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# Online Platform for Doctors, Medicine Delivery and Disease Prediction using Machine Learning

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**ABSTRACT**—Almost every Indians spend a lot amount of income on medicine so a fast and reliable online medicine delivery system is needed. Most people buy medicine from the local stores. they go to the nearby stores to buy their medicines but sometimes all the medicines are not available at same place therefore people travel to other areas to buy their medicines so keeping all that in mind an online web-based e-commerce medicine delivery system is needed very much.

Recently in the pandemic of COVID-19, drug scarcity become an important issue. A fast, reliable, safe and user-friendly online e-commerce web application has been developed in this paper.

Here, users can buy a medicine according to their needs, Users after selecting the desired medicines, add them to cart and make payment. They can also select COD for the payment Besides medicine, here user can also predict their disease in the basis of the symptoms they have and also consult to the doctors through video calling.

## I. INTRODUCTION

In today's fast-growing world, people face various diseases due to the environmental condition and their living habits. so sometimes it is not possible for them to go to pharmacy store to buy medicines, sometimes all medicines are not available at same place therefore people travel other areas to buy the medicines so keeping all that in mind an online web based e-commerce medicine courier system is needed immensely.

Predicting disease in earlier stages becomes an important task and its correct prediction is the most challenging task. We developed disease predictions which predict on the basis of the symptoms they have. For disease prediction We will be using data to train the Naive Bayes Classifier, Support Vector Classifier, and Random Forest Classifier. We will use a confusion matrix to determine the quality of the templates.

The main objective of the "PHARMEDICS" project is to supply medicines on your doorstep and also provide medical consultation with expert physicians. The application also provides disease prediction on the basis of symptoms after that it suggests medicines. It can also provide health related tips, find nearby hospitals and clinics after that user can book appointments. Pharmedics is robust, integrated with trending technologies. Pharmedics is user friendly

## II. LITERATURE SURVEY

◆DhirajDahiwade, GajananPatle, EktaaMeshram, showed an implementation using a CNN, KNN in his research paper [2].

◆R. Devika, S. V. Avilala and V. Subramaniaswamy in their research paper examines the performance of K-Nearest Neighbour (KNN), Naive Bayes, and Random Forest classifier using its preciseness, accuracy and execution time for CKD prediction. The research outcome is that the performance of Random Forest classifier works better than Naive



Bayes and KNN [3].

◆Jackins, V., Vimal, SKaliappan in their research paper used AI based Naive Bayes classification and random forest classification algorithm to classify disease datasets like heart disease, diabetes and cancer to check if the patient is affected by that disease or not. then the performance of both algorithms on data is calculated and compared and the results show the effectiveness of the classification techniques on a dataset, and also the nature and complexity of the dataset used ◆Bashir, S., Qamar, U., Khan in their research paper use the voting mechanism to predict the correct disease [5].

◆Some papers were published aimed at either enhancing the original research paper or giving alternate approaches [6][7] for the objective.

Some pitfalls of existing system:

1. Time consuming.
2. High losses.
3. No real-time creation.
4. Does not give the cause or medicine related to disease.

### III. PROBLEM IDENTIFICATION

- The project aims at creating a system that takes the symptoms as input and predict the disease they could have.
- The project aims at providing online medicine delivery system.
- The project aims at providing online consultancy system so that user can discuss their problem with their doctors.
- The project aims at providing health advisories to the users

### IV. METHODOLOGY

#### 1. Medicine Delivery

A medicine delivery system is an online based web application where users can order their medicines as per their need and pay for the same using credit/debit card. People can consult with their doctors online.

customers can see the web application and they can register or login in order to buy the medicines. After that, customers can view the medicines, make purchases by adding them to cart. Customers can also use the COD feature.

#### 2. Disease Prediction

- Methodology of implementing machine learning model that can correctly predict the disease of a human on the basis of the symptoms that she/he possesses. approach for this machine learning problem are as follows: **Gathering Data:** First we will gather the data for prediction, so here we have taken the data from Kaggle.

- **Building Model:** After gathering the data, we are ready to train our machine learning model. We will be using support vector classifier, random forest classifier and naive bayes classifier.

- **Inference:** After training, we will predict the disease for the given symptoms by combining the results of all the models.

#### 3. Medical Consultancy

For the consultancy feature we have used peer js for the video call and socket.io for full duplex connection.



**4. Medial Blogs**

For the blogs related to health tips and health information we have made a separate table in the database for storing the blogs of the users then we fetch the blogs from the database on certain constraints then show it to the users.

**5.Nearby Doctors and Hospitals**

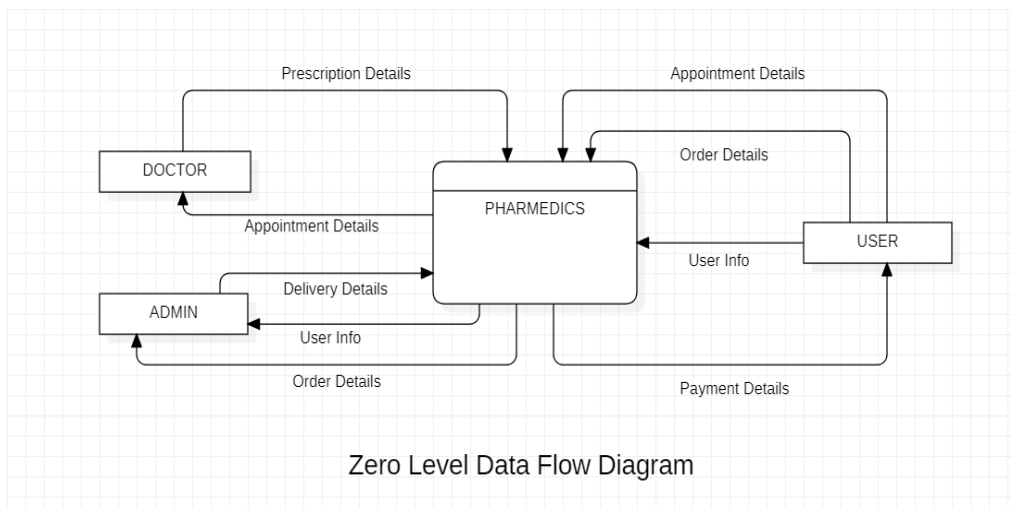
For finding nearby doctors and hospitals we have used features provided by the google maps

**5. Medical Appointments**

For making or booking an appointment with the doctors we will first check the dates available for appointment from the database then then send the message to the doctor upon confirmation with the doctors we will again send email of confirmation of appointment booking to the user.

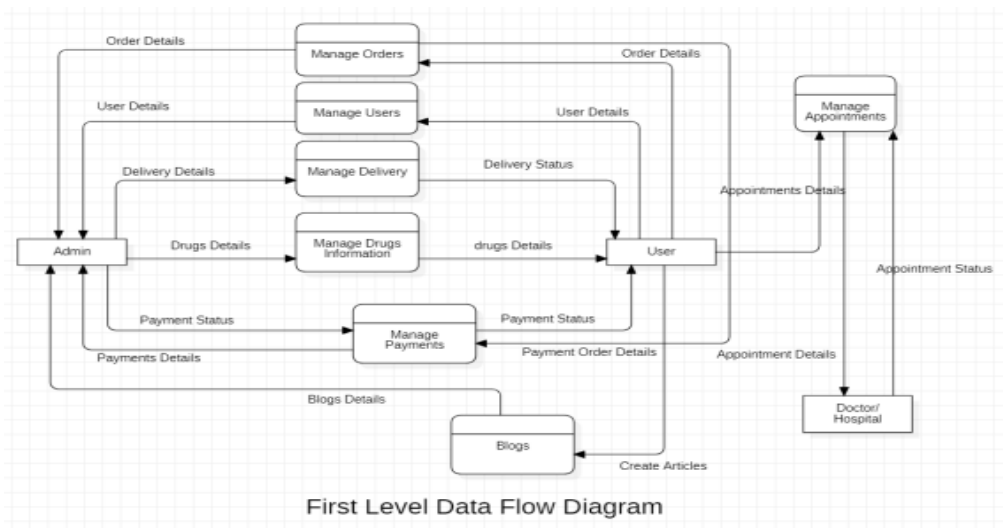
**V. PROJECT DESIGN**

1. Zero level data flow diagram:



Zero Level Data Flow Diagram

2.The basic first level data flow diagram of the project is shown:

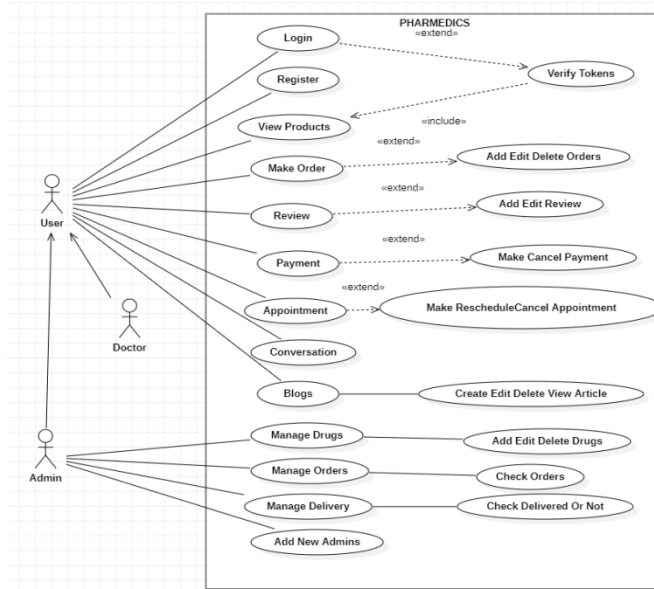


First Level Data Flow Diagram



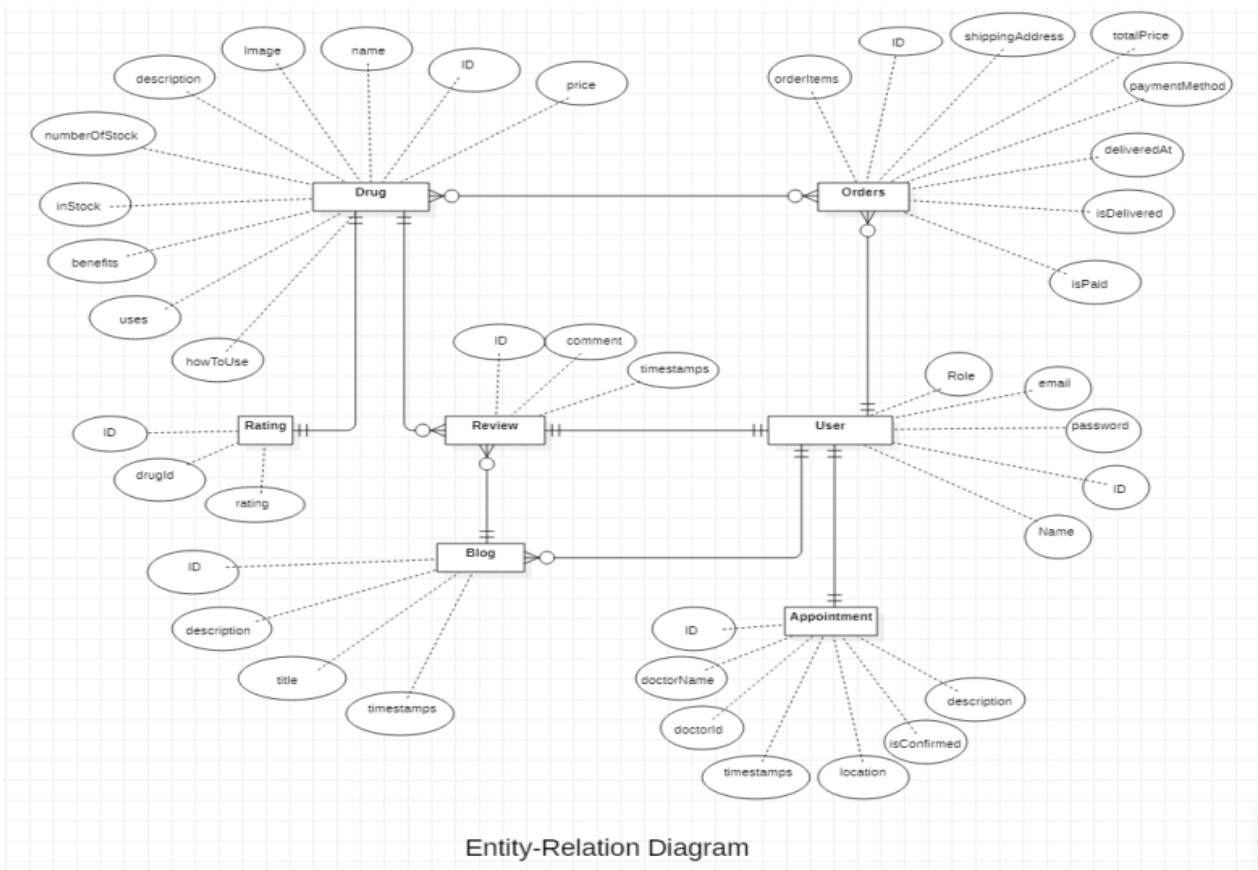


3. Basic use case diagram of the project is shown:



Use Case Diagram

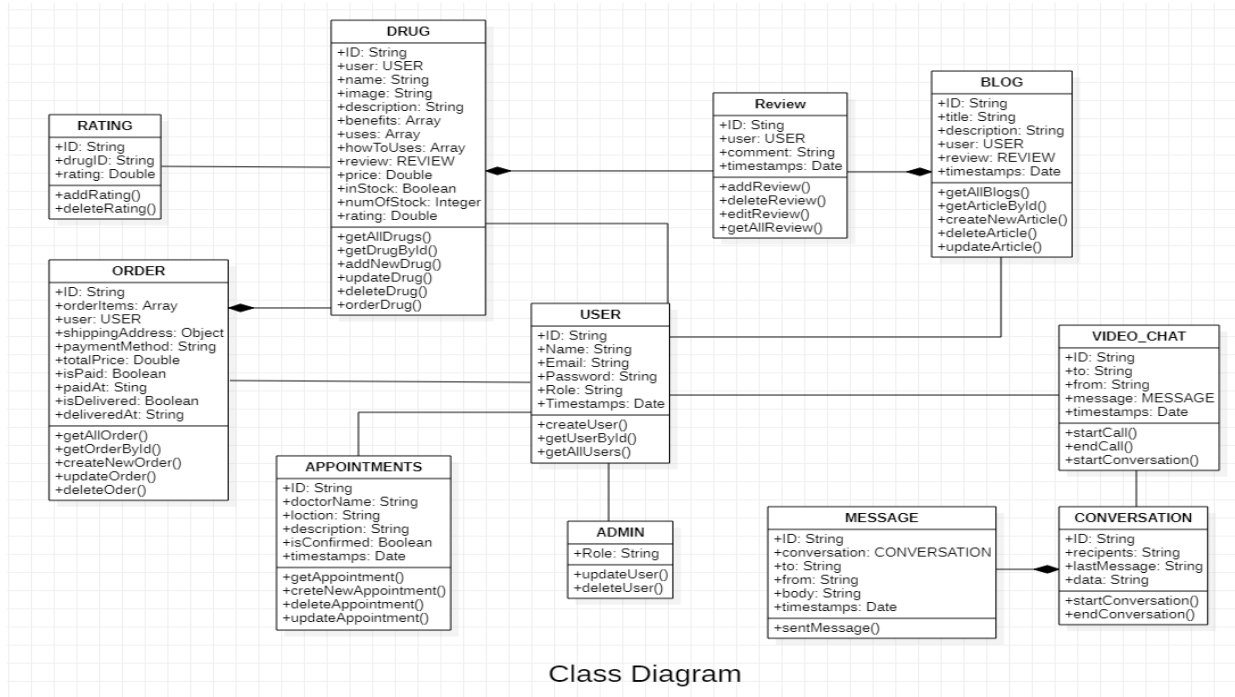
4. The basic ER diagram of the project is shown



Entity-Relation Diagram

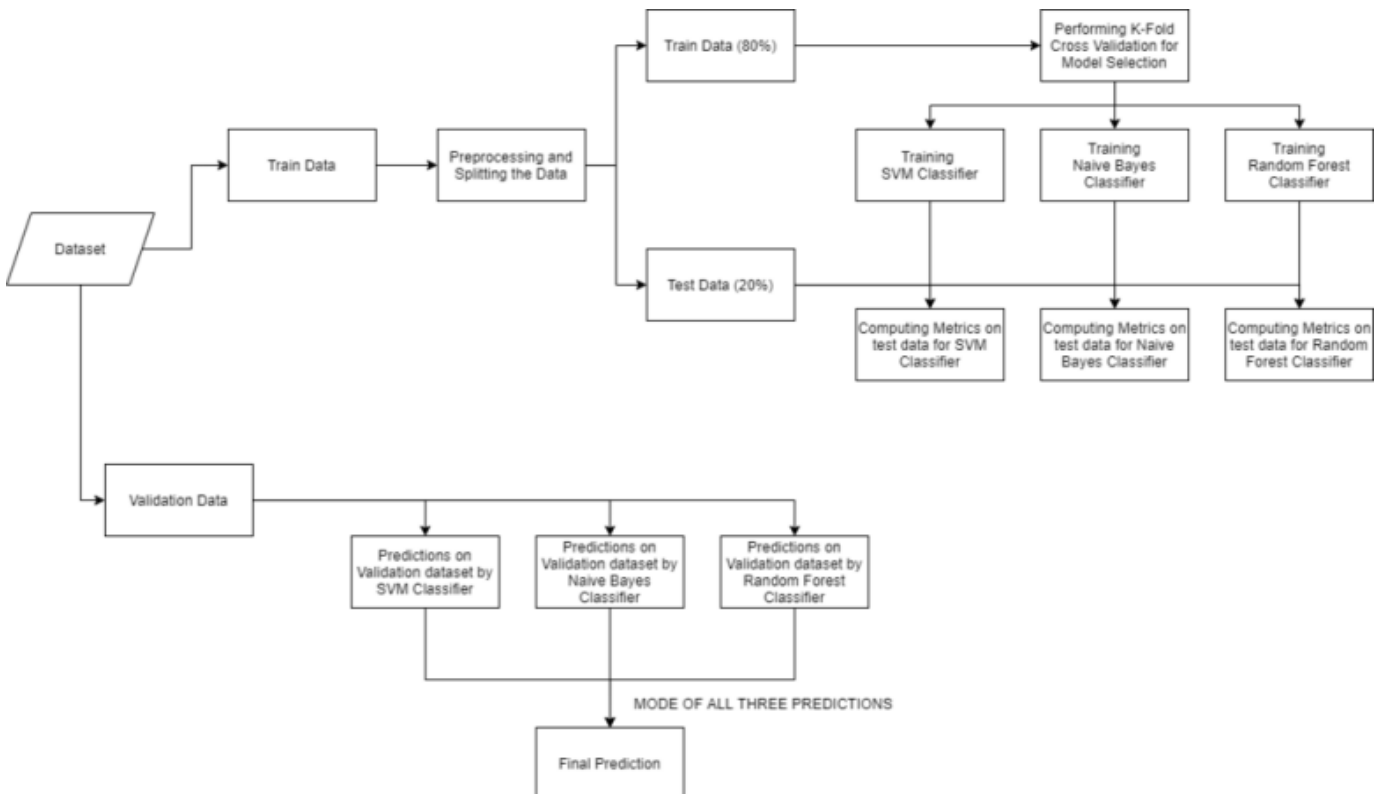


5. Basic class diagram of project:



Class Diagram

6. workflow for implementation of disease prediction module of project:





VI. IMPLEMENTATION

A. Input:

1. First we will load the dataset (from Kaggle) using the pandas library. This dataset will be clean with no null values and all the values will consist of 0's and 1's. While performing classification it becomes necessary to check if the targeted column is balanced or not. We will use bar plot, to check if the dataset is balanced or not.
2. Symptoms user facing after model training is done.
3. Name of the medicine to be purchased.

B. Configuration:

In this step we download the required libraries and packages. We import them into the project and set runtime configurations (if required for any).

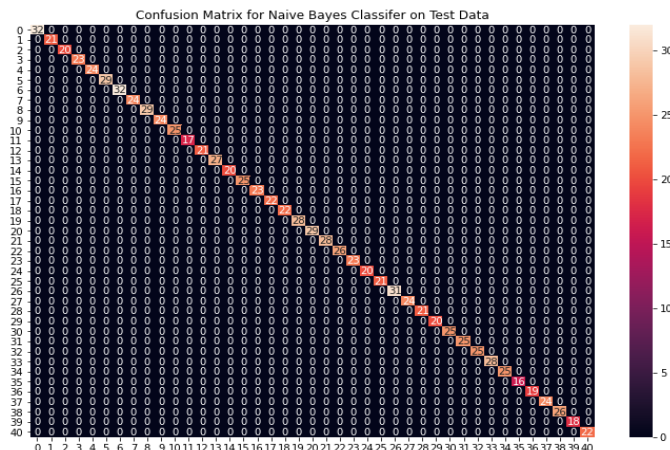
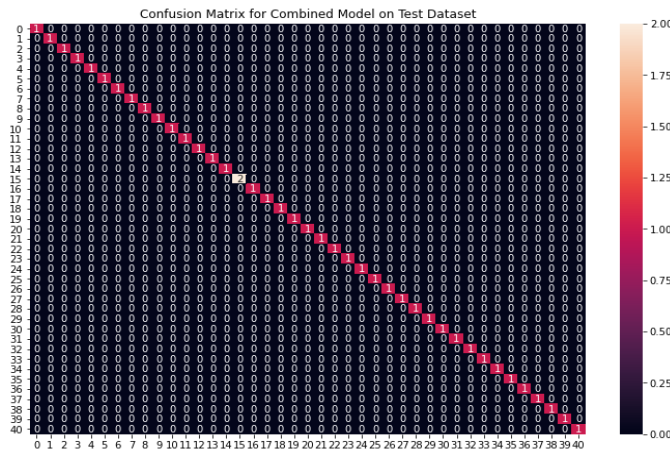
C. Filter and Display:

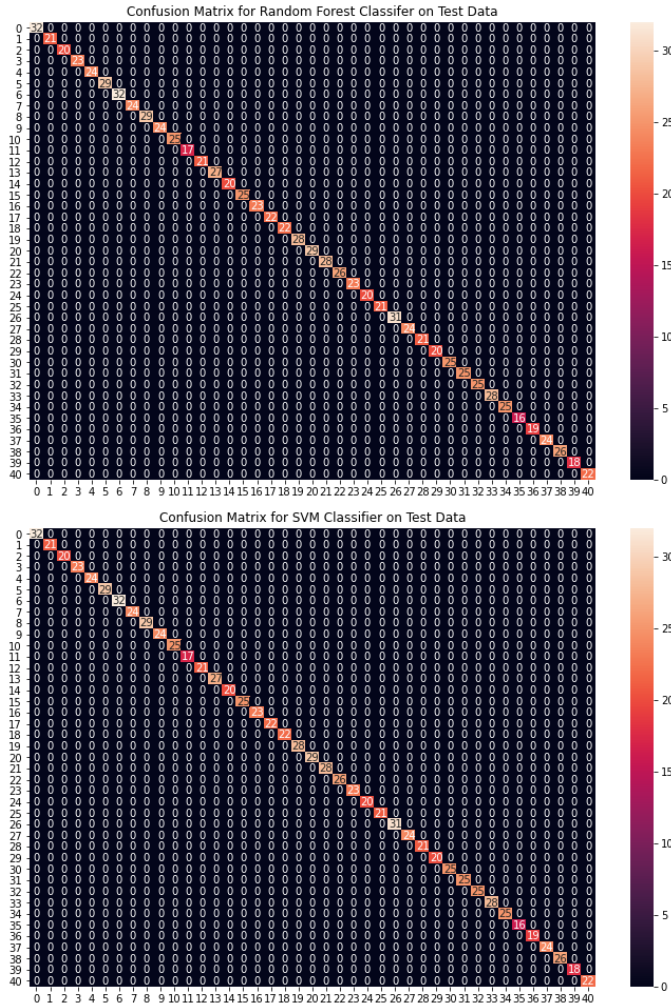
In this module we will filter the medicines on the basis of category and then display the available medicine.

D. Model Building:

In this module we create functions for making the loading and pre-processing of our images in the project.

After data splitting, we will start building model. We will be using K-Fold cross-validation to estimate the machine learning models. We will be using Naive Bayes Classifier, Random Forest Classifier and Support Vector Classifier, for cross-validation.





VII. RESULTS

- Model will predict the disease user may have on the basis of the symptoms entered.
- The user can buy any medicine he wants.
- User can pay via PayPal for their need.
- User can consult with their doctors.

VIII. CONCLUSION AND FUTURE SCOPE

Conclusion-

The project will allow the user to buy medicines online, predict the disease on the basis of symptoms, provide medical consultancy and health articles.

Future Plan-

1. Providing more payment options.
2. Providing information regarding the availability of the beds in nearby hospitals





3. In addition, we also make this monolithic architecture into microservices. 4. The project can be modified in the form of mobile application.

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