



**SCHOOL OF INFORMATION TECHNOLOGY & ENGINEERING**

# **Hospital Management System**

**PROJECT REPORT**

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## **ABSTRACT:**

The purpose of the project entitled as “**HOSPITAL MANAGEMENT SYSTEM WITH CANCER PREDICTION**” is to computerize the Front Office Management of Hospital to develop website which is user friendly simple, fast, and cost effective. It deals with the collection of patient’s information, staff details, etc. Traditionally, it was done manually. The main function of the system is register and store patient details and doctor details and retrieve these details as and when required, and also to manipulate these details meaningfully System input contains patient details, diagnosis details, while system output is to get these details on to the screen. The Hospital Management System can be entered using a username and password. It is accessible an administrator. Only he can add data into the database. The data can be retrieved easily. The data are well protected for personal use and makes the data processing very fast.

## **INTRODUCTION**

The project Hospital Management system includes registration of patients, storing their details into the system, and also computerized appointment scheduling and it's cancelling. The software has the facility to give a unique id for every patient and stores the details of every patient and the doctor automatically. User can choose the specific specialized doctor based on his requirement and availability of a doctor using his login. The system also provides option for doctor to upload reports which can be viewed by the admin.

The System also implements Multilayer Perceptron Network for the prediction Breast Cancer.

The Hospital Management System can be entered using a username and password. It is accessible administrator. Only they can add data into the database. The data can be retrieved easily. The interface is very user-friendly. The data are well protected for personal use and makes the data processing very fast.

Hospital Management System is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits to hospitals.

Hospital Management System is designed for multispecialty hospitals, to cover a wide range of hospital administration and management processes. It is an integrated end-to-end Hospital Management System that provides relevant information across the hospital to support effective decision making for patient care, hospital administration and critical financial accounting, in a seamless flow.

Hospital Management System is a software product suite designed to improve the quality and management of hospital management in the areas of clinical process analysis and activity-based costing. Hospital Management System enables you to develop your organization and improve its effectiveness and quality of work. Managing the key processes efficiently is critical to the success of the hospital helps you manage your processes.

Classification is a task that is often encountered in everyday life. A classification process involves assigning objects into predefined groups or classes based on a number of observed attributes related to those objects. Although there are some more traditional tools for classification, such as

certain statistical procedures, neural networks have shown to be an effective solution for this type of problems. There is a number of advantages to using neural networks - they are data driven, they are self-adaptive, they can approximate any function - linear as well as non-linear (which is quite important in this case because groups often cannot be divided by linear functions). Neural networks classify objects rather simply - they take data as input, derive rules based on those data, and make decisions.

Introducing the problem:

The objective is to train the neural network to predict whether a breast cancer is malignant or benign when it is given other attributes as input.

The data set contains 699 instances. The first attribute is the ID of an instance, and the later 9 all represent different characteristics of an instance. Each instance has one of 2 possible classes (benign or malignant). The characteristics that are used in the prediction process are:

1. Clump Thickness
2. Uniformity of Cell Size
3. Uniformity of Cell Shape
4. Marginal Adhesion
5. Single Epithelial Cell Size
6. Bare Nuclei
7. Bland Chromatin
8. Normal Nucleoli
9. Mitoses

Each attribute has the domain 1-10. The last attribute - class, takes the values 2 and 4 (2 for benign, 4 for malignant).

### **Prodeure of training a neural network :**

In order to train a neural network, there are five steps to be made:

1. Normalize the data
2. Create a Neuroph project
3. Create a training set
4. Create a neural network
5. Train the network
6. Test the network to make sure that it is trained properly

### **Step 1: Normalizing the data:**

For this step we used weka tool. Initially all the attributes were not in the range of [0,1] but after doing normalization all 9 attributes come in the range. Then we divide the class output into 2 classes output so now we have 11 attributes (9 input and 2 output)

### **Step 2: Creating a new Neuroph project:**

Follow on screen instruction and give the name to your project.

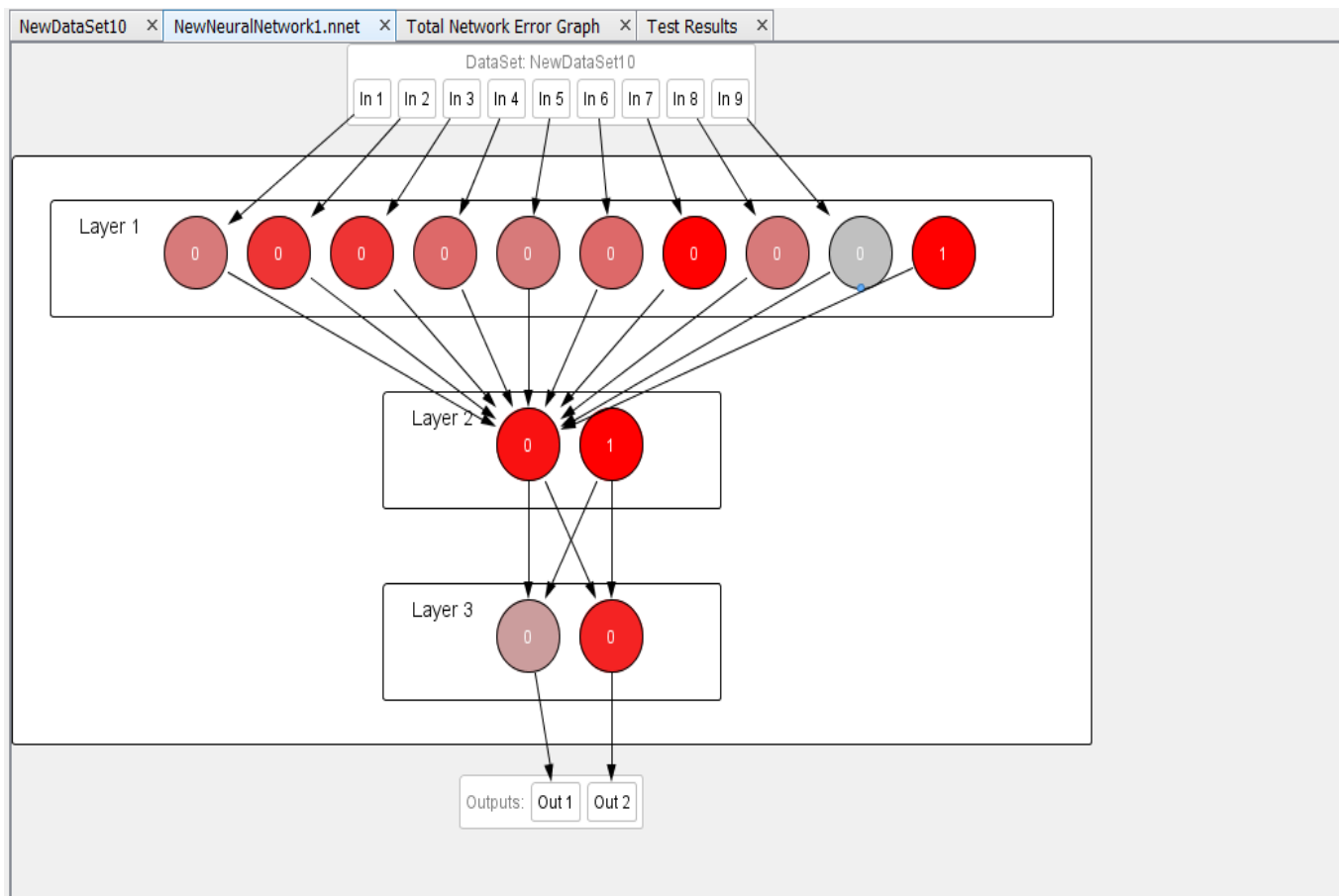
### **Step 3: Creating a training set:**

For this step we imported the .csv file into the framework and used “supervised learning” because we already know the output.

### **Step 4: Create a neural network:**

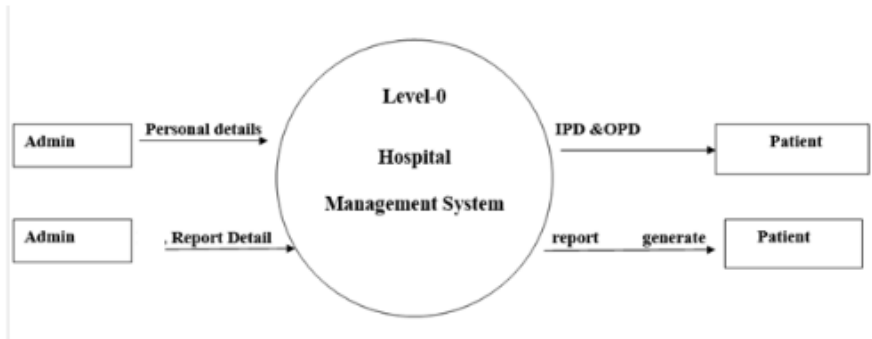
For this we created a Multi-Layer Perceptron neural network which has 3 layers. 3 input layers, 1 hidden layer and 2 output layers.

Then we started the training and got the weight.

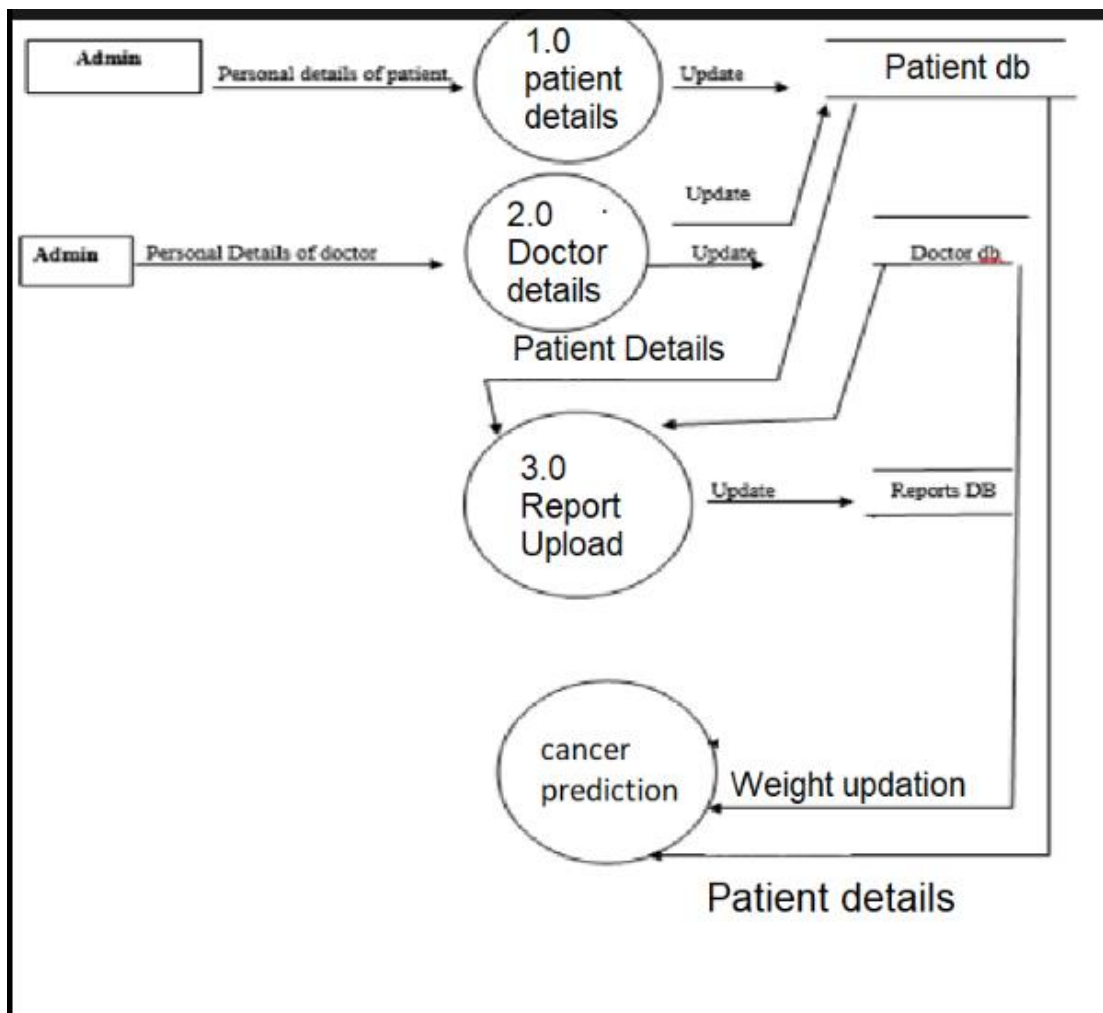


# DATAFLOW DIGARAMS

## LEVEL 0



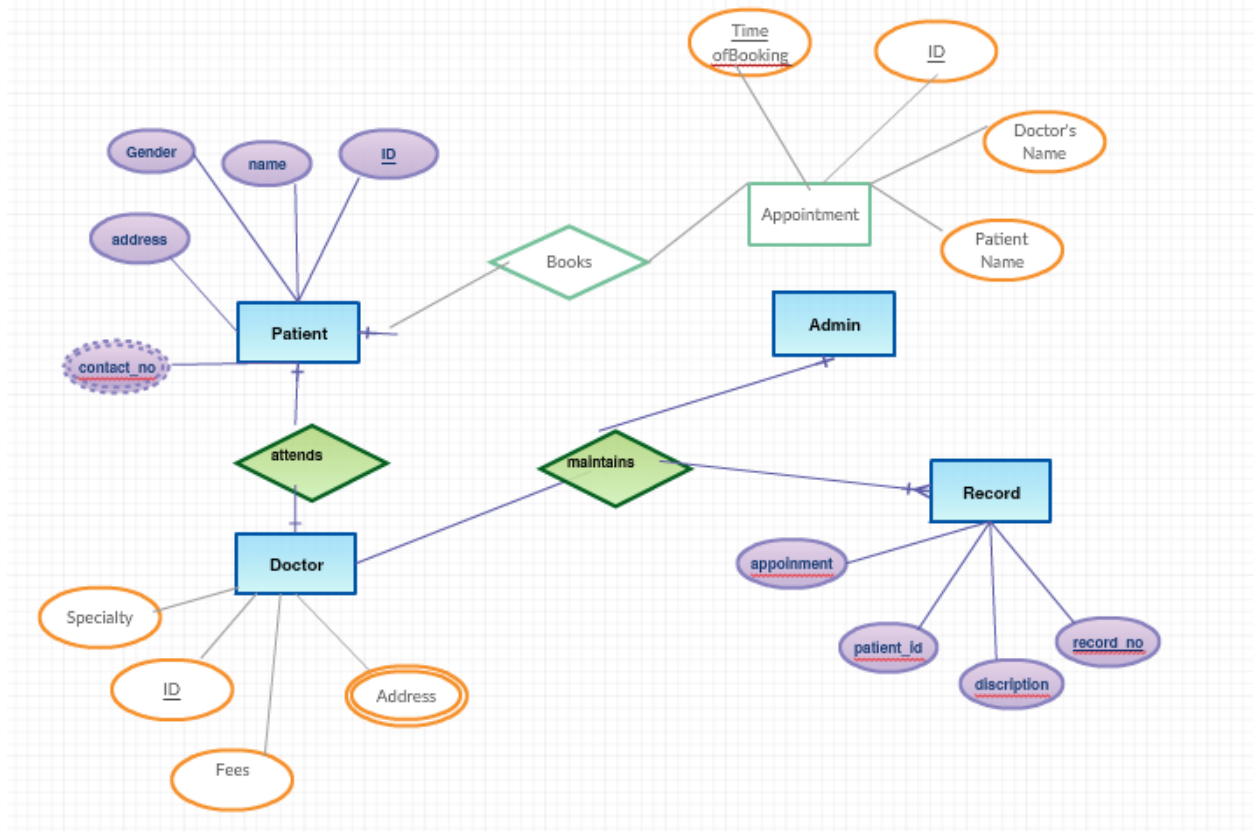
## LEVEL 1





## DATABASE DESIGN

E-R Diagram for Hospital Management System



## SAMPLE CODE

```
<?php
$message = "";
if(isset($_POST['reset'])){
    header('Location: network.php');
}
elseif(isset($_POST['submit']) && !empty($_POST['w1']) &&
!empty($_POST['w2']) && !empty($_POST['w3']) && !empty($_POST['w4']) &&
!empty($_POST['w5']) && !empty($_POST['w6']) && !empty($_POST['w7']) &&
!empty($_POST['w8']) && !empty($_POST['w9'])){
// w1 Weight      1.6796818812446186
// w2 Weight      1.8610267943060772
// w3 Weight      1.8059482084618208
// w4 Weight      0.9267825246357847
// w5 Weight      0.8826127485184864
// w6 Weight      2.583913486347142
// w7 Weight      1.2879503827506151
// w8 Weight      1.412600363838915
// w9 Weight      1.6007762437963111
//
// b bias      -3.958916845403134
//
//
// w11 Weight      -5.586984226764622
// w12 bias 3.1755116889548107
// w21 Weight      5.5079614232084255
// w22 Wbias      -3.1345899812445746
    $w1 = $_POST['w1'];
    $w2 = $_POST['w2'];
    $w3 = $_POST['w3'];
    $w4 = $_POST['w4'];
    $w5 = $_POST['w5'];
    $w6 = $_POST['w6'];
    $w7 = $_POST['w7'];
    $w8 = $_POST['w8'];
    $w9 = $_POST['w9'];
    // $b1 = $_POST['b1'];
    // $b2 = $_POST['b2'];
    // $b3 = $_POST['b3'];
    if($w1>1 || $w1<0 || $w2>1 || $w2<0 || $w3>1 || $w3<0 || $w4>1 || $w4<0
|| $w5>1 || $w5<0 || $w6>1 || $w6<0 || $w7>1 || $w7<0 || $w8>1 || $w8<0 ||
$w9>1 || $w9<0 ){
        $message = "Weights should be in the range of [0,1]";
    }else{
        $layer2_input = $w1*(1.6796818812446186) + $w2*(1.8610267943060772) +
$w3*(1.8059482084618208) + $w4*(0.9267825246357847) +
$w5*(0.8826127485184864) + $w6*(2.583913486347142) + $w7*(1.2879503827506151)
+ $w8*(1.412600363838915) + $w9*(1.6007762437963111) -3.958916845403134;
        $output1 = (1)/(1+exp((-1)*$layer2_input));

        $layer3_1 = $output1*(-5.586984226764622) + 3.1755116889548107;
        $layer3_2 = $output1*(5.5079614232084255) - 3.1345899812445746;
        $output3_1 = (1)/(1+exp((-1)*$layer3_1));
        $output3_2 = (1)/(1+exp((-1)*$layer3_2));
        if($output3_1>$output3_2)
```

```

        $message = "Type of cancer: Benign";
    else {
        $message = "Type of cancer: Malignant";
    }
}

}elseif(isset($_POST['submit'])){
    $message = 'Fields can not be empty';
}else{
    $message = '';
}

?>
<!DOCTYPE html>
<html lang="en" dir="ltr">
    <head>
        <meta charset="utf-8">
        <!-- <meta http-equiv="refresh" content="0;
url="http://localhost/hospital_osp/network.php" /> -->
        <title>Network Form</title>
        <style media="screen">

            #upload {
                margin-top: 5%;
                font-family: "Trebuchet MS", Arial, Helvetica, sans-serif;
                border-collapse: collapse;
                width: 50%;

            }

            #upload td, #upload th {
                border: 1px solid #ddd;
                padding: 8px;
                text-align: center;

            }

            #upload tr:nth-child(even){background-color: #f2f2f2;}

            #upload tr:hover {background-color: #ddd;}

            #upload th {
                padding-top: 12px;
                padding-bottom: 12px;
                background-color: #4CAF50;
                color: white;

            }
            #output{
                font-size: 20px;
                font-weight: bold;
                font-family: fantasy;
                font-style: normal;
                color: red;

            }
        </style>
    </head>
    <body>
        <form class="network" action="network.php" method="post">

```

```

<table id="upload" align="center">
  <?php
    $formsubmitted = '';
    if(isset($_POST['submit']) && !empty($_POST['w1']) &&
!empty($_POST['w2']) && !empty($_POST['w3']) && !empty($_POST['w4']) &&
!empty($_POST['w5']) && !empty($_POST['w6']) && !empty($_POST['w7']) &&
!empty($_POST['w8']) && !empty($_POST['w9'])) {
      $formsubmitted = 1;
    }else {
      $formsubmitted = 0;
    }
  ?>
  <tr>
    <th>Attribute</th>
    <th>Weights</th>
  </tr>
  <tr>
    <td>Clump Thickness</td>
    <td><input type="text" name="w1" value="<?php
if($formsubmitted >0){echo $w1;}
else{echo '';}
?>"></td>
  </tr>
  <tr>
    <td>Uniformity of Cell Size</td>
    <td><input type="text" name="w2" value="<?php
if($formsubmitted >0){echo $w2;}
else{echo '';}
?>"></td>
  </tr>
  <tr>
    <td>Uniformity of Cell Shape</td>
    <td><input type="text" name="w3" value="<?php
if($formsubmitted >0){echo $w3;}
else{echo '';}
?>"></td>
  </tr>
  <tr>
    <td>Marginal Adhesion</td>
    <td><input type="text" name="w4" value="<?php
if($formsubmitted >0){echo $w4;}
else{echo '';}
?>"></td>
  </tr>
  <tr>
    <td>Single Epithelial Cell Size</td>
    <td><input type="text" name="w5" value="<?php
if($formsubmitted >0){echo $w5;}
else{echo '';}
?>"></td>
  </tr>
  <tr>
    <td>Bare Nuclei</td>
    <td><input type="text" name="w6" value="<?php
if($formsubmitted >0){echo $w6;}
else{echo '';}
?>"></td>

```

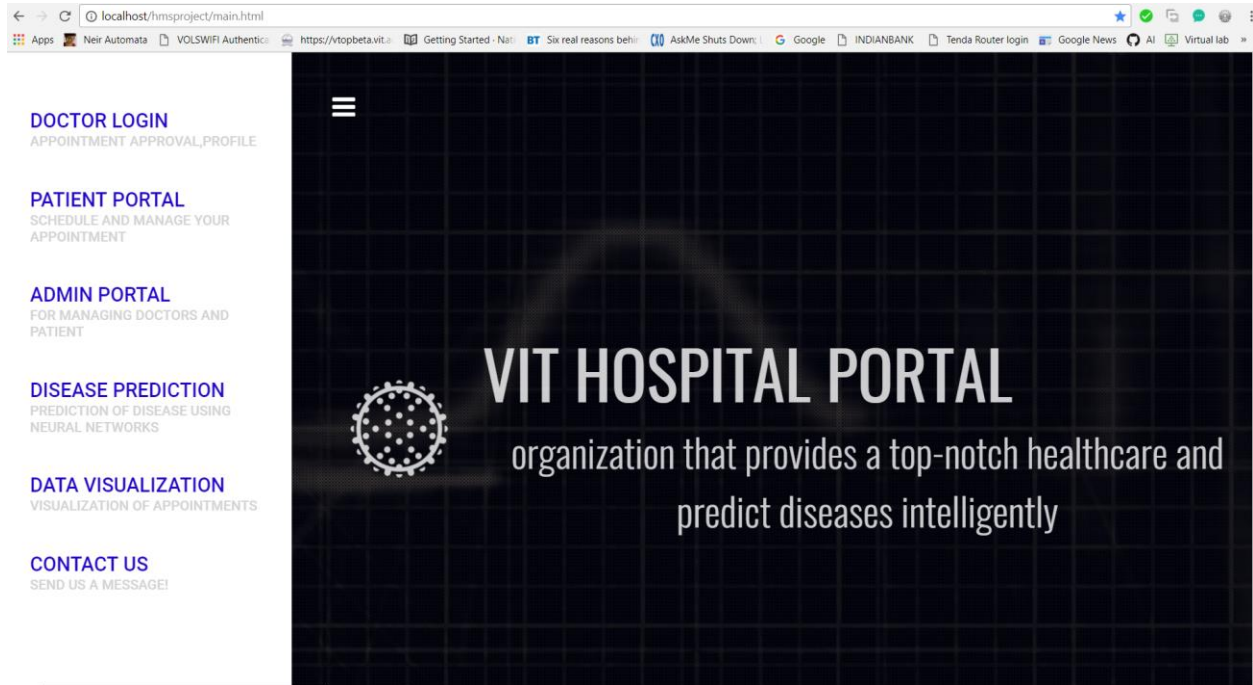
```

        </tr>
        <tr>
            <td>Bland Chromatin</td>
            <td><input type="text" name="w7" value="<?php
            if($formsubmitted >0){echo $w7;}
            else{echo ' ';}
            ?>"></td>
        </tr>
        <tr>
            <td>Normal Nucleoli</td>
            <td><input type="text" name="w8" value="<?php
            if($formsubmitted >0){echo $w8;}
            else{echo ' ';}
            ?>"></td>
        </tr>
        <tr>
            <td>Mitoses</td>
            <td><input type="text" name="w9" value="<?php
            if($formsubmitted >0){echo $w9;}
            else{echo ' ';}
            ?>"></td>
        </tr>
        <!-- <tr>
            <td>b</td>
            <td><input type="text" name="bias" value=""></td>
        </tr> -->
        <tr>
            <td><input type="submit" name="submit"
value="Submit"></td>
            <td><input type="submit" name="reset" value="Reset"></td>
        </tr>
        <tr>
            <td colspan="2"><p id="output"><?php
            echo $message;

            ?></p></td>
        </tr>
    </table>
</form>
</body>
</html>

```

# SCREENSCHOTS

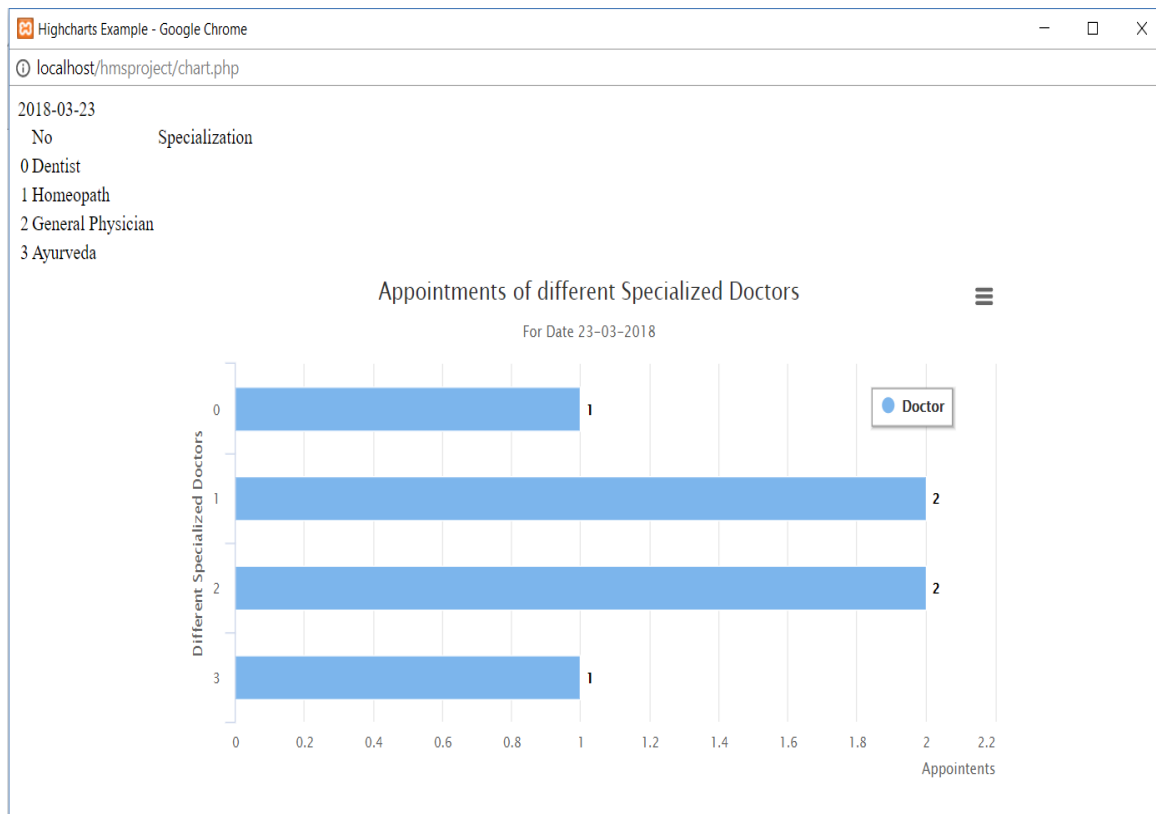


Network Form - Google Chrome

localhost/hmsproject/network.php

### Breast Cancer Prediction using Multilayer Perceptron

Attribute	Weights
Clump Thickness	<input type="text"/>
Uniformity of Cell Size	<input type="text"/>
Uniformity of Cell Shape	<input type="text"/>
Marginal Adhesion	<input type="text"/>
Single Epithelial Cell Size	<input type="text"/>
Bare Nuclei	<input type="text"/>
Bland Chromatin	<input type="text"/>
Normal Nucleoli	<input type="text"/>
Mitoses	<input type="text"/>
<input type="button" value="Submit"/>	<input type="button" value="Reset"/>







## Admin Login


[Sign in to your account](#)


Please enter your name and password to log in.

Can't read the image? click [here](#) to refresh.

[Home](#) [Login](#)


Admin

ADMIN | DASHBOARDAdmin / Dashboard




### Manage Patients

Total Patients :




### Manage Doctors

Total Doctors :






### Appointments


Total Appointments :



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VIT Hospital Portal

DOCTOR | DASHBOARDUser / Dashboard




### My Profile

Update Profile



### My Appointments

View Appointment History



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## **CONCLUSION**

Since we are entering details of the patients electronically in the "Hospital Management System", data will be secured. Using this application, we can retrieve patient's history with a single click. Thus processing information will be faster. It guarantees accurate maintenance of Patient details. And with ability to predict dangerous disease like cancer, it helps to patient early recognize the symptoms and help them in their healing process.

The system also provides efficient visualization of the data for data analysis for the appointments made in a given day for different specialized doctors. It easily reduces the book keeping task and thus reduces the human effort and increases accuracy speed

## 8. References

### Websites:

1. <http://www.w3schools.com/php/>
2. <http://www.apachefriends.org/en/xamppwindows.html>
3. <http://www.tutorialspoint.com/articles/run-a-phpprogramin-xampp-server>
4. <http://www.stackoverflow.com/>