Araneae
Technologies

HOSPITAL MANAGEMENT SYSTEM

Consult a doctor anytime, anywhere...

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ABSTRACT

EMR: - Complete Software Solution for Hospital Management System

The theme of the project is to automate all the hospital appointments and patient management through online. It is most powerful and effective most of all online solution to your business needs.

HMS will provide a solution to manage all the patients, Patient appointments, doctors and Payments in the hospital. It will provide the patient to manage appointments, payments directly through online.

Features of the Product:

→Hospital Admin can easily view all the appointments, Payments, Doctors, Patients and Feedback of Patients.

→Doctor can view and manage all the appointments of Patients.

→Patient Can easily get registered in to HMS, can take the appointment and make payments online.

→User can easily login or register directly by using any of the social sites like Google, Facebook, Twitter and LinkedIn.

→Patient will get auto email alerts when registered or when user appointment gets confirmed/Rescheduled or Cancelled.

HMS Project development by

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Modules

There are three modules in this project:

1. Admin Module

2. Doctor Module

3. Patient Module

Admin Module:

Admin **Dashboard** consists of:

- Appointments (Total Visited, Total Patients, Doctors, Specialties)

- Information regarding (Monthly Recap Report, Payment Details [payment through Reference ID]

- Patient Registration Details, Feedback Status and Scheduled Appointments

Admin Module consists of following Services: -

- ✓ **Patient** Registration: This service provides the admin to register the patient details.

- ✓ Patient Management: This service provides the admin to check/edit the registered patient details.

- ✓ Manage Appointments: This service provides the admin to check/ reschedule/ cancel the patient appointments.

- ✓ Schedule Appointment: This service provides the patient to schedule the location, specialist of doctor, date & time of Appointment.

- ✓ Notifications: Automatic mail alerts such as patient registration.

- ✓ **Doctor** Registration: This service provides the admin to register the Doctor details.

- ✓ Manage Doctors: This service provides the admin to edit the Doctor details.

- ✓ Notifications: Automatic mail alerts such as doctor registration.

Doctor Module:

Doctor **Dashboard** consists of:

- Appointments (Confirmed, Upcoming, Cancelled, Total)

Doctor Module consists of following services: -

- ✓ Patient Registration: This service provides the doctor to register the patient details.

- ✓ Patient Management: This service provides the doctor to check/edit the registered patient details.

- ✓ Manage Appointments: This service provides the doctor to check/ reschedule/cancel the patient appointments.

- ✓ Notifications: Automatic mail alerts such as doctor registration.

Patient Module:

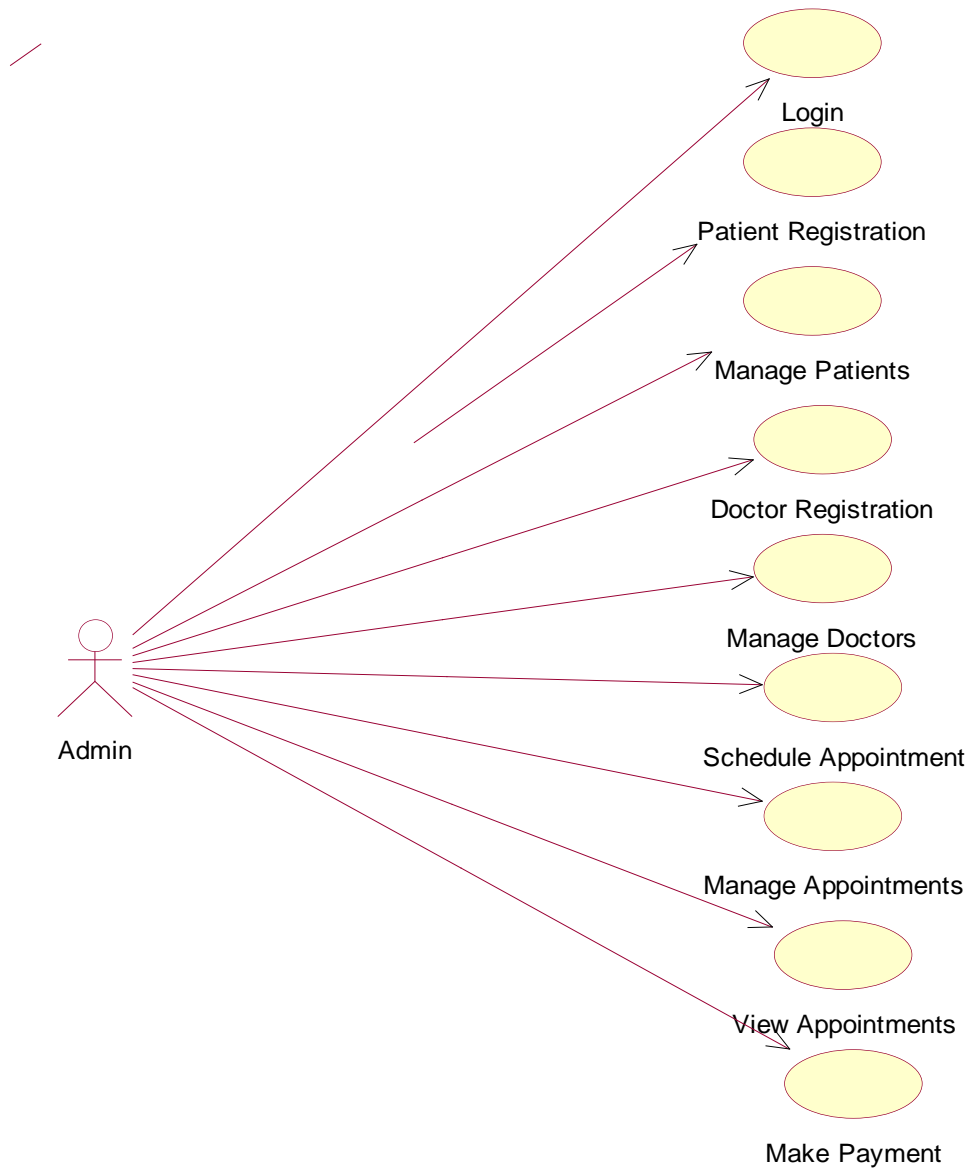Doctor **Dashboard** consists of:

- Appointments (Confirmed, Upcoming, Cancelled, Total)

- Make Payment

- Display Information Payment details, Profile Status, Scheduled Appointments)

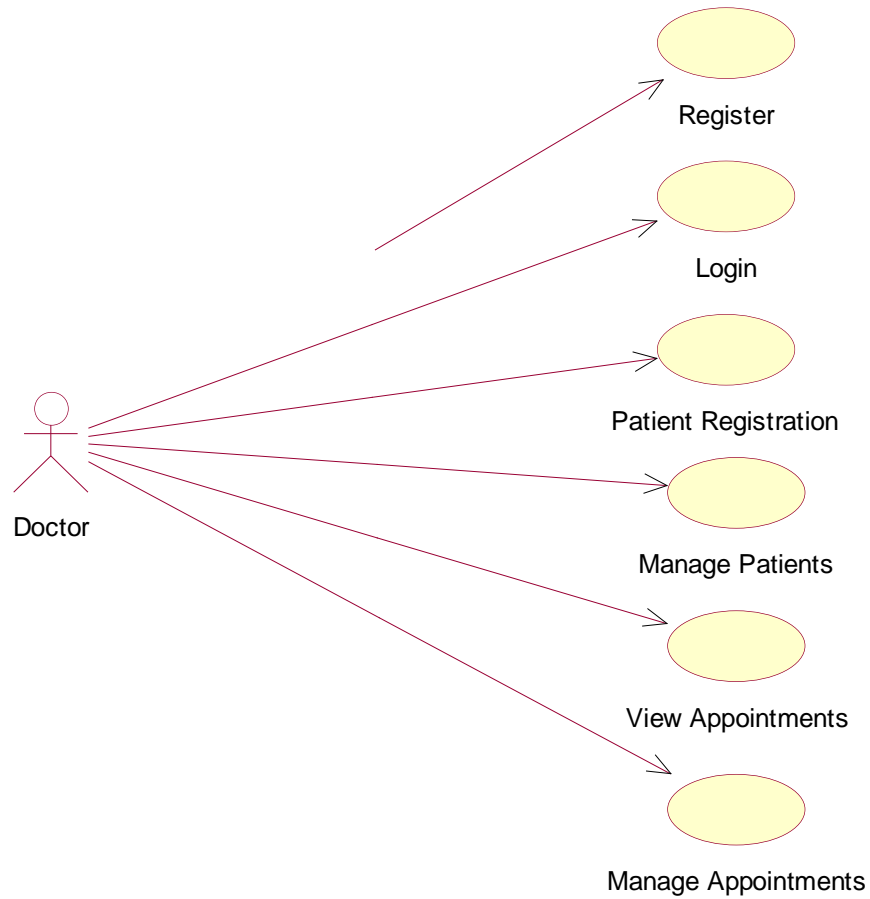**Patient Module** consists of following services: -

- ✓ Patient Registration: This service provides the patient to register the patient details.

- ✓ Patient Management: This service provides the patient to check/edit the registered patient details.

- ✓ Manage Appointments: This service provides the patient to check/ reschedule/cancel the patient appointments.

- ✓ Schedule Appointment: This service provides the patient to schedule the - location, specialist of doctor, date & time of Appointment.

- ✓ Notifications: Automatic mail alerts such as doctor registration.
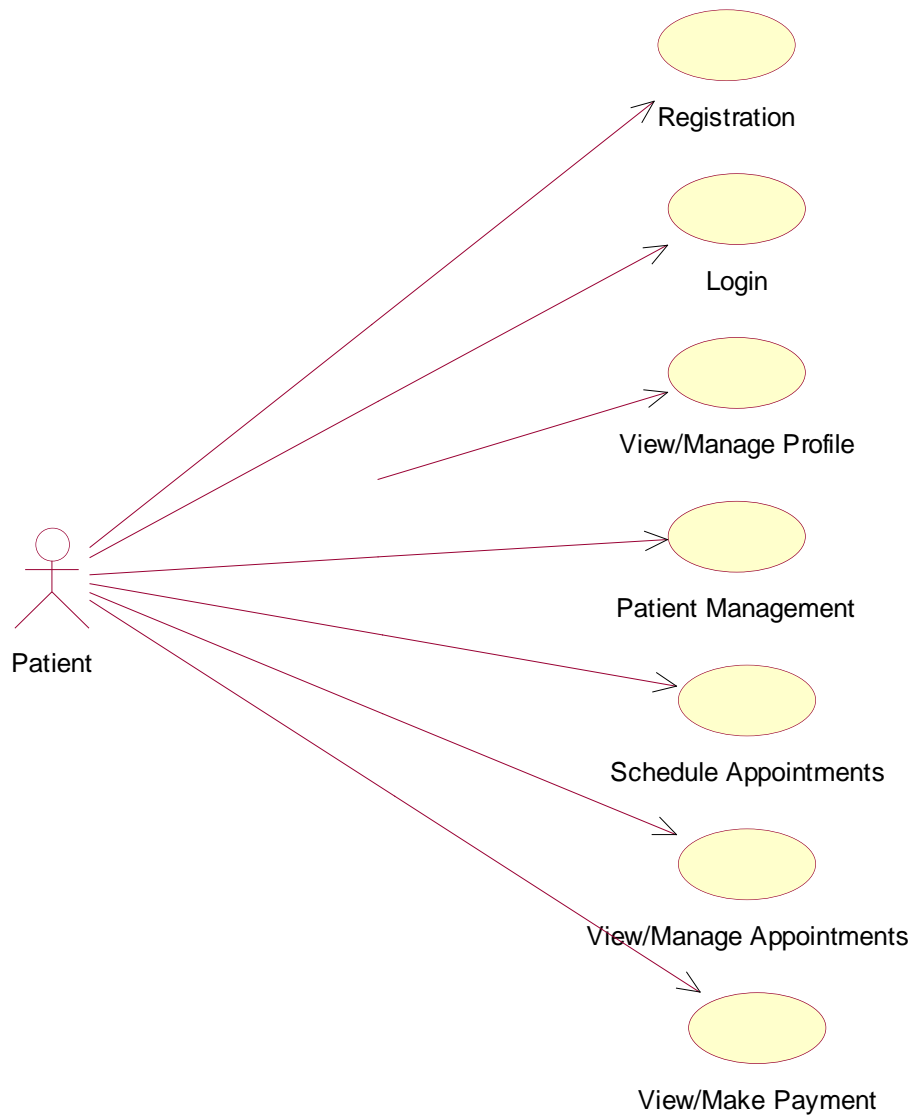
USE CASES:

<u>Admin:</u>

    Admin has them responsibilities like Doctor Registration, Doctor Management, Patient registration, Patient Management, Schedule appointment, manage appointments and Make Payment.
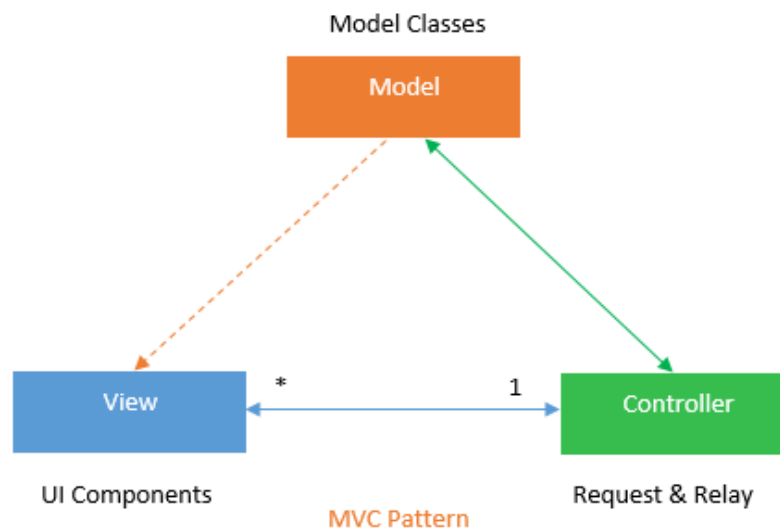
Doctor:

Doctor has the responsibilities like Patient registration, manage patients, manage appointments i.e., doctor can reschedule or cancel the appointment of the patient if necessary.

Patient:

Patient has the responsibilities like Patient registration, Manage Profile, Book an appointment or manage appointments take i.e., the patient may cancel or reschedule the appointment if necessary. After the doctor check-up the user can made a payment though reference number.

HMS IMPLEMENTATION:

HMS is developed in MVC Design pattern by using Microsoft .Net Framework.

Technologies Used:

Technology	Version
-.Net Framework	**4.5.1**
Asp.net MVC	**5.0**
Web API	**2.0**
Entity Framework	**6.x**
JQuery	**1.10.2**
Bootstrap	**3.0.0**
SQL Server	**2012**
Gulp	**4**

Features like JQuery UI animations, JQuery Ajax, Bootstrap, URL routing are also implemented in HMS.

VIEWS:

Home/Index page:

- User login & Patient Account Registration

Layout Pages:

- Admin Dashboard

- Doctor Dashboard

- Patient Dashboard

Partial Views:(A-Admin, D-doctor, P- Patient)

- Patient Registration-ADP

- Patient Management-ADP

- Schedule Appointment-AP

- Manage Appointment-ADP
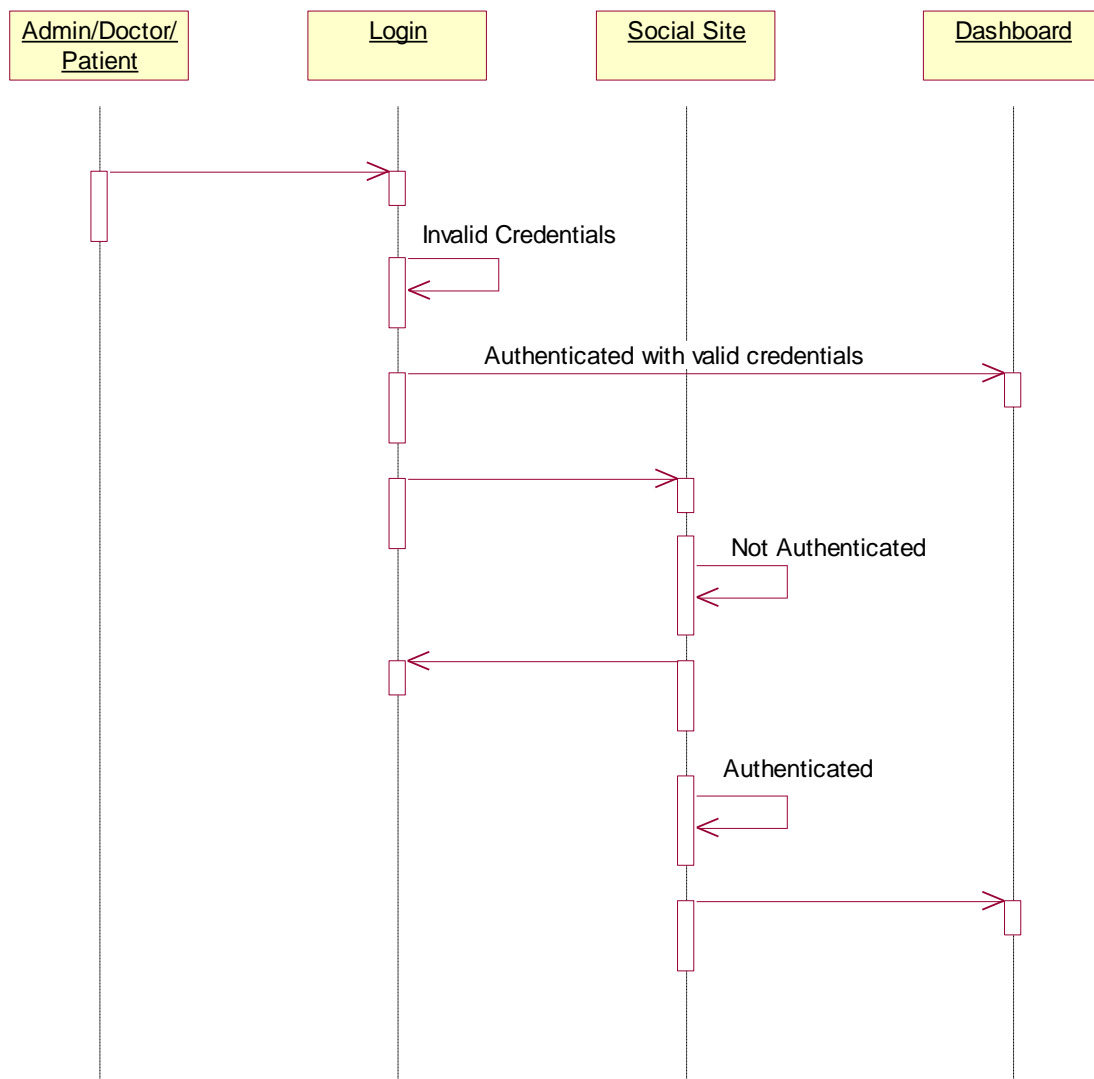
- Manage Payment AP

Normal Views:

- Login

- Registration

- Admin Dashboard Content

- Patient Dashboard Content

- Doctor Dashboard Content

- Doctor Registration

- Manage Doctors

- Patient Feedback

User Login:

User Can Login in two ways

- Manual Login using login Credentials

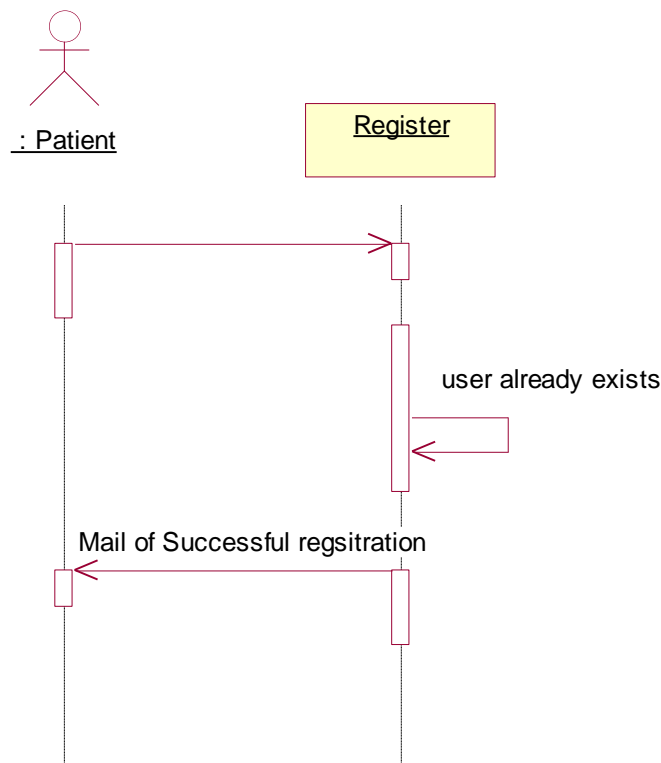- Login through social sites like Facebook, Google, Twitter and LinkedIn

The user can directly login using their social accounts. *Even the new patients can login with social account without any registration*

Patient Account Registration

Patient can register by clicking on register a new membership and by submitting all the details.
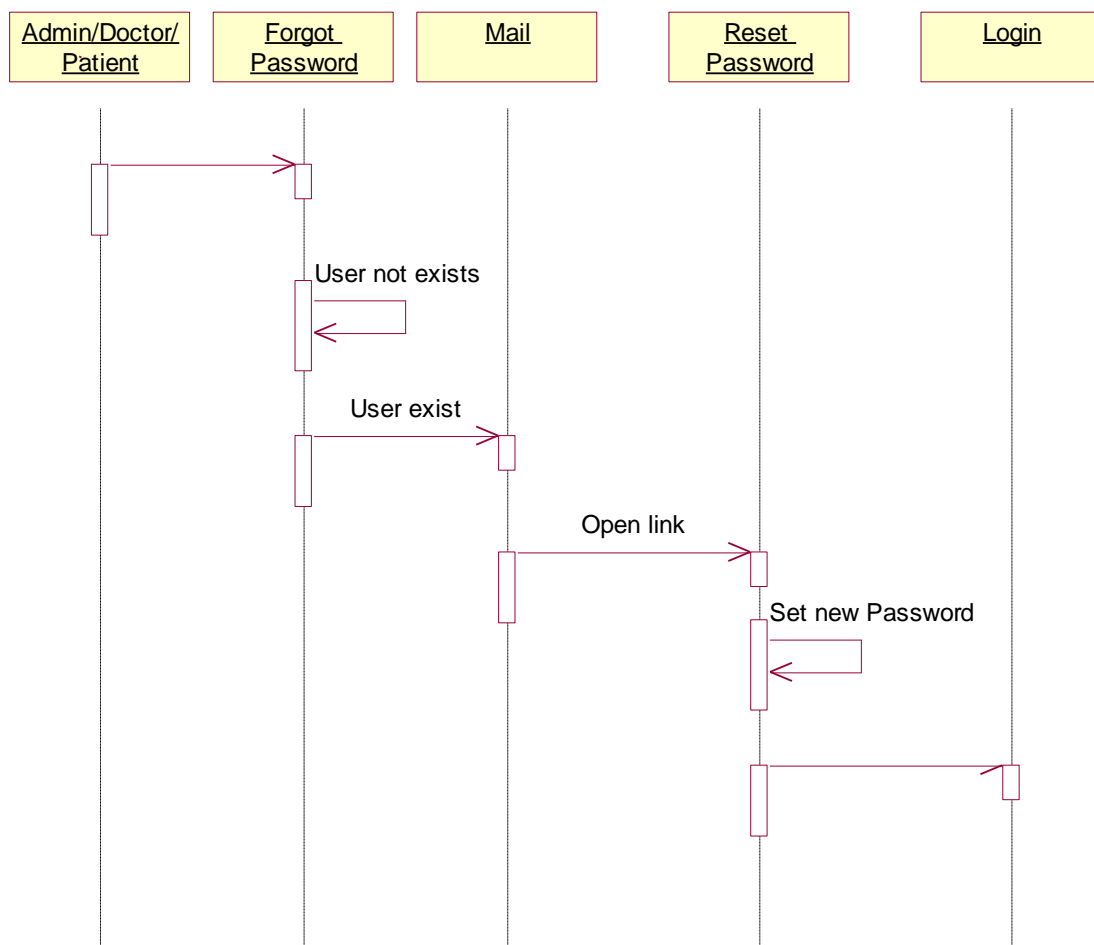
➢ User will gets notified through email if the registration is successful.

For patient registration email and password are mandatory. If the user is already existing with same mail. Then the registration is cancelled. If the user is successfully registered, he will get notified through mail.

User Forgot Password:

The user can reset his/her password by clicking on Forgot Password link. There the user has to provide the mail that is registered in HMS. If the uses mail id is valid he will get a link to his mail id. By clicking on that link he could able to reset his password and login into their account.

By clicking on the link that the user has received to his mail he could able to set new password.

Existing System

Home Controller

- **User Registration**
    - ➤ Design

        Fields: -Full Name

        -Email*

        -Phone

        -Password*

        -Confirm Password*

        -Profile Picture
    - ➤ Database – USERACCOUNTS_TB
    - ➤ Functionality (with Auto Mail Generation)

- **Login**
    - ➤ Design with Facebook and Google Authentication

        Fields: -Email*

        -Password*
    - ➤ Database – USERACCOUNTS_TB
    - ➤ Functionality (with Social Authentication)

- **Forgot Password**
    - ➤ Design

        Fields: -Registered Email*
    - ➤ Database – USERACCOUNTS_TB
    - ➤ Functionality (Verifying email and sending reset link)

- **Reset Link**
    - ➤ Design

        Fields: -Email

        -Password*

        -Confirm Password*
    - ➤ Database – USERACCOUNTS_TB
    - ➤ Functionality (To Update password in db)

Admin Controller

- **Admin Dashboard**
  - ➢ Design
  - ➢ Database
  - ➢ Functionality
  - ➢ Widgets
    - ▪ Total Visited Appointments
    - ▪ Total Patients
    - ▪ Doctors
    - ▪ Specialties
  - ➢ Displaying Monthly Recap Report graph based on payments i.e.,
    - ▪ Paid through online/cheque/Cash
    - ▪ Pending Payments
  - ➢ Payment Details
    - ▪ Select Date Range for Payment
    - ▪ payment Transactions through Reference Id
  - ➢ Display the Payment information with paging, searching and payment through[Cash/Cheque/Paypal]
  - ➢ Display the Payment information [Due, Paid, Total] in Pie diagram.
  - ➢ Functionality (Taking Feedback Request by following fields)
    - ▪ Select Patient
    - ▪ Select Doctor
    - ▪ Visit No

- Visiting Date
- Display the Feedback Status in Data Table with paging, searching and sorting.
- Display the Patient Registration Data in pie chart
  - Total Patients
  - Completed
  - Incomplete
- Select the Schedule Appointment date range
- Display the Appointments with paging, searching and sorting
  - Fields:
  - Patient Name
  - Doctor Name
  - Date
  - Time
  - Payment Mode
  - Payment Status
- Display the patients Appointment in Calendar as doctors wise.

- **Patient Registration**
  - Design (Form Wizard Model- Progress bar with %)
    Fields: - 7Forms data
  - Database -States_MTB
    -Countries_MTB
    -Race_MTB
    -Ethinicity_MTB
    -Relationship_MTB
    -Allergies_MTB
    -PatientPersonalDetails_TB

-PatientEmployerDetails_TB
-PatientEmergencyDetails_TB
-PatientInsuranceDetails_TB
-PatientAllergenDetails_TB
-PatientMedicationDetails_TB
-PatientLicenseDetails_TB
-PatientAgreementdetails_TB

➢ Functionality (Inserting of 7forms data to db in single time)

- **Patients Management**

  ➢ Design

  Display the Patient Details with paging, searching and editing options

  If we click on patient Name, it displays entire patient information in form-modal type.

  ➢ Database -States_MTB
  -Countries_MTB
  -Race_MTB
  -Ethinicity_MTB
  -PatientPersonalDetails_TB

  ➢ Functionality

- **Schedule Appointments**

  ➢ Design

  Fields: Selecting date and time*

  Specialty*

  Location*

  Selecting Patient*

  ➢ Database -ProviderSpeciality_MTB

-ProviderLocation_MTB

-Appointment_TB

➤ Functionality

If the Patient has any payment dues, it should not allow to book an appointment(new)

- **Manage Appointments**

    ➤ Design

    Display current appointments of all the patients

    ➤ Database –States_MTB
    -Countries_MTB
    -Race_MTB
    -Ethinicity_MTB
    -PatientPersonalDetails_TB

    ➤ Functionality

- **Doctor Registration**

    ➤ Design

    Fields: -First Name
    Last Name
    Email
    Gender
    Specialty
    Slot Interval
    Phone
    Cell phone
    Home Address1
    Home Address2
    City
    State
    Country
    Zip Code
    Profile Picture

    ➤ Database –Speciality_MTB

-State_MTB

-Country_MTB

-ProviderSpeciality_TB

-ProviderDetails_TB

➢ Functionality

- **Doctors Management**

  ➢ Design

  Display the doctors Details with paging, searching and editing options

  ➢ Database –Specialty_MTB

  -State_MTB

  -Country_MTB

  -ProviderSpeciality_TB

  -ProviderDetails_TB

  ➢ Functionality

Doctor Controller

- **Doctor Dashboard**

  ➢ Design

  ➢ Database

  ➢ Functionality

  ➢ Widgets

  - Confirmed Appointments

  - Upcoming Appointments

  - Cancelled Appointments

  - Total

➢ Display upcoming Appointments in calendar[Monthly Report Wise] based on patients

➢ Display Schedule, Confirmed, Reshedule, Cancelled, and Total Appointments in graph[month wise]

- **Patient Registration**

   ➢ Design (Form Wizard Model- Progress bar with %)
      - o Fields: - 7Forms data

   ➢ Database -States_MTB
         -Countries_MTB
         -Race_MTB
         -Ethinicity_MTB
         -Relationship_MTB
         -Allergies_MTB
         -PatientPersonalDetails_TB
         -PatientEmployerDetails_TB
         -PatientEmergencyDetails_TB
         -PatientInsuranceDetails_TB
         -PatientAllergenDetails_TB
         -PatientMedicationDetails_TB
         -PatientLicenseDetails_TB
         -PatientAgreementdetails_TB

   ➢ Functionality (Inserting of 7forms data to db in single time)

- **Patient Management**

   ➢ Design

   Display the Patient Details in Datatable with paging, searching and editing options

If we click on patient Name, it displays entire patient information in form-modal type.

- ➢ Database -States_MTB
  -Countries_MTB
  -Race_MTB
  -Ethinicity_MTB
  -PatientPersonalDetails_TB
- ➢ Functionality

- **Manage Appointments**

  - ➢ Design

    Display current appointments of all the patients

    Doctor can update the Appointment status either Rescheduled or Visited.

  - ➢ Database –States_MTB
    -Countries_MTB
    -Race_MTB
    -Ethinicity_MTB
    -PatientPersonalDetails_TB
  - ➢ Functionality

Patient Controller

- **Doctor Dashboard**

  - ➢ Design
  - ➢ Database
  - ➢ Functionality
  - ➢ Widgets
    - ▪ Confirmed Appointments
    - ▪ Upcoming Appointments

- Cancelled Appointments

- Total

➤ Payment Details

    - Select Date Range for Payment

    - payment Transactions through Reference Id

➤ Display the Payment information with paging, searching and payment through[Cash/Cheque/Paypal]

➤ Display the Payment information [Due, Paid, Total] in Pie diagram.

➤ Select the Schedule Appointment date range

➤ Display the Appointments with paging, searching and sorting

    - <u>Fields:</u>
    - Doctor Name
    - Location
    - Date
    - Time
    - Payment Mode
    - Payment Status

➤ Display the patients Appointment in Calendar as doctors wise.

➤ Display the Profile Status of Patient based on progress bar and pie diagram i.e.,

    - Personal Information
    - Employer Details
    - Emergency Contact Details

- Insurance Details
- Identity Details
- Medication & Reconciliation Details

➢ If the patient want to add profile status, click on the progress bar links and edit the data.

➢ Display upcoming Appointments in calendar[Monthly Report Wise] based on patients

➢ Display Confirmed, Upcoming, Cancelled, and Total Appointments in graph[month wise] and with knobs.

Proposed System

Admin

- **Manage Profile**

  To change Profile settings such as name, profile picture, Password and Mobile

- **Admin Setup**

  For Adding or modifying states, countries, Race, Ethnicity, Allergies, Relationship, Locality, Specialty and Medication.

- **Mail**

  Sending any mail to patients or Doctors individually or for all

- **Chat box**

  Chat with doctor or patients

- **Doctors Graph in Dashboard**

  Displaying Doctors Rating as per customer reviews and ratings

Doctor

- **Manage Profile**

  To change Profile settings such as name, profile picture and Password

- **Chat Box**

- **Medical Prescription**

  Symptoms, Illness, Severity of the disease, Drug issued and medical prescription to be submitted after patient visited. The Prescription will be sent to Patient Registered mail id

Patient

- **Login**

    Patient will get a confirmation link after user gets registered. He can login only after the mail is confirmed

- **Manage Profile**

    To change Profile settings such as name, profile picture, Password and Mobile

- **Chat Box**

    Chat with doctor

- **Appointment Time**

    Showing the time *widget* in patient dashboard regarding the upcoming appointment

- **Schedule Appointment**

    If the number of appointments exceeded for particular location or specialty, he can choose join in *waitlist* or choose for another location or date. If anyone Cancels their appointment, appointment will be confirmed for patient under waitlist based on first come first serve

    The Patient who has pending payment will not have allowed for booking an appointment

- **Signup through Social Account**

    User can even register through social login, if the user login through social sites he should set the password for his account for the first time

- **Ratings and Reviews**

    The Patient can rate the appointment based on waiting time, staff behaviour, hospital environment, cleanliness

Mail Gateway

➢ **User Registration**

User gets the mail Confirmation link, after user registered

➢ **Forgot Password**

Whenever user clicks on forgot password and submits registered email then the link will be sent to user to reset his password

➢ **Patient Registration**

After the successful registration in form wizard model i.e., patient details submission in 7forms, the user will get notified through mail that patient registration successful

➢ **Appointment Confirmed/Cancelled/Rescheduled**

Patient will receive the mail regarding appointment date and time whenever appointment is confirmed or rescheduled or cancelled

➢ **Medical Prescription**

Doctor will provide the medical prescription after patient treatment is completed. Patient will get the medical prescription to his mail

➢ **Payment Receipt**

Payment reference number and payment details are sent to patient mail after the payment is successful

➢ **Profile Status**

Patient can edit the profile status, sent to mail after the status has updated.

➢ **Patient Appointment**

▪ After Scheduled Appointment mail sent to patient i.e., Appointment will be on particular date and time.

- Sent mail to Patient before 1day

- Sent mail to Patient before 1hour