by repeating steps **1 to 4** for "n" number times to create **"n" number of trees**.

Reason Of Using:

- Random forest classifier will **handle the missing** values.
- When we have more trees in the forest, random forest classifier won't **overfit** the model.
- Can model the random forest classifier for **categorical values** also.

5.Result:

1.Login page
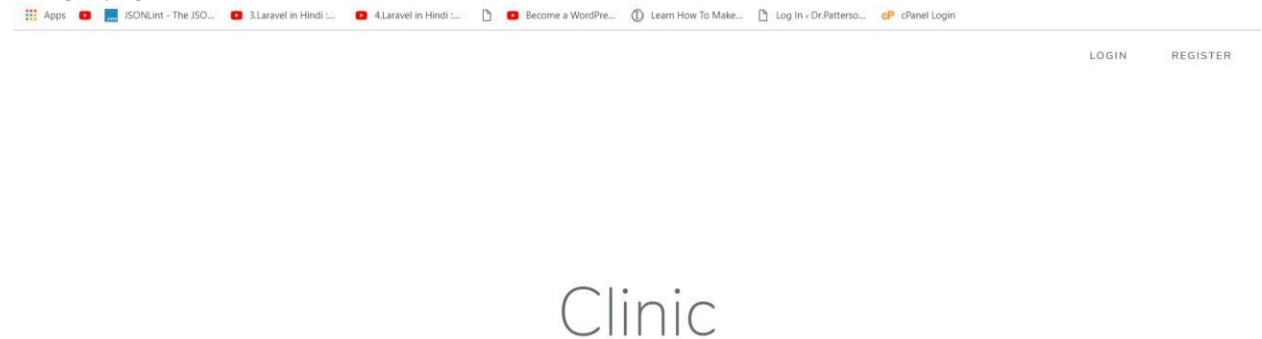
2.Registration

3.Successful login
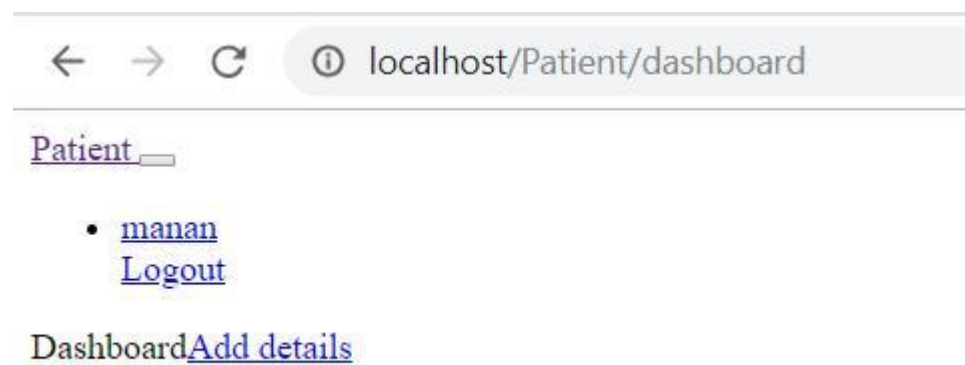
4.Database :

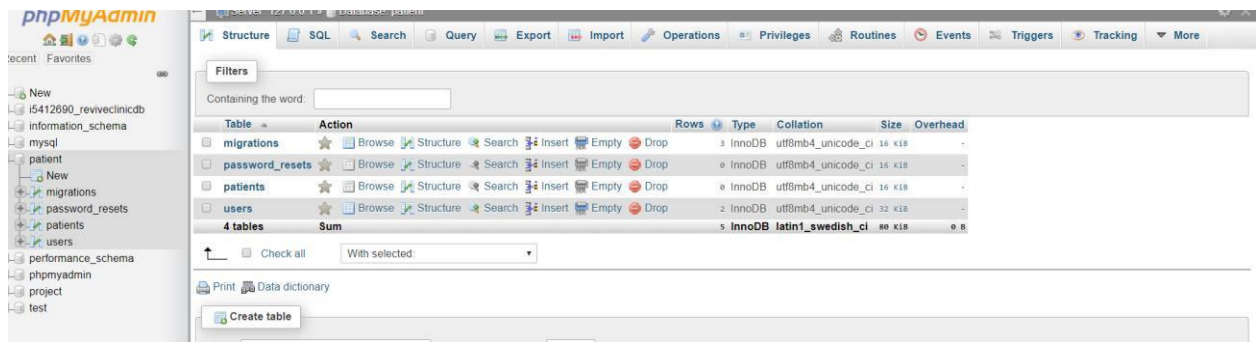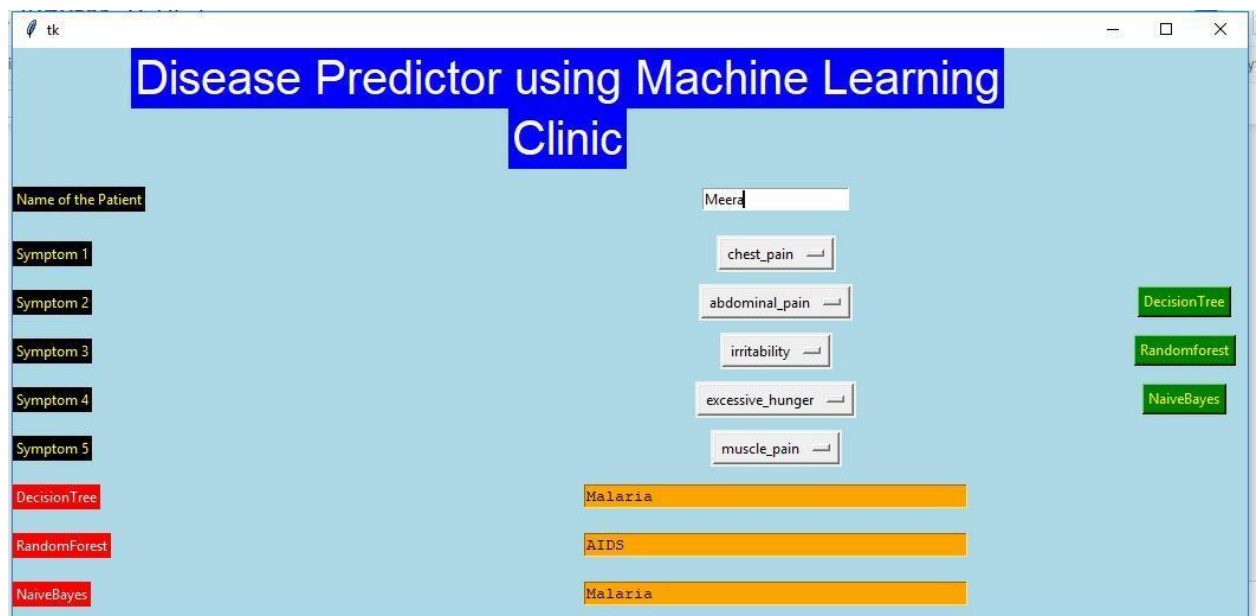5.Machine learning:

6.Conclusions and Future Scope

This will be the nal chapter of the report. A brief report of the work carried out shall form the rst part of the Chapter. Conclusions derived from the logical analysis presented in the Results and Discussions Chapter shall be presented and clearly enumerated, each point stated separately. Scope for future work should be stated lucidly in the last part of the chapter.

Paper 3: Analysis of health care data using different data mining techniques
(DOI: 10.1109/IAMA.2009.5228051)
● In this study, we briefly examine the potential use of classification based data mining techniques such as decision tree and association rule to massive volume of health care data.

● But in our project we analyse and volume data according to various age groups and gender. And give them alerts before hand. Also study and determine pattern in health during seasonal changes

Paper 4: Machine learning approach for predicting womens health risk
(DOI: 10.1109/ICECTECH.2011.5941891)
● In this paper, we discuss about a machine learning approach which will classify women into different health risk segments and sub groups based on the information collected from them.

● In our project we will take the input of food habits, weight and history of the patient to predict the health risk

Paper 2: Statistical Analysis of Big Data to Improvise Health Care
(DOI: 10.1109/ICSNS.2018.8573653)

● This paper proposes to use statistical tests to quantitatively analyses the datasets of patients to reveal some new unknown patterns. May not to an increased life span it may provide the precaution as the repeated analysis of various data samples may mark the beginning of identification of new panorama for some life threatening malignant diseases

● Through this paper we analyse the data and predict the disease accordingly.

● We will utilize the available statistical methods to improve the quality of treatment and the life of entire ailing population.