



Home Health Care Nurse Network

Thesis Presentation

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A close-up photograph of a teal stethoscope resting on a medical chart. The chart has a grid with handwritten text, including 'Datum: 13:30', '13:45', and '14:00'. The stethoscope's chest piece is silver and circular, with a blue tube. The background is a light gray with a diagonal blue and black graphic element.

Agenda

- **Home Health Care**
- **Home Health Care Nurse Network**
- **System Analysis**
- **System Design**
- **Technologies**
- **Implementation**
- **Challenges and Milestone**

Home Health Care



• Home Health Care Industry

- ***Purpose:*** sending nurses to patient's houses.
- ***Routine:*** facilities schedule nurses assignments
- ***Problem:*** when a scheduled nurse calls in sick.



Traditional Solution



Phone
Calls



Nurse
Registry
Agency

Traditional Solution Problems

- **Making Phone Calls**
 - Time Consuming
 - Reduce Productivity
 - Annoying daily phone calls for nurses
- **Nurse Registry Agencies**
 - Temporary Nurses
 - Unexperienced
 - Unqualified
 - Unsatisfied Patients
 - costly

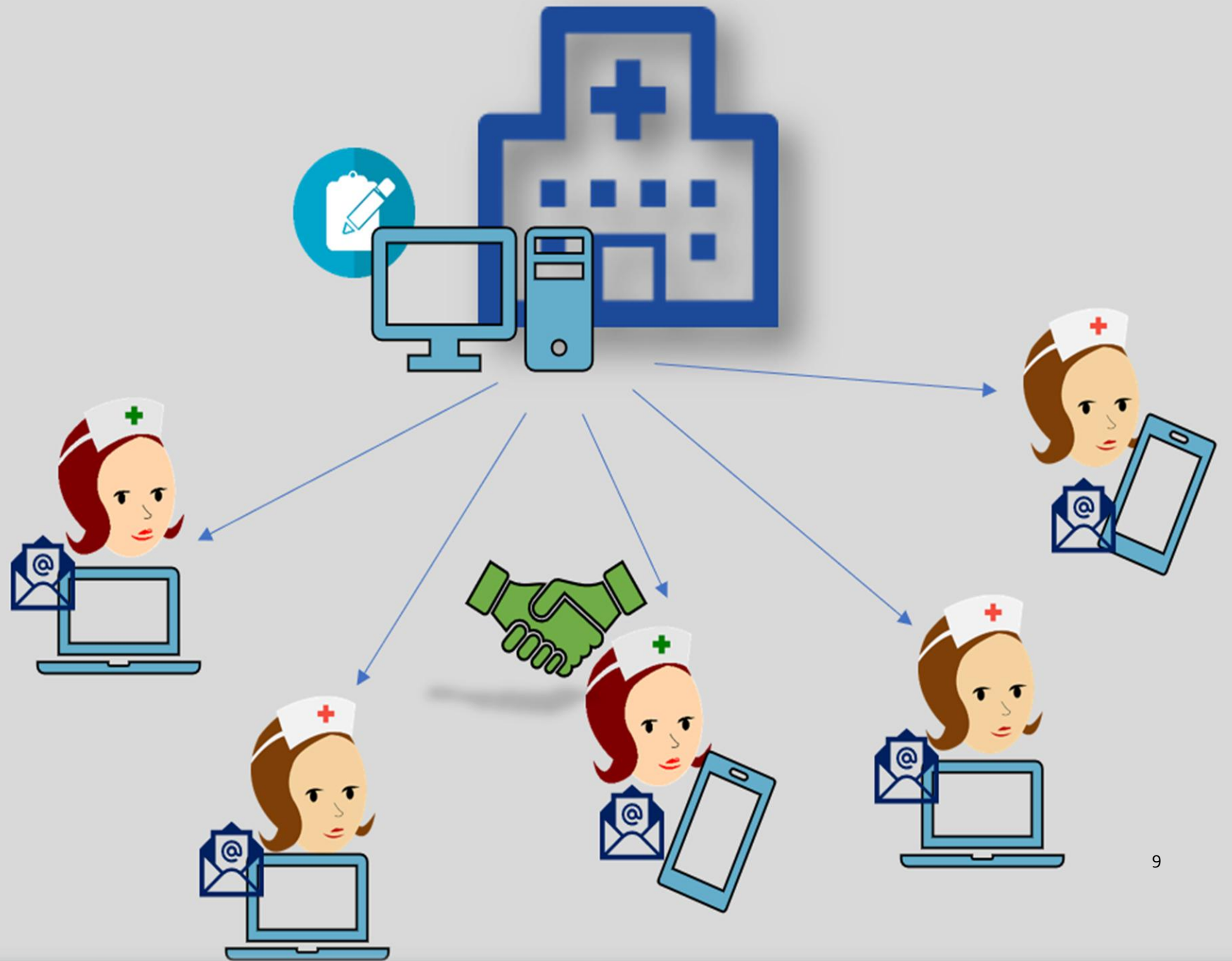


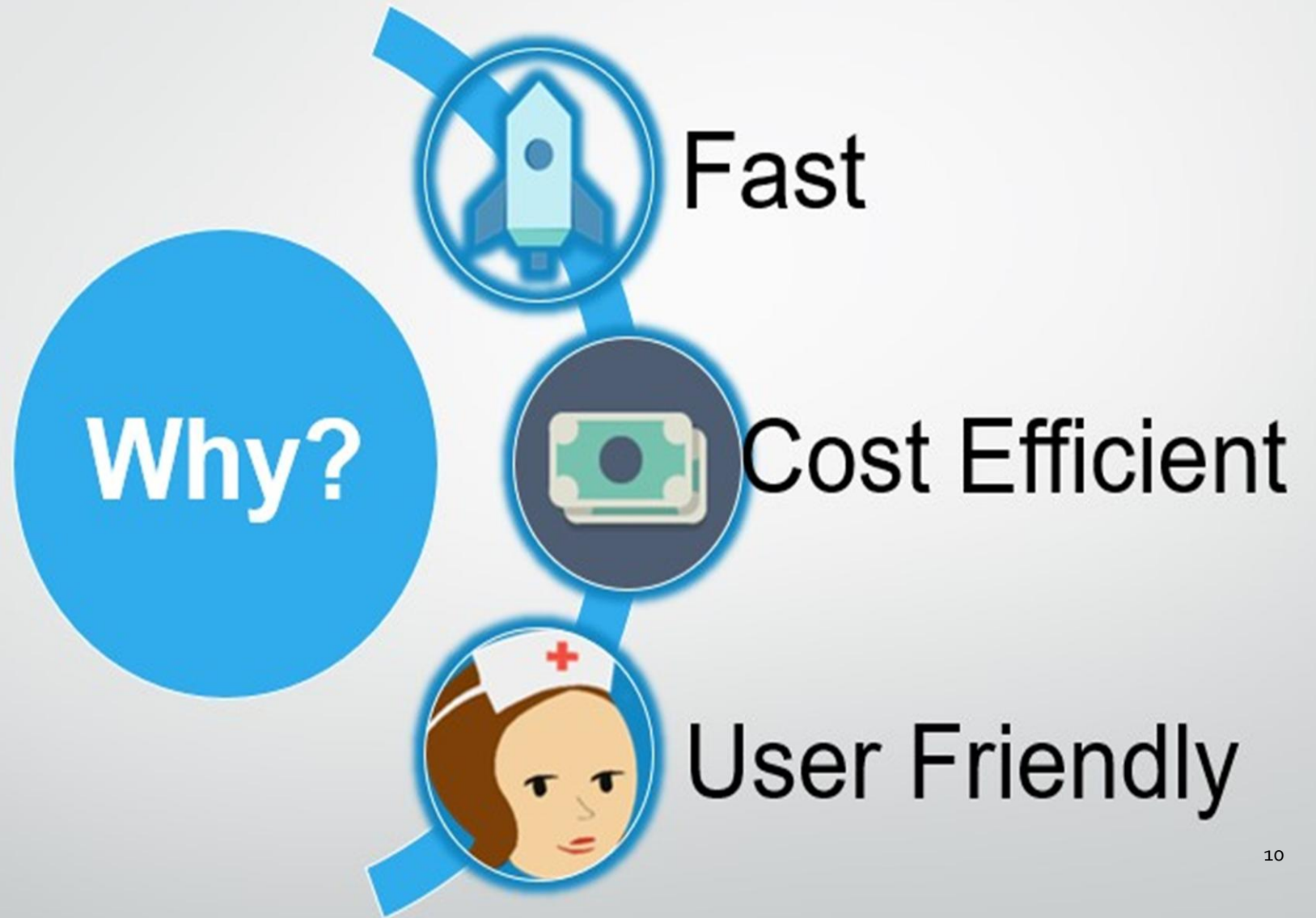
Home Health Care Nurse Network

HHCNN



- Web-based application
- Platform
 - Home Health Care Facilities
 - Nurses
 - Cover nurses in case of absence

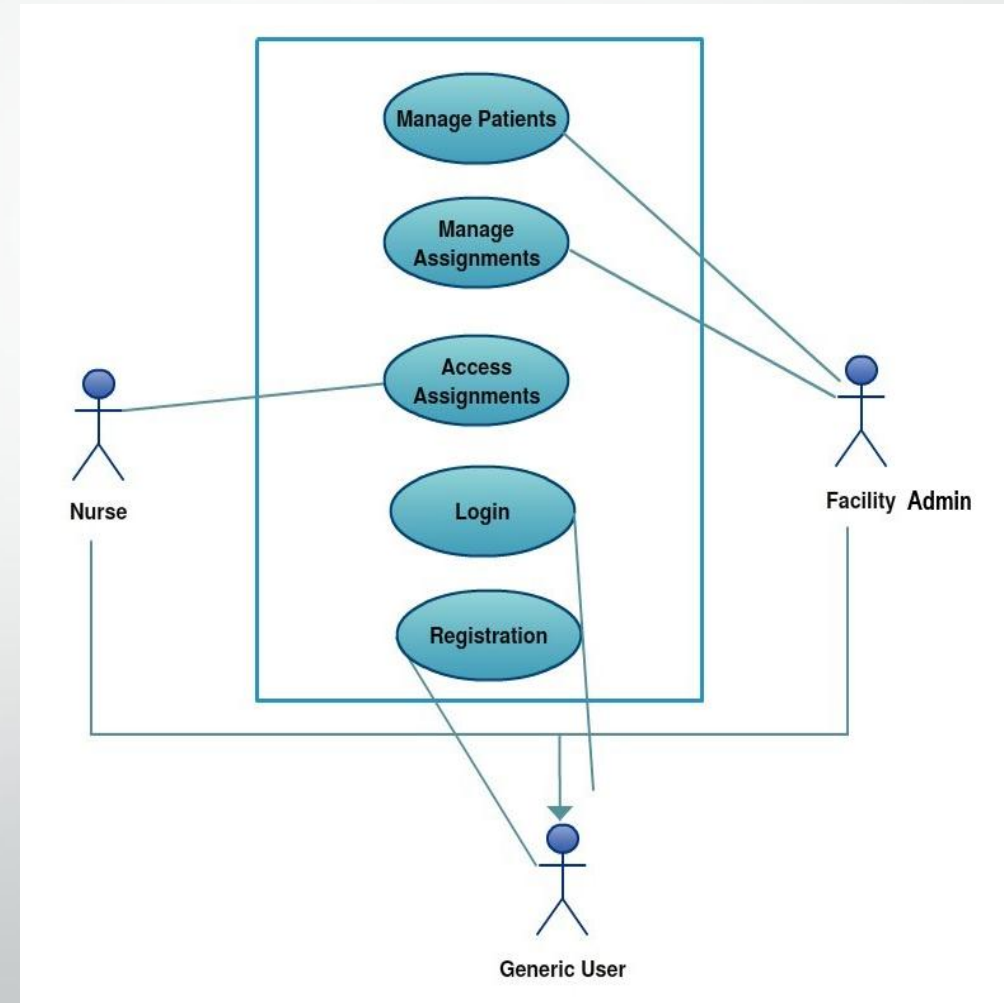




System Analysis

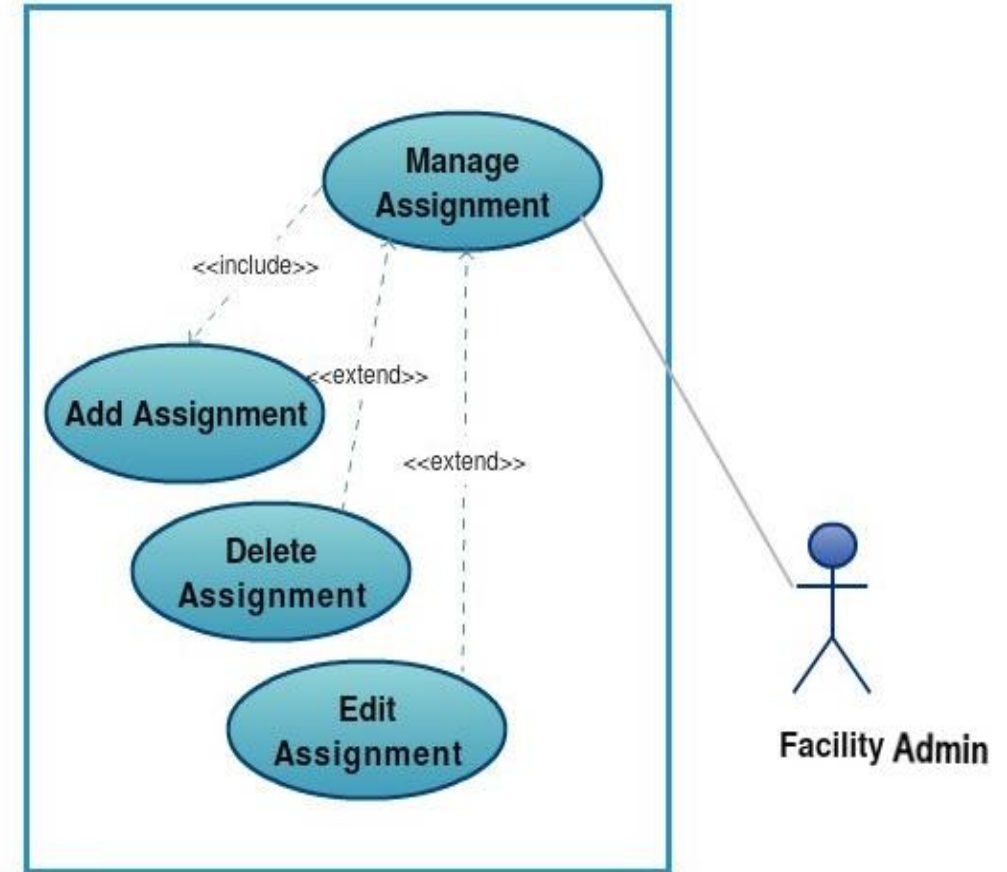
System Analysis

- General Use Case Diagram



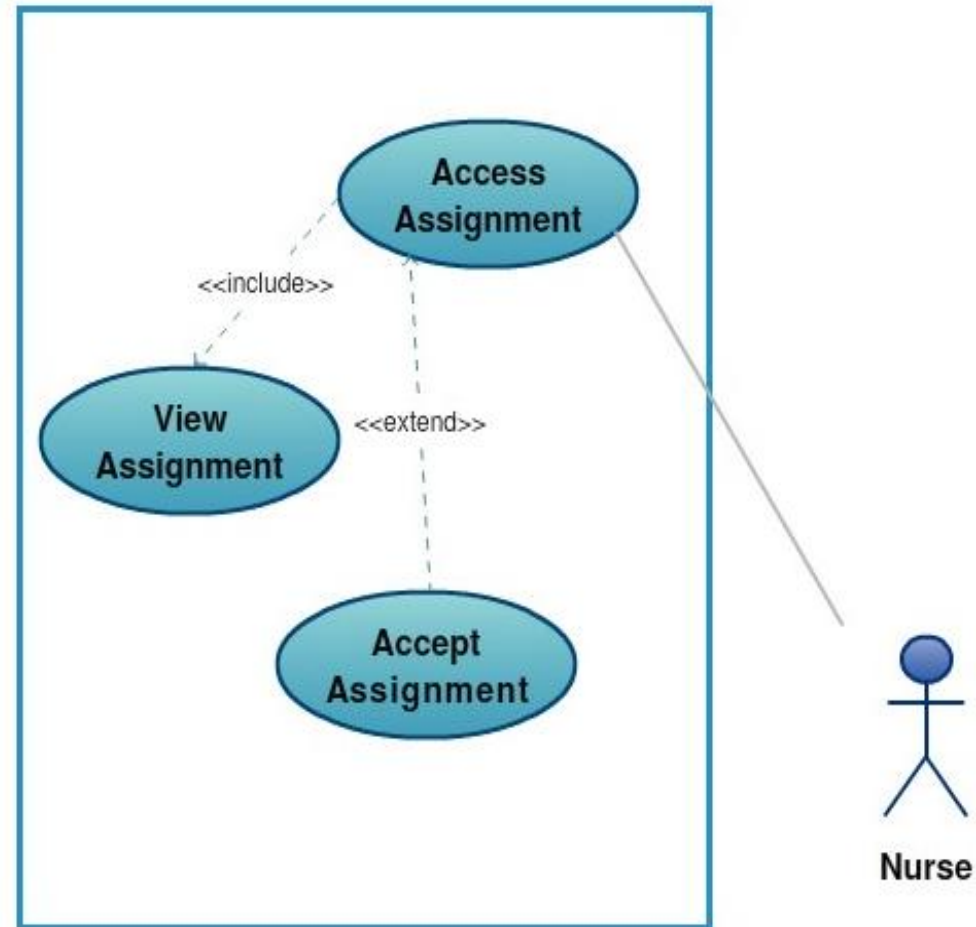
System Analysis

- Assignment Management Use Case Diagram



System Analysis

- Access Assignment Use Case Diagram



System Analysis

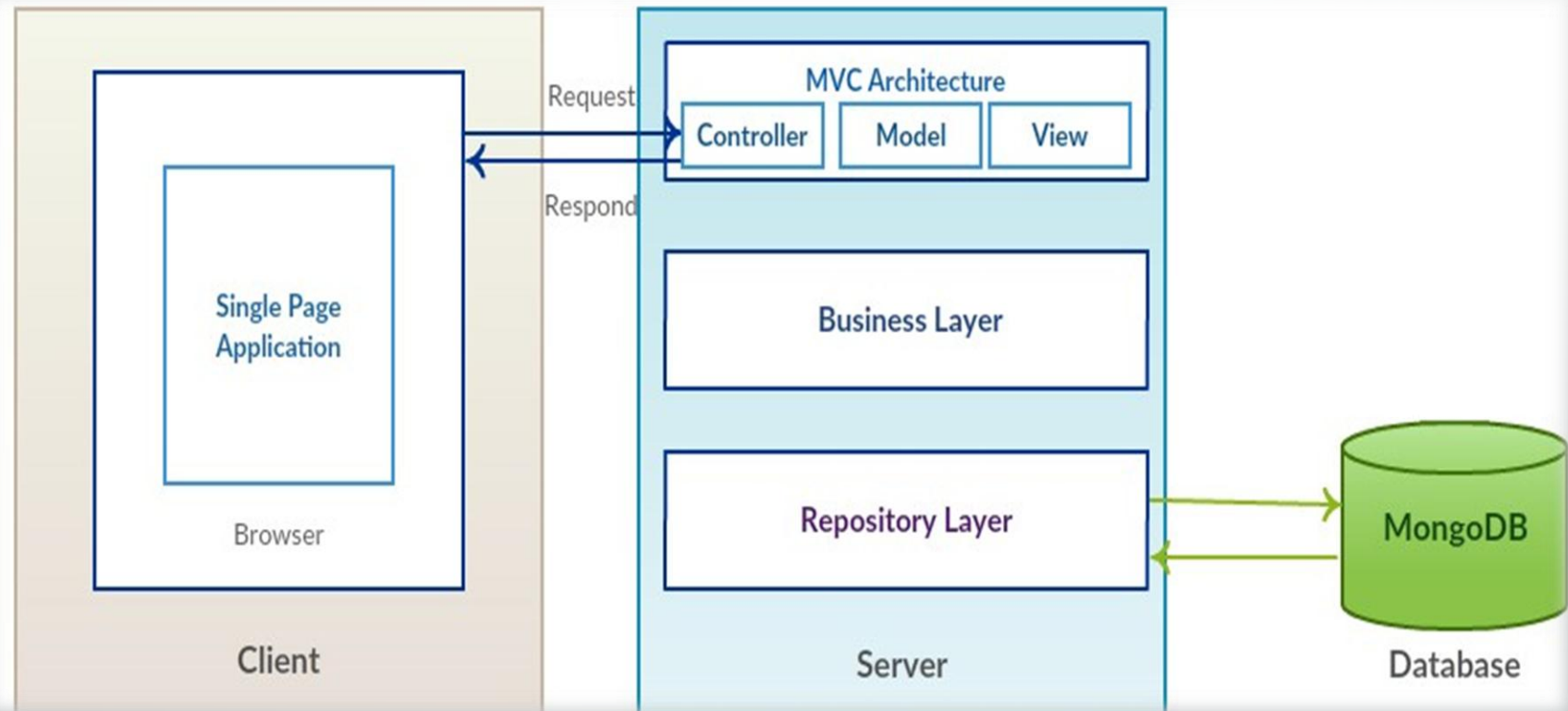
- More Use Case Diagrams such as:
 - Registration
 - Login
 - Patient Management
 -

System Design

System Design

- **Sever-side**
 - MVC Architecture
 - Model: Maintain data
 - View: Displays UI and data
 - Controller: Handles Request/Response
 - Business Layer (Logical part)
 - Repository Layer (Communicate with DB)

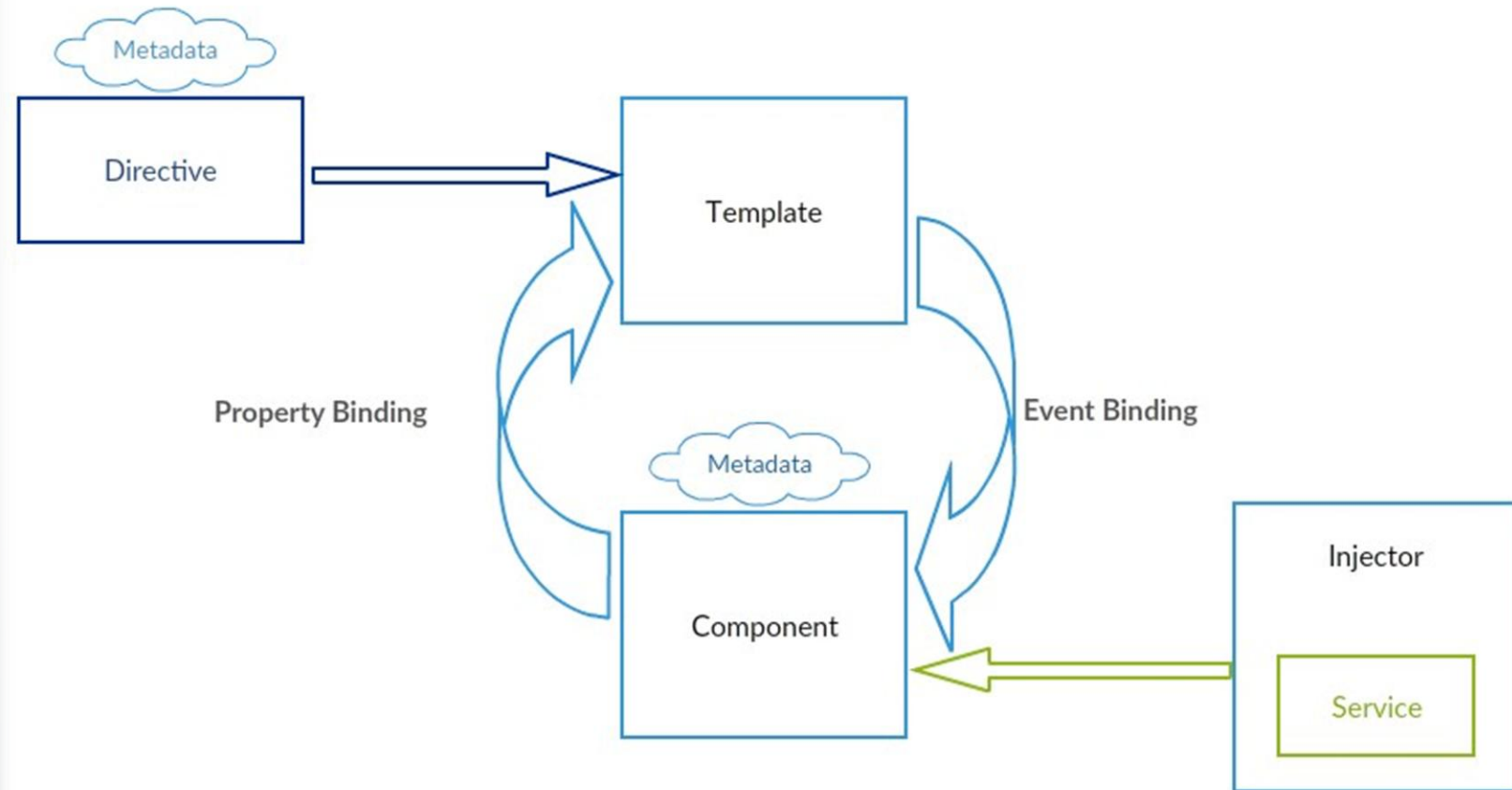
Sever-side Architecture



System Design

- **Client-side**
 - SPA(Single Page Application)
 - Components
 - HTML Templates
 - TypeScript

Client-side Architecture

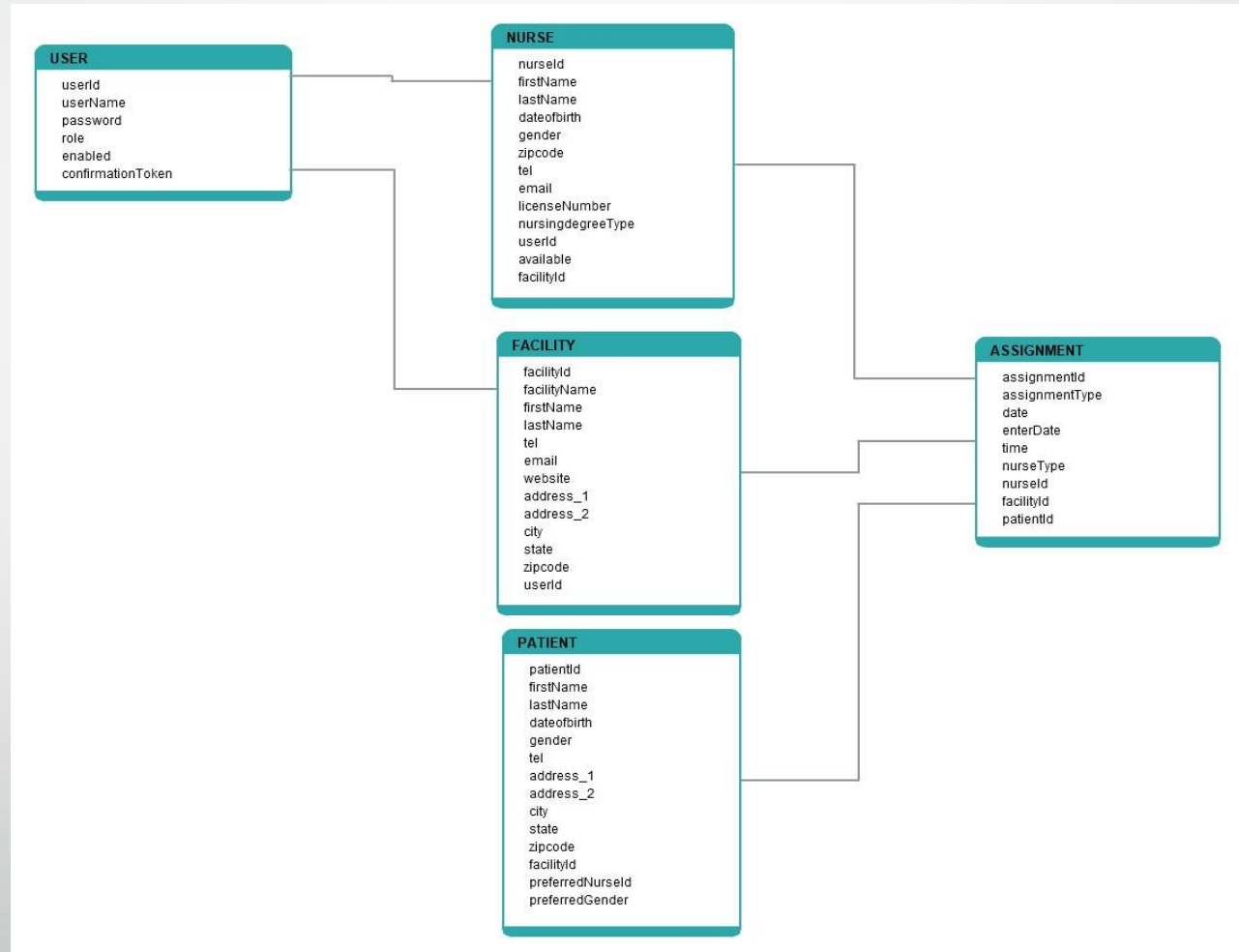


System Design

- **Database**
 - NoSQL Database
 - Scalable
 - Flexible and Fast Project Development
 - No need to define Tables, Columns and Types
 - **Referenced Schema Design**
 - Sub-document size increase

System Design

- Database




Technologies

Technologies

 Spring Boot

 Angular 5

 MongoDB

Technologies

- Spring Boot
 - Lightweight framework
 - Less configuration code
 - Overridable default configuration

Technologies

- Angular 5
 - Front-end Web-application Platform
 - TypeScript
 - JavaScript
 - Complex projects

Technologies


- MongoDB
 - NoSQL DBMS and Document oriented
 - JSON like Documents
 - Collections
 - The Most Popular NoSQL database
 - Storing and retrieving great quantities of data

Implementation



HHCNN

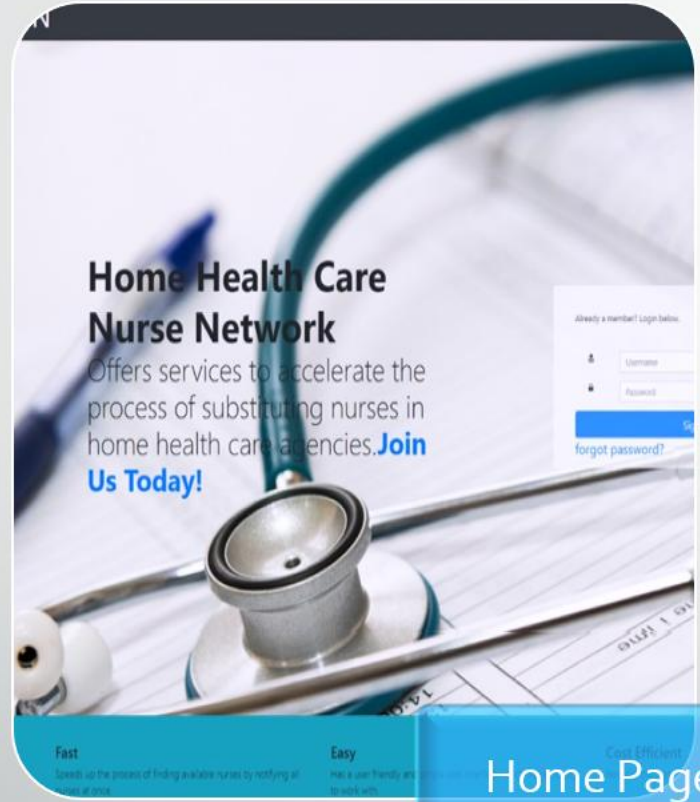
- Registration
- Login
- Patient Management
- User Profile Management
- Assignment Management
-



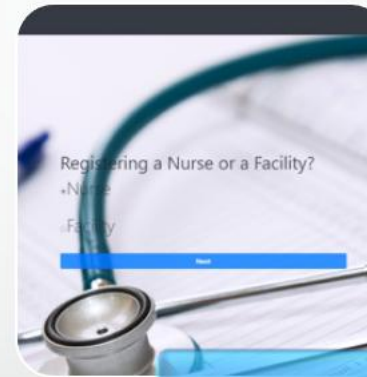
Registration

(in detail)

Registration



Home Page



Nurse or Facility



The registration form is titled "Please fill out the form below:". It contains several input fields: "Username", "Password", "Location", "Email", "Phone Number", "Fax Number", "Company Name", "Company Address", "Company City", "Company State", "Company Zip", "Company Country", "Company Website", "Company Email", "Company Phone", "Company Fax", "Company Mobile", "Company Other". There are also checkboxes for "I am a Nurse" and "I am a Facility".

Registration Form

Registration

HTML Template

```
<div class="panel panel-info bg-light col-6" style="...">
  <h3 align="left" class="mt-2">Please fill out the form below:</h3>
  <form (ngSubmit)="saveNurse()" #nurseForm="ngForm" >
    <div class="mt-5 mb-5 justify-content-center">
      <div class="form-group">
        <label for="firstname">FirstName:</label>
        <input type="text" class="form-control" [(ngModel)]="nurse.firstName" name="firstna
      </div>
      <div class="form-group">
        <label for="lastname">LastName:</label>
        <input type="text" class="form-control" [(ngModel)]="nurse.lastName" name="lastna
      </div>
      <div class="form-group">
        <label for="dateofbirth">DateOfBirth:</label>
        <input type="date" pattern="MM-dd-yyyy" class="form-control" [(ngModel)]="nurse.d
      </div>
      <div class="form-group">
        <label for="gender">Gender:</label>
        <div>
          <input type="radio" checked name="gender" value="male" [(ngModel)]="nurse.gende
          <input type="radio" name="gender" value="female" [(ngModel)]="nurse.gender" > F
          <input type="radio" name="gender" value="other" [(ngModel)]="nurse.gender"> Oth
        </div>
      </div>
      <div class="form-group">
        <label for="zipcode">ZipCode:</label>
        <input type="text" class="form-control" [(ngModel)]="nurse.zipcode" name="zipcode
      </div>
      <div class="form-group">
        <label for="tel">Phone Number:</label>
        <input type="tel" class="form-control" [(ngModel)]="nurse.tel" name="tel" id="te
      </div>
      <div class="form-group">
        <label for="licensenum">License Number:</label>
        <input type="text" class="form-control" [(ngModel)]="nurse.licenseNumber" name="licensenum" id="
      </div>
    </div>
  </form>
</div>
```

TypeScript Class

```
import { HttpClient } from '@angular/common/http';
import { Router } from '@angular/router';

@Component({
  selector: 'app-nurse-registration',
  templateUrl: './nurse-registration.component.html',
  styleUrls: ['./nurse-registration.component.css']
})
export class NurseRegistrationComponent implements OnInit {

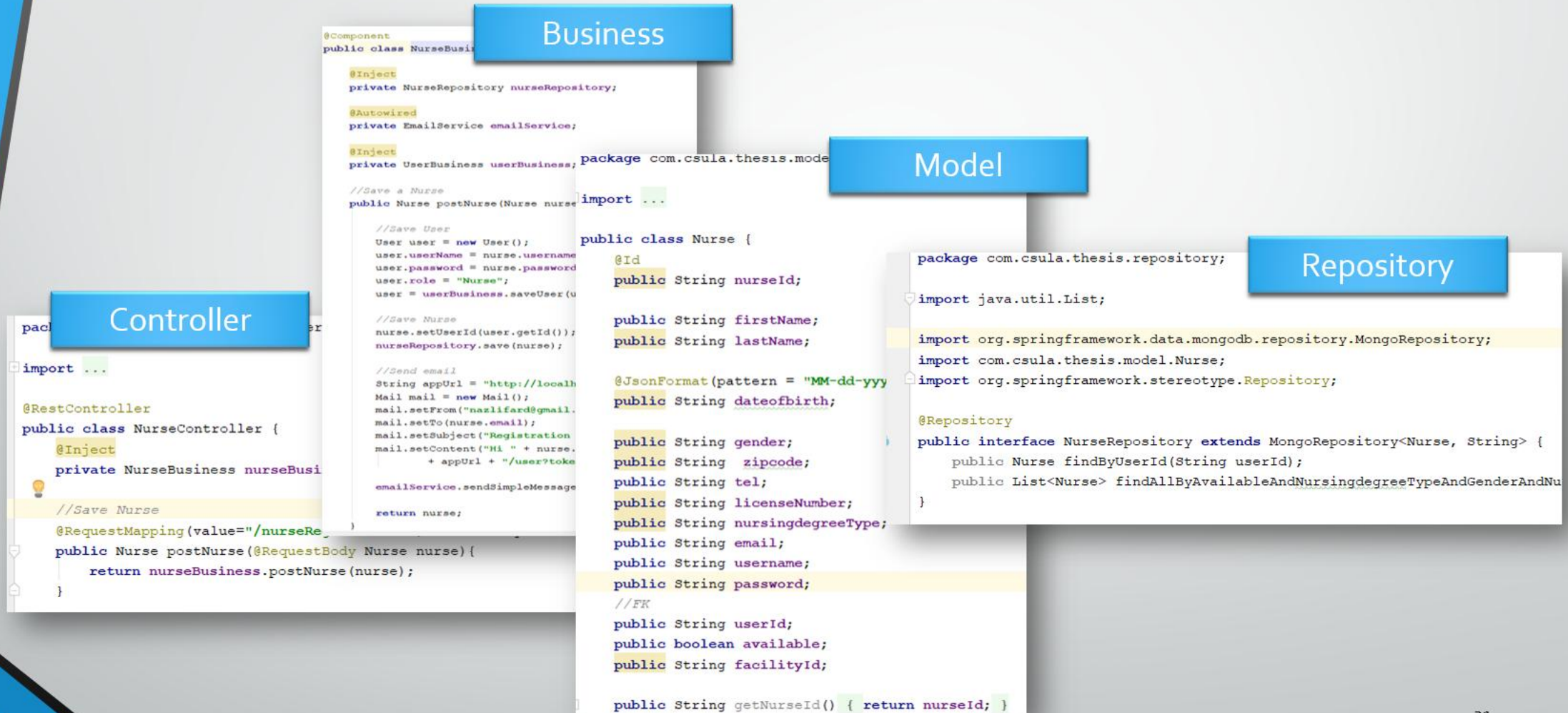
  nurse = { firstName: "", lastName: "", dateofbirth: "", gender: "", zipcode: "", tel: "", licenseNumber: "", email: "", username: "", password: "" };

  constructor(private http: HttpClient, private router: Router) { }

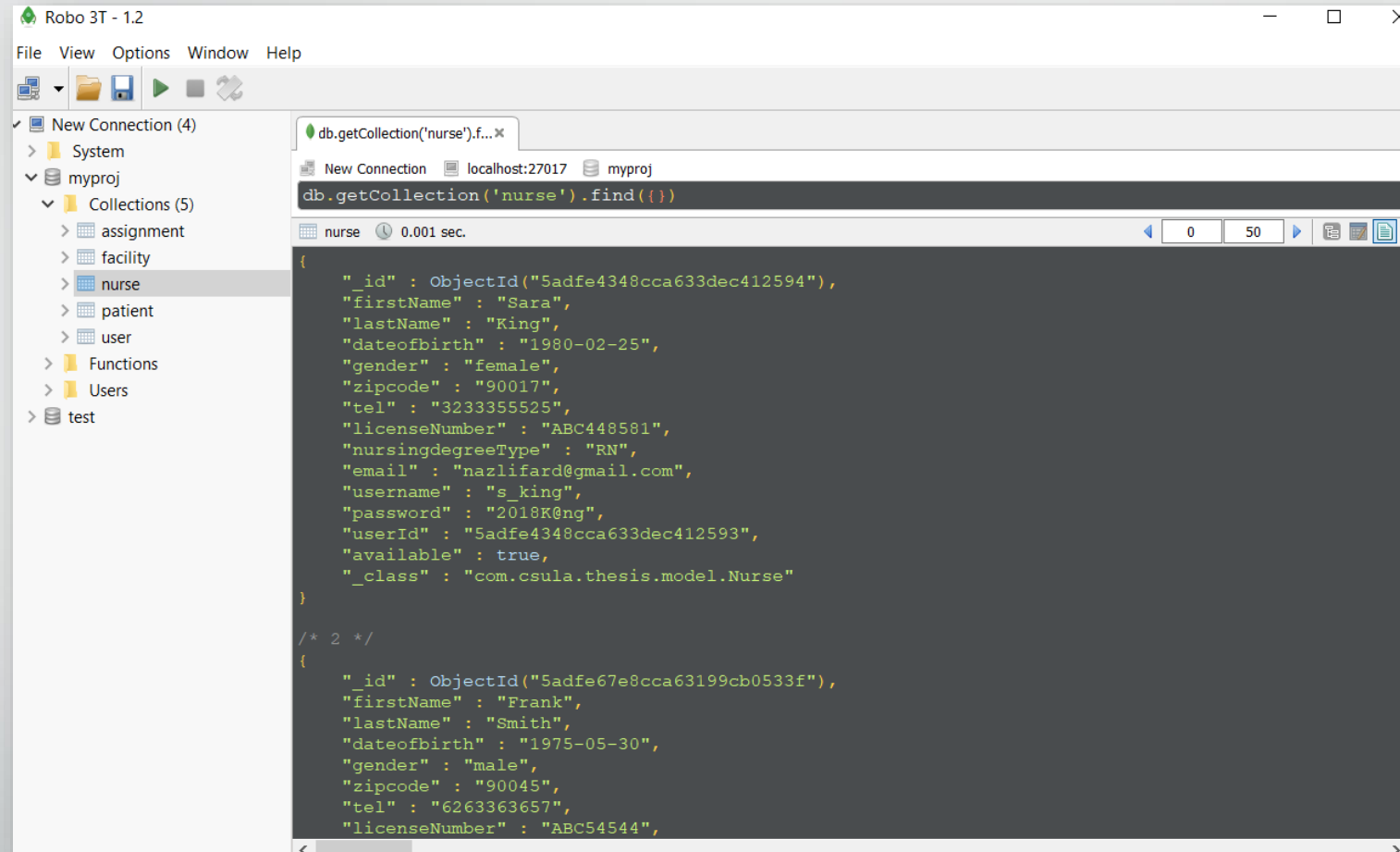
  ngOnInit() {
  }

  saveNurse() {
    this.http.post('/nurseRegistration', this.nurse)
      .subscribe( next: res => {
        this.router.navigate( commands: ['/'] );
      }, error: (err) => {
        console.log(err);
      } );
  }
}
```


Registration



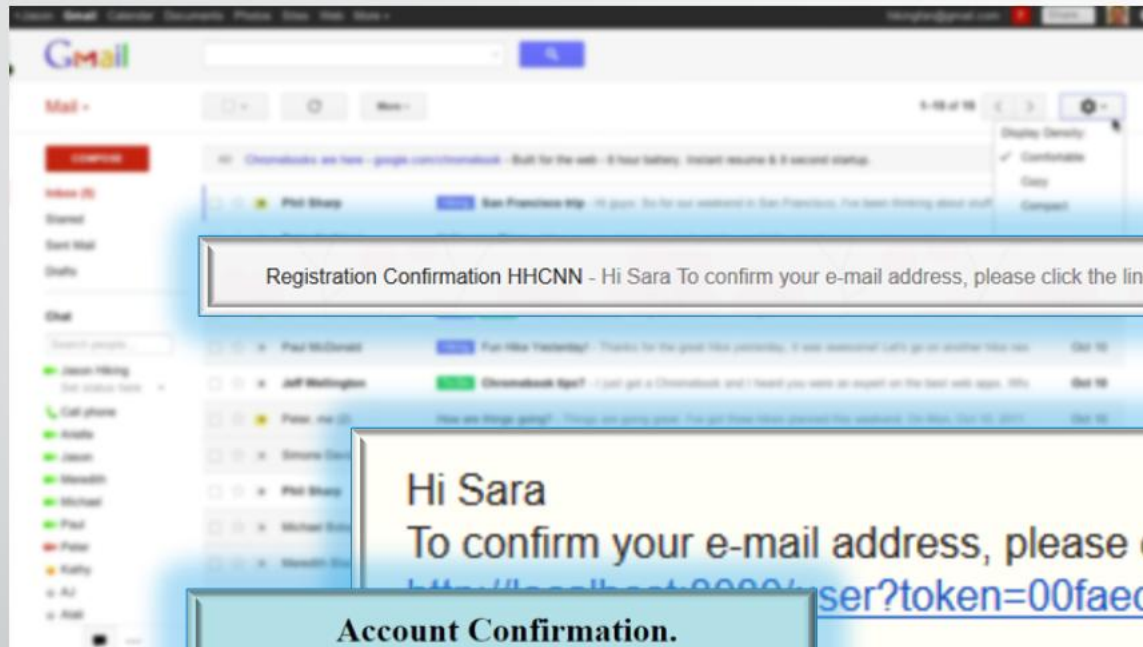
Registration



The screenshot shows the Robo 3T - 1.2 application window. On the left, a tree view shows the database structure: 'myproj' contains collections 'assignment', 'facility', 'nurse', 'patient', and 'user'. The 'nurse' collection is selected. The main pane shows the MongoDB query `db.getCollection('nurse').find({})` and its results. The results are displayed in a table with two rows of JSON documents. The first row represents a nurse named Sara King, and the second row represents a nurse named Frank Smith. Both documents include fields for _id, firstName, lastName, dateofbirth, gender, zipcode, tel, licenseNumber, nursingdegreeType, email, username, password, userId, available, and _class.

```
Robo 3T - 1.2
File View Options Window Help
db.getCollection('nurse').f...
New Connection localhost:27017 myproj
db.getCollection('nurse').find({})
nurse 0.001 sec.
{
  "_id" : ObjectId("5adfe4348cca633dec412594"),
  "firstName" : "Sara",
  "lastName" : "King",
  "dateofbirth" : "1980-02-25",
  "gender" : "female",
  "zipcode" : "90017",
  "tel" : "3233355525",
  "licenseNumber" : "ABC448581",
  "nursingdegreeType" : "RN",
  "email" : "nazlifard@gmail.com",
  "username" : "s_king",
  "password" : "2018K0ng",
  "userId" : "5adfe4348cca633dec412593",
  "available" : true,
  "_class" : "com.csula.thesis.model.Nurse"
}
/* 2 */
{
  "_id" : ObjectId("5adfe67e8cca63199cb0533f"),
  "firstName" : "Frank",
  "lastName" : "Smith",
  "dateofbirth" : "1975-05-30",
  "gender" : "male",
  "zipcode" : "90045",
  "tel" : "6263363657",
  "licenseNumber" : "ABC54544",
```

Registration Confirmation



Registration Confirmation HHCNN - Hi Sara To confirm your e-mail address, please click the link below: <http://localhost:8080/user?token=00faecfe-3a4e-4642-9632-97afe9fbef52>

Hi Sara

To confirm your e-mail address, please click the link below:

<http://localhost:8080/user?token=00faecfe-3a4e-4642-9632-97afe9fbef52>

Account Confirmation.

Thank you for registration, your account has been confirmed.



Login

Login

Home Health Care Nurse Network
Offers services to accelerate the process of substituting nurses in home health care agencies. **Join Us Today!**

Already a member? Login below.

Username
 Password

[forgot password?](#)

Fast
Speeds up the process of finding available nurses by notifying all Nurses at once.

Easy
Has a user friendly and simple user interface, which makes it easy to work with.

Cost Efficient
Reduces the cost from both time and money perspectives.

HHCNN User Interface

Available Assignments

Date	Time	Assignment Type	Nurse Type	Enter Date
2019-05-02	000 pm	Substitute/Short/Reserve	LPN/CNA	2019-05-04 10:00

HHCNN User Interface

Available Assignments

Date	Time	Assignment Type	Nurse Type	Accept Assignment
2019-05-02	000 pm	Substitute/Short/Reserve	LPN/CNA	<input type="button" value="Accept"/>

Upcoming Assignments

Date	Time
2019-05-02	000 pm

Assignment Management

Assignment Management

Available Assignment Notification - Hi Sara There is an available assignment with the date and time specified below Date: 2018-06-02Time: 10:00 AM

Hi Sara

There is an available assignment with the date and time specified below

Date: 2018-06-02Time: 10:00 AM

Add an Assignment

Assignment Type:

Nursing Degree Type:

Patient's Name:

Date:

mm/dd/yyyy

Time:

Available Assignments				
Date	Time	Assignment Type	Nurse Type	Accept Assignment
2018-05-25	1:00 pm	Injection	RN	<input type="checkbox"/> Accept
<input type="button" value="Submit"/>				



HHCNN

- **Notification Conditions**

- Nurse
 - Get notified
- Assignment
 - Assignment Type
 - Nursing Degree
- Patients
 - Preferred Nurse
 - Preferred Nurse Gender

Challenges



Milestone



