HEALTH MONITORING SYSTEM USING RULE BASED EXPERT SYSTEM

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Abstract: The trend of applying AI techniques in healthcare is increased because the health sector is rich with information and the expert system has become a necessity. With the help of these techniques, we can generate rules by the knowledge that we have. For analyzing the health data, we have some techniques like forward chaining, backward chaining etc. In this project, rule-based expert system is build to analyze the health data set. It takes the health information of patients which includes hemoglobin, Blood pressure, sugar levels, weight, etc. By analyzing the data with trained data set, the proposed method will suggest what kind of food to be taken as diet. To perform the analysis on the data set, Rule-based expert system is used to generate a rule to predict features of a person and diet to be followed. Every individual can able to analyze his periodically improvement by following specified diet. This project helps in estimating our health without consulting the doctor.

Index terms – **Rule based Expert System, Health care, Forward and Backward Chaining, Trained dataset.**

I.INTRODUCTION

The Expert System is a system that emulate decision-making ability of a human expert in a restricted domain. The Expert System is one of the leading Artificial Intelligence techniques that have been adopted to handle such task. The required AI techniques for such domains have to be capable of emulating the human brain's diagnostic processes. The Expert System is well-known reasoning techniques that is utilized in diagnosis applications domain. In Expert System, human knowledge about a particular expertise to accomplish a particular task is represented as facts and rules in its knowledge base. It seeks and uses the information provided by a user. Reasoning process is then performed over the represented knowledge using heuristic approaches for a solution.

With the ES, the user can interact with a computer to solve a certain problem. This can occur because the ES can store heuristic knowledge. Then the system can make inferences and arrive at a specific conclusion to give advice and explain, if necessary, the logic behind the advice. Expert System provides powerful and flexible means for obtaining solutions to all problems that often cannot be dealt with by other, more traditional and orthodox methods. The terms expert system and knowledge-based system are often used synonymous.

II. LITERATURE SURVEY

Human nutrition deals with the provision of essential nutrients in food that are necessary to support human's life and health. Nutrients include carbohydrates, fats, fiber, minerals, proteins, vitamins, and water. Many of us are unaware of these nutrients in food , this system enables us to take nutrition food based on our flaws in our health data. Without consulting doctor directly we can pre-estimate our health condition using this system. Each individual can view his improvement by following our diet which is suggested based on current health data. In this busy schedule we might forget to take care of our health we need a system or a solution that will help is to know the best quality of care. Adopting better dietary habits and choosing and choosing varied combination of our health is the primary step. Consuming the right amount of proper food may be the single most important step you can do to lower your risk. Without consulting the doctor we can pre-estimate our health condition using this system. Each individual can view his/her improvement by following our diet which is suggested based on our health data.

III.THE PROPOSED USED METHODOLOGIES

The contribution of the proposed system is to design an data mining based medical intelligent decision support system for the suggestion proper diet.

Major contributions of the proposed system are as follows:

- This alert system will suggest nutrition food to improve health by analyzing our medical report.
- Each Individual can view his variation in his health by following suggested diet.
- Pre-estimation of symptoms can be done with the help of this alert system.

Advantages of Proposed System:

- Early detection of symptoms is possible at earlier stage.
- Suggestion of proper diet can be achieved without consulting doctor directly.
- In the existing system, consulting doctor is time consuming but in proposed system we can overcome it.
- Analysis of his health can be achieved through this system.

Content Diagram

Content diagram help us apply systems thinking to our content strategies by standardizing notation and making things visual and concrete. This modeling technique can be used casually as in sketching ideas out on a whiteboard or as a formal mode of documentation.

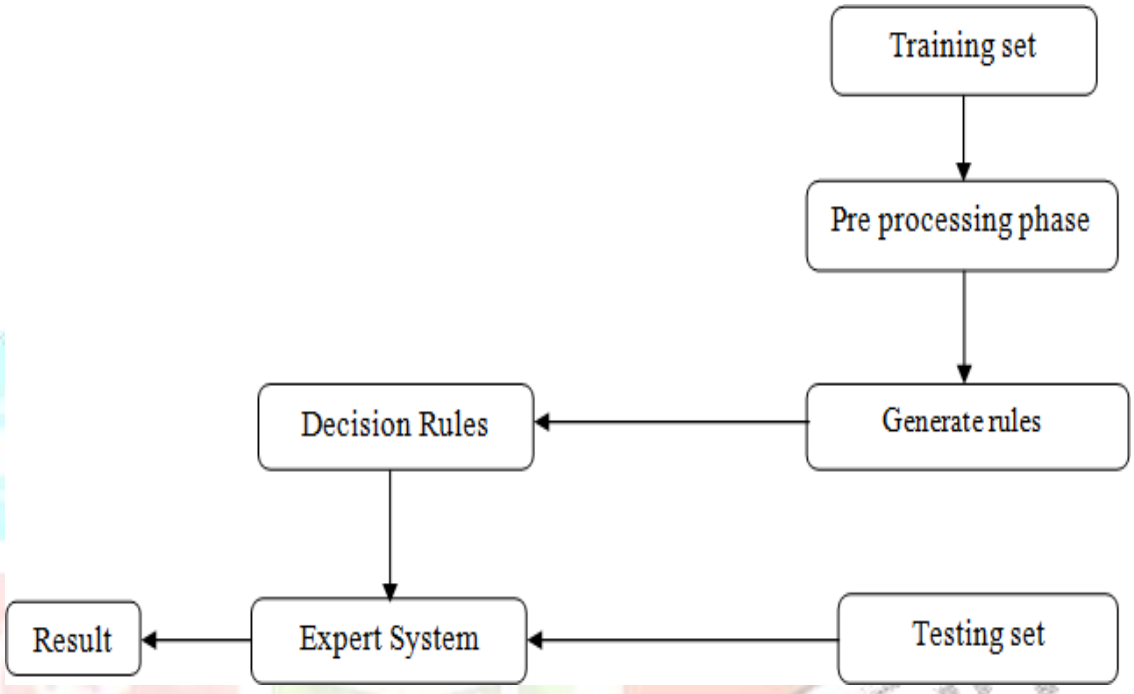


Figure 3.1: Block Diagram

Rule- Based Expert Systems:

Rule-based systems are the simplest form of AI. A rule based system uses rules as knowledge representation for knowledge coded into the system. Instead of showing knowledge in declarative, the static way as a set of things which are true, rule-based system represents knowledge in terms of a set of rules that tells what to do or what to conclude in different situations.

Methodologies:

In this proposed system, we have following methodologies.

Rules are expressed as a set of if-then statements

IF P THEN Q

This is also equivalent to:

$P \Rightarrow Q$.

Algorithm:

Step1- Start.

Step2- Enter the health attribute values which include hemoglobin level, BP, weight, height, age, gender.

Step3- The given attribute values are passed to the decisions and are stored in database.

Step4- The rules which we generated using forward chaining are verified with given test dataset with trained dataset.

Step5- Based on the rules the diet will be suggested to the user.

Step6- The user can view his own health variation levels through graph and also he can view the graph of registered users.

Step7- User can view symptoms and causes of health attribute like deficiency in hemoglobin levels, under and heavy weight, low BP ,high BP.

Step8- User can also contact admin by sending his/her feedback.

Step9- Stop.

Flow Chart :

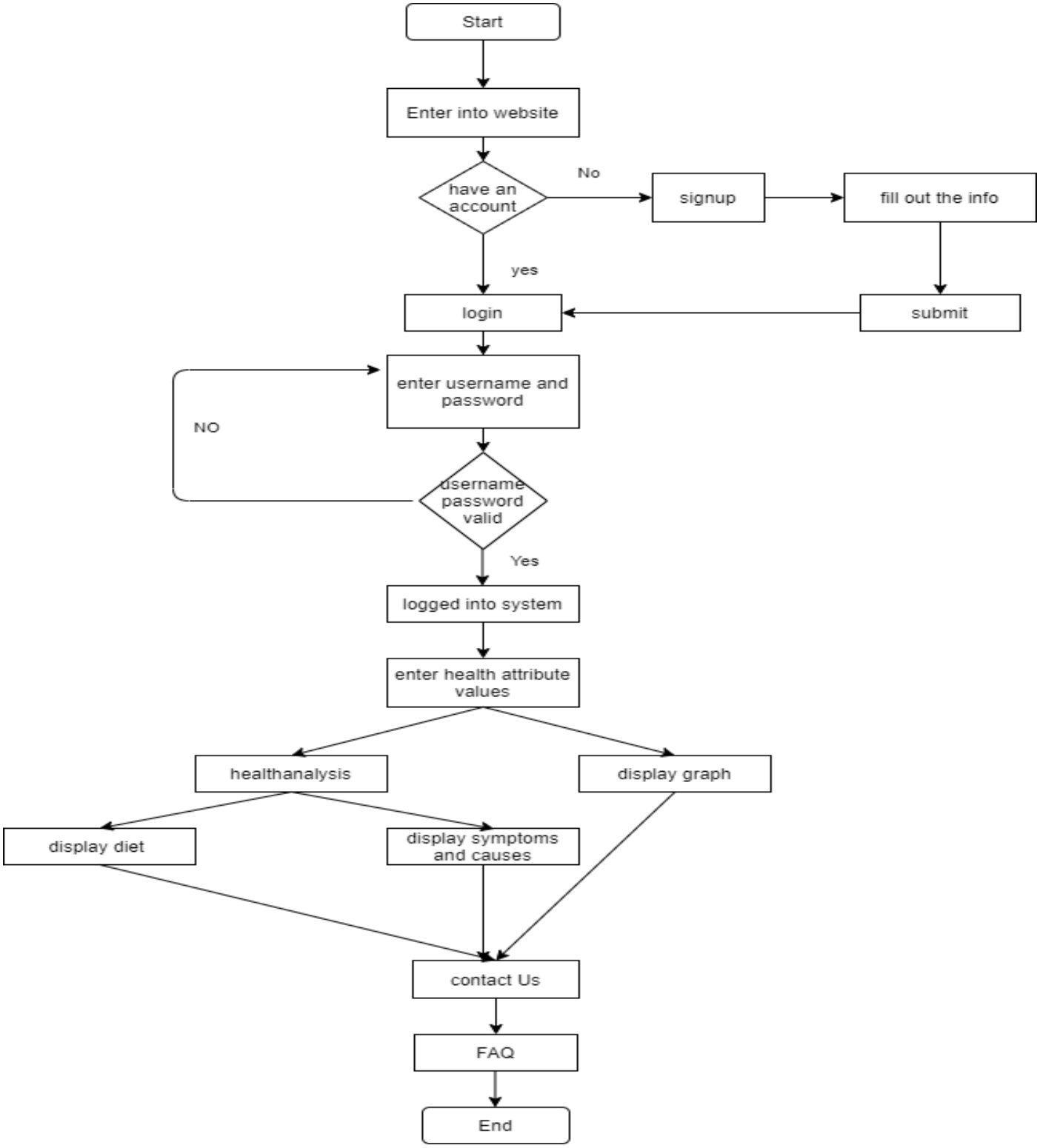
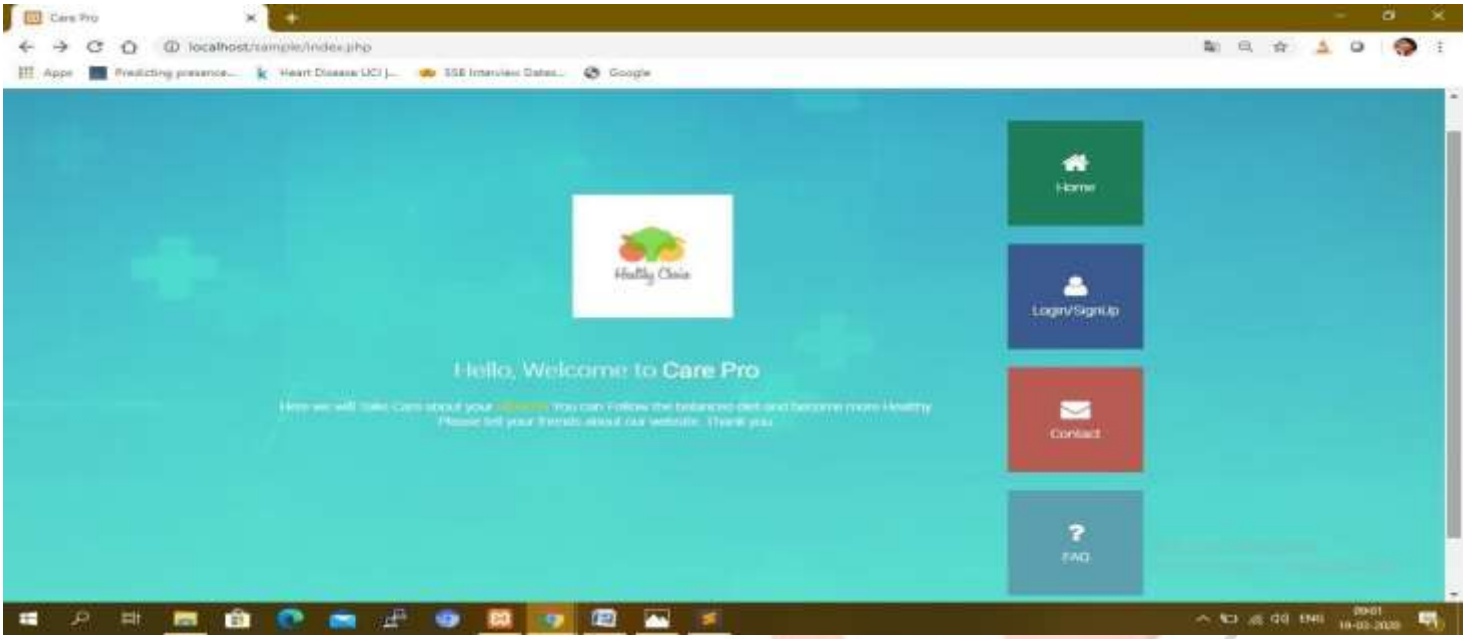

Start
Enter into website
have an account
No
signup
fill out the info
yes
login
submit
enter username and password
NO
username password valid
Yes
logged into system
enter health attribute values
healthanalysis
display graph
display diet
display symptoms and causes
contact Us
FAQ
End

Figure 3.2: Flowchart

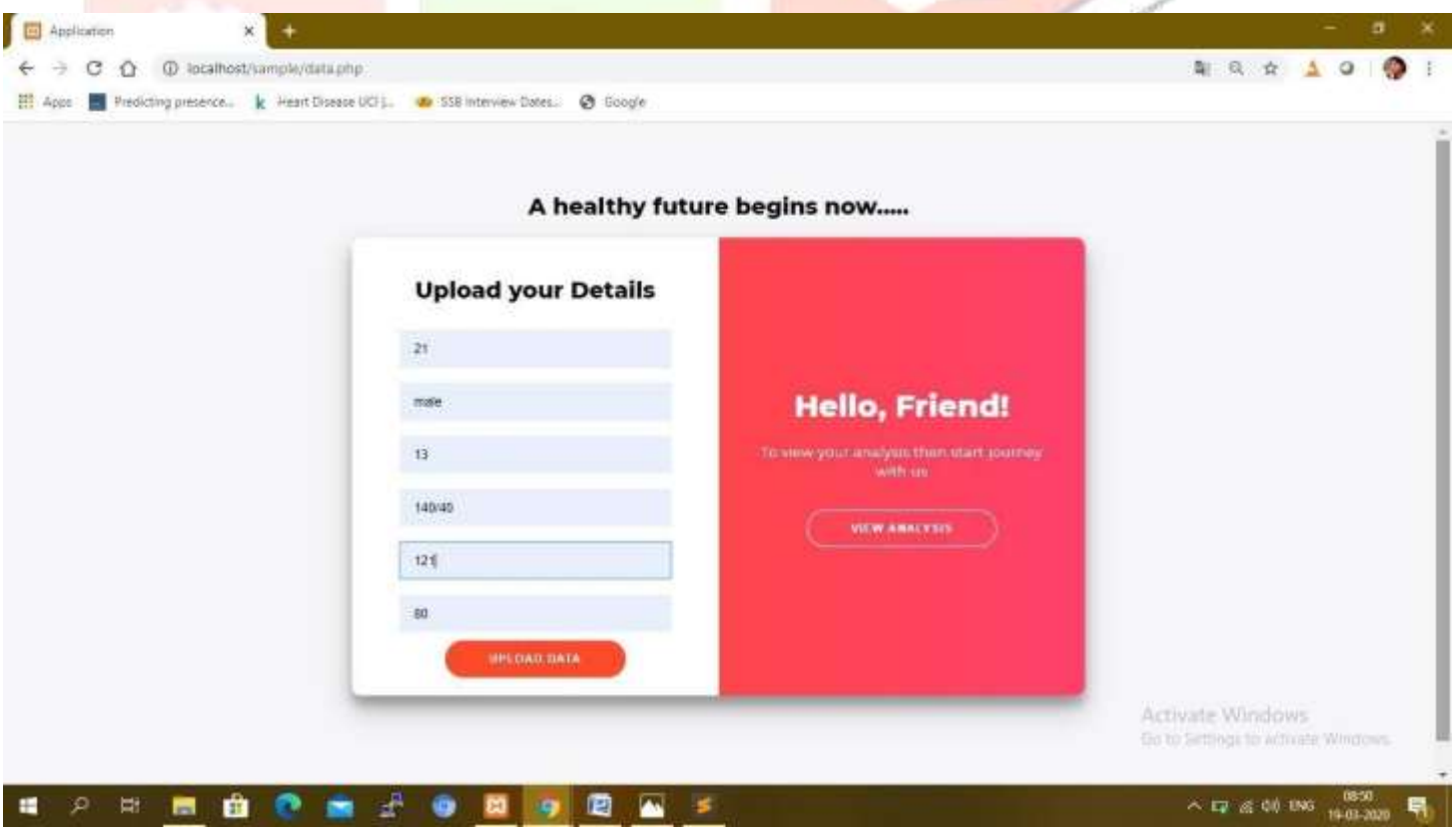
IV.EXPERIMENTAL REPORTS

We used HTML for our experiment below screens are main page which consists of login page,contact page and FAQ page etc.

Input Screens:

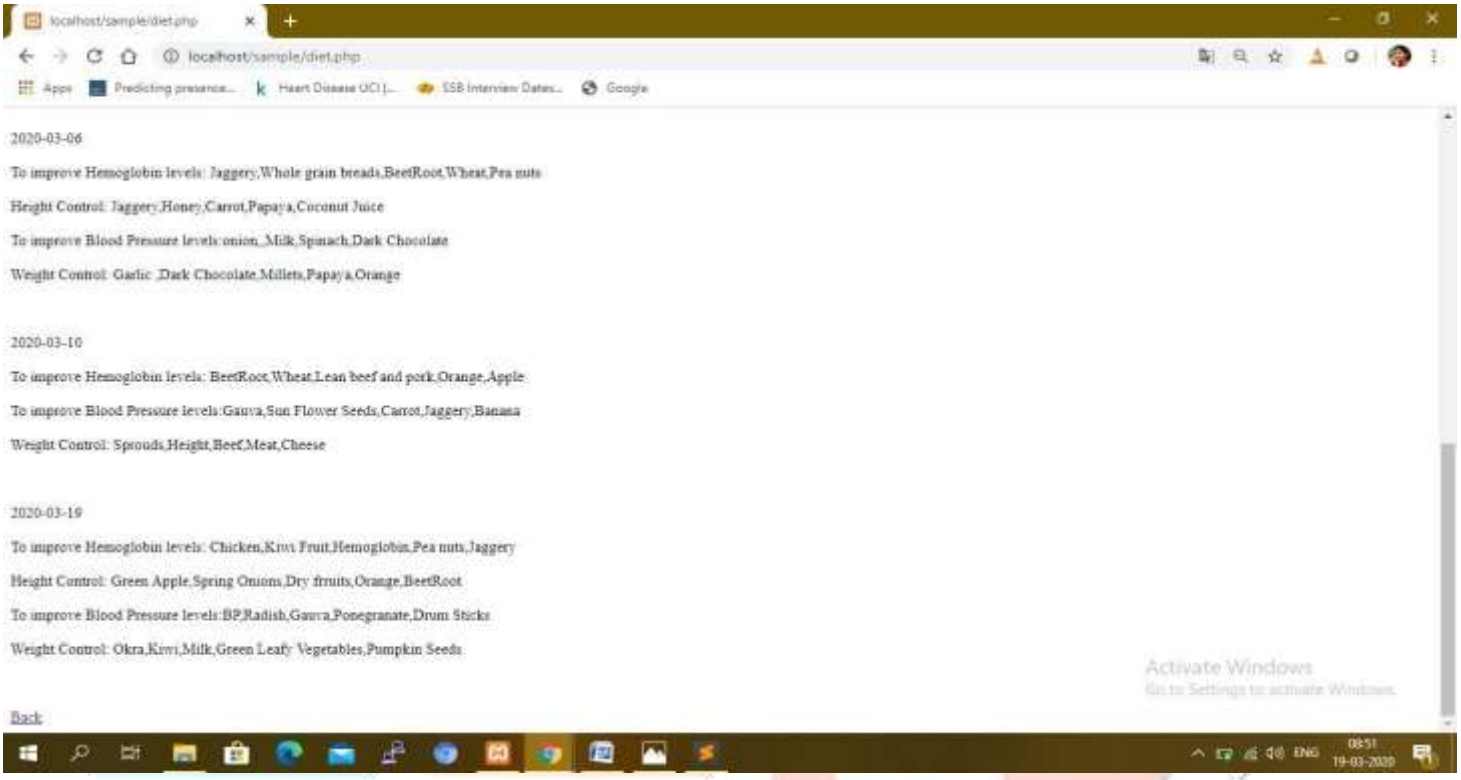


Screen 4.1-Home page

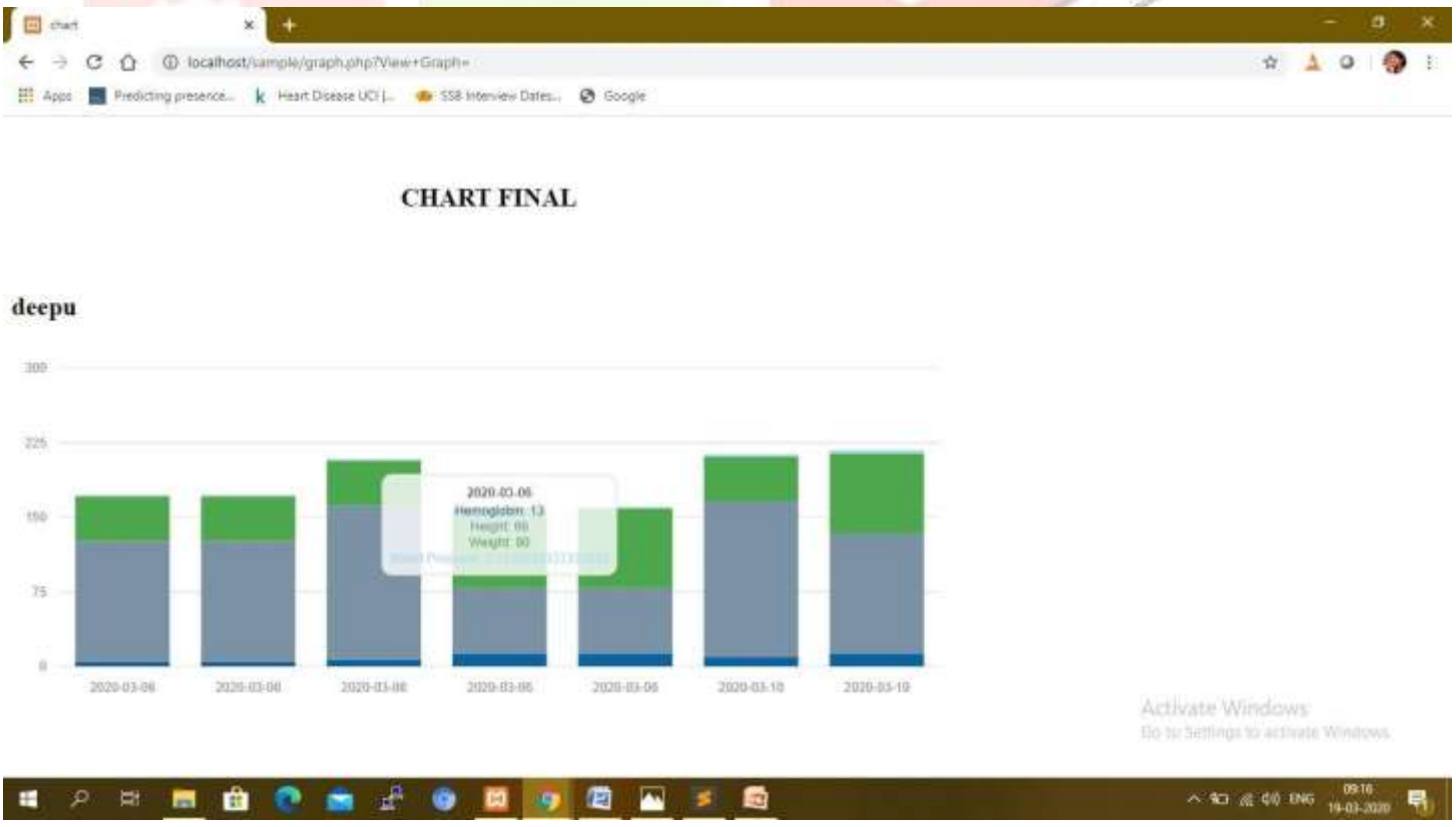


Screen 4.2-Uploading data

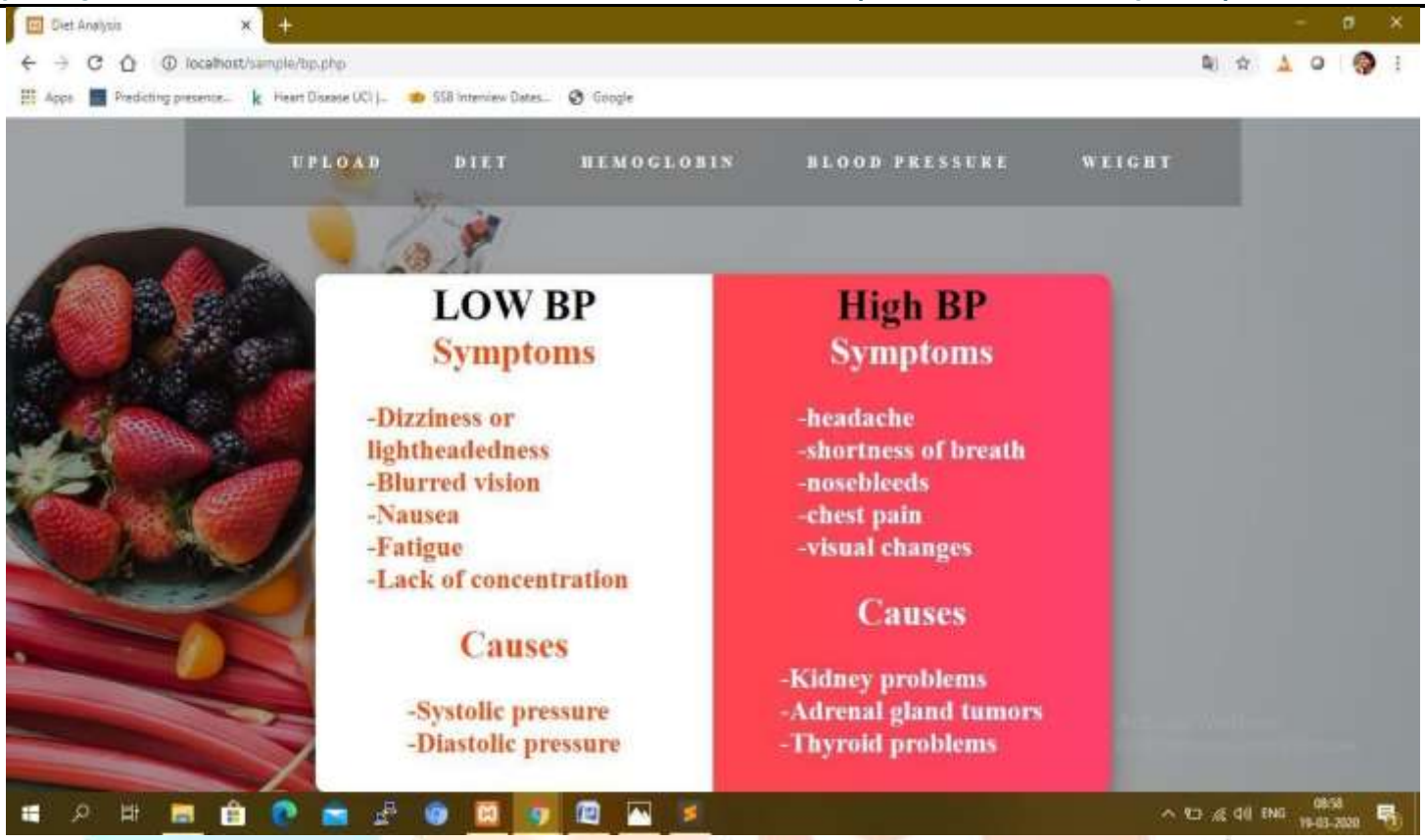
Output Screens:



Screen 4.3- Suggesting Diet



Screen 4.4-Graph of Individual Person



Screen 4.5- Symptoms and Causes of each attribute

V.CONCLUSION

Good food helps to improve body growth, boosts the immune system by preventing diseases and infections, promotes good mental function, enhances body beauty and promotes healthy long life. A personalized healthy diet recommended system that considers an individual's daily energy requirement in order to maintain a healthy weight and reduce the risk of diseases has been developed by considering the food preferences of the user. Standard metrics were used to evaluate the performance of the system, with the results showing that the system is efficient in diet recommendation. This system will suggest nutrition food to improve health by analyzing our medical report. Each Individual can view his variation in his health by following suggested diet. Pre-estimation of symptoms can be done with the help of this alert system. This application also provides the symptoms and causes of low deficiency in our health attributes. It is free of cost and any individual use this application

V.REFERENCES

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