Parshvanath Charitable Trust's
A. P. SHAH INSTITUTE OF TECHNOLOGY
(Approved by AICTE New Delhi & Govt. of Maharashtra, Affiliated to University of Mumbai)
(Religious Jain Minority)

Department of CSE (Artificial Intelligence & Machine Learning)

Academic Year: 2024-25
Semester: VI
Class / Branch: T.E./ CSE(AI&ML)
Subject: CC Lab
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Roll No: 107
Date of Performance: 04-04-2025
Date of Submission: 04-04-2025

Assignment-2

Q4) An e-commerce website experiences sudden spikes in traffic during holiday seasons. The IT team wants to leverage Docker containers to automatically scale the application horizontally to handle increased loads. Implement an application using Docker containers to achieve auto-scaling?

Step 1)
Create a new .NET Core Web API Project.
Step 2)
Weather Forecast class with required properties:

```
namespace AutoScaleK8SDemo
{
    public class WeatherForecast
    {
        public DateTime Date { get; set; }

        public int TemperatureC { get; set; }

        public int TemperatureF => 32 + (int)(TemperatureC / 0.5556);

        public string? Summary { get; set; }
    }
}
```

Step 3)
Weather forecast controller with action method

```
using Microsoft.AspNetCore.Mvc;

namespace AutoScaleK8SDemo.Controllers
{
    [ApiController]
    [Route("[controller]")]
    public class WeatherForecastController : ControllerBase
    {
        private static readonly string[] Summaries = new[]
```

```
        {
        "Freezing", "Bracing", "Chilly", "Cool", "Mild", "Warm",
"Balmy", "Hot", "Sweltering", "Scorching"
    };

        private readonly ILogger<WeatherForecastController> _logger;

        public
WeatherForecastController(ILogger<WeatherForecastController> logger)
        {
            _logger = logger;
        }

        [HttpGet(Name = "GetWeatherForecast")]
        public IEnumerable<WeatherForecast> Get()
        {
            return Enumerable.Range(1, 5).Select(index => new
WeatherForecast
            {
                Date = DateTime.Now.AddDays(index),
                TemperatureC = Random.Shared.Next(-20, 55),
                Summary =
Summaries[Random.Shared.Next(Summaries.Length)]
            })
            .ToArray();
        }
    }
}

Step 4)
Register for the required services
var builder = WebApplication.CreateBuilder(args);

// Add services to the container.
builder.Services.AddControllers();
// Learn more about configuring Swagger/OpenAPI at
https://aka.ms/aspnetcore/swashbuckle
builder.Services.AddEndpointsApiExplorer();
builder.Services.AddSwaggerGen();

var app = builder.Build();
```

```
// Configure the HTTP request pipeline.
app.UseSwagger();
app.UseSwaggerUI();

app.UseAuthorization();

app.MapControllers();

app.Run();
```

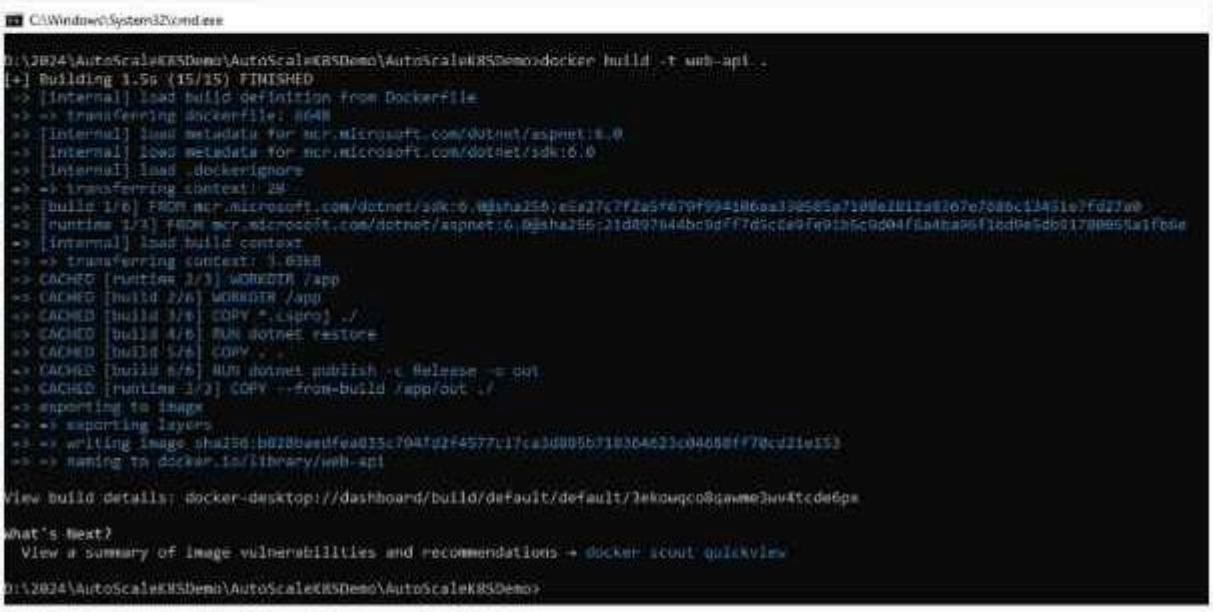
Step 5)

Create a Docker image for our newly created application

```
# Use the official .NET Core SDK as a parent image
FROM mcr.microsoft.com/dotnet/sdk:6.0 AS build
WORKDIR /app

# Copy the project file and restore any dependencies (use .csproj for
the project name)
COPY *.csproj ./
RUN dotnet restore

# Copy the rest of the application code
COPY . .

# Publish the application
RUN dotnet publish -c Release -o out

# Build the runtime image
FROM mcr.microsoft.com/dotnet/aspnet:6.0 AS runtime
WORKDIR /app
COPY --from=build /app/out ./

# Expose the port your application will run on
EXPOSE 80

# Start the application
ENTRYPOINT ["dotnet", "AutoScaleK8SDemo.dll"]
```

Step 6)

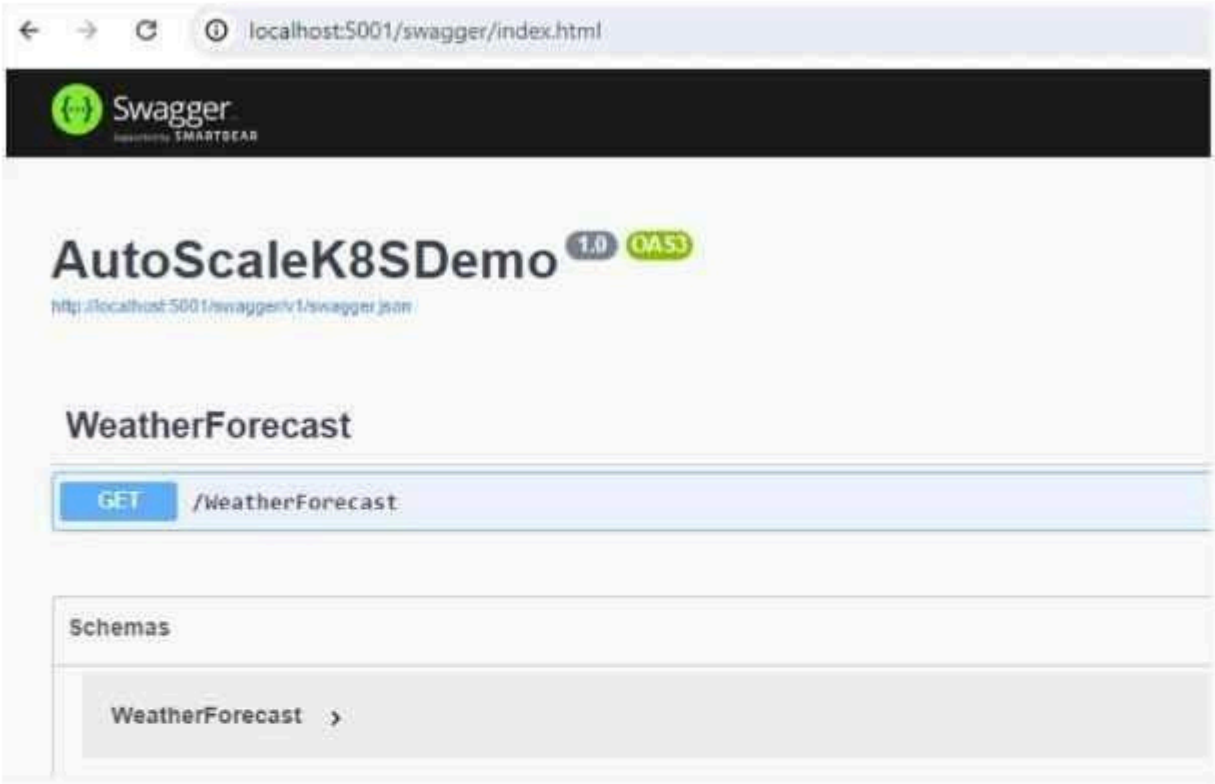
Build the Docker image. docker build -t web-api.



Step 7)

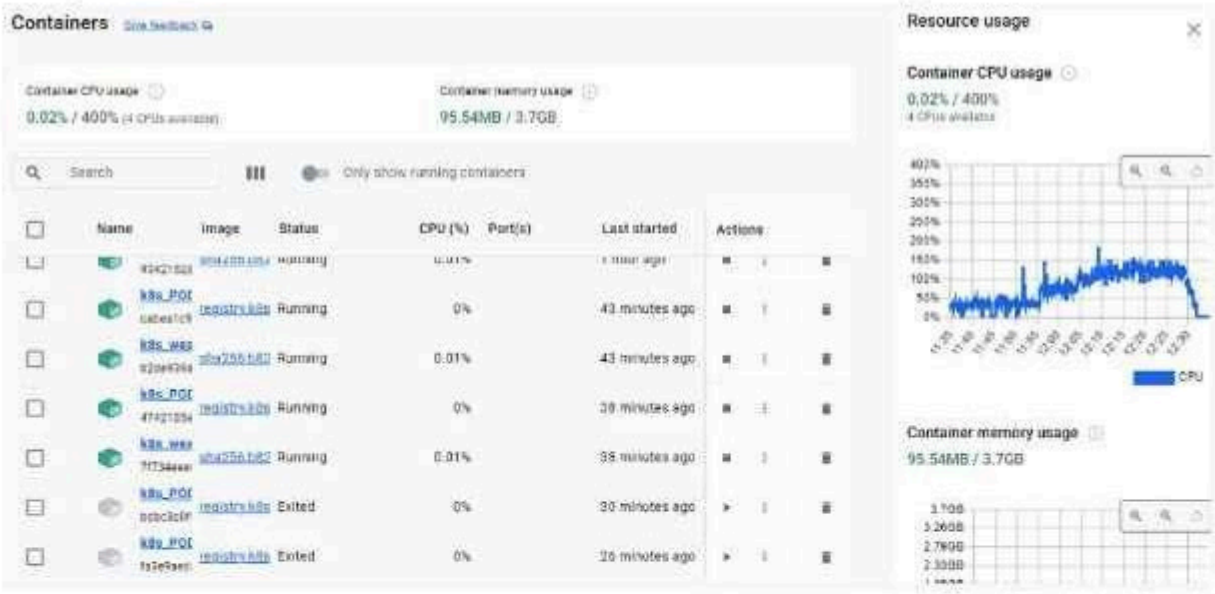
Run the docker image inside a docker container.

docker run -d -p 5001:80 — name web-api-container web-api



C:\Windows\System32\cmd.exe

```
D:\2024\AutoScaleK8SDemo\AutoScaleK8SDemo>kubectl get deployment
NAME                                READY   UP-TO-DATE   AVAILABLE   AGE
weatherforecast-app-deployment      1/1     1            1           6m45s

D:\2024\AutoScaleK8SDemo\AutoScaleK8SDemo>kubectl get services
NAME                          TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)        AGE
kubernetes                    ClusterIP   10.96.0.1        <none>        443/TCP        4h31m
weatherforecast-app-service   NodePort    10.110.147.151   <none>        80:30138/TCP   6m45s

D:\2024\AutoScaleK8SDemo\AutoScaleK8SDemo>kubectl get pods
NAME                                              READY   STATUS    RESTARTS   AGE
weatherforecast-app-deployment-cc6c76747-djhfv    1/1     Running   0          6m56s

D:\2024\AutoScaleK8SDemo\AutoScaleK8SDemo>kubectl get namespace
NAME              STATUS   AGE
default           Active   4h33m
kube-node-lease   Active   4h33m
kube-public       Active   4h33m
kube-system       Active   4h33m

D:\2024\AutoScaleK8SDemo\AutoScaleK8SDemo>
```

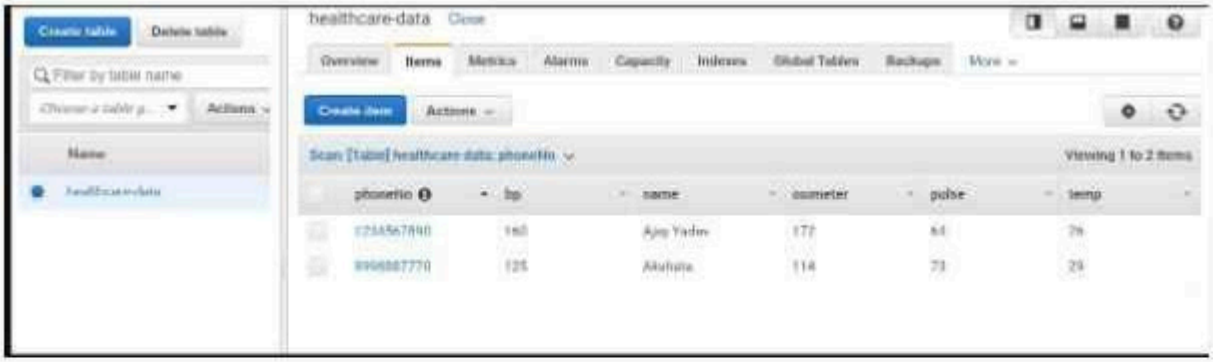


Q5) Create web application for health care system using cloud services and deploy them using public cloud.

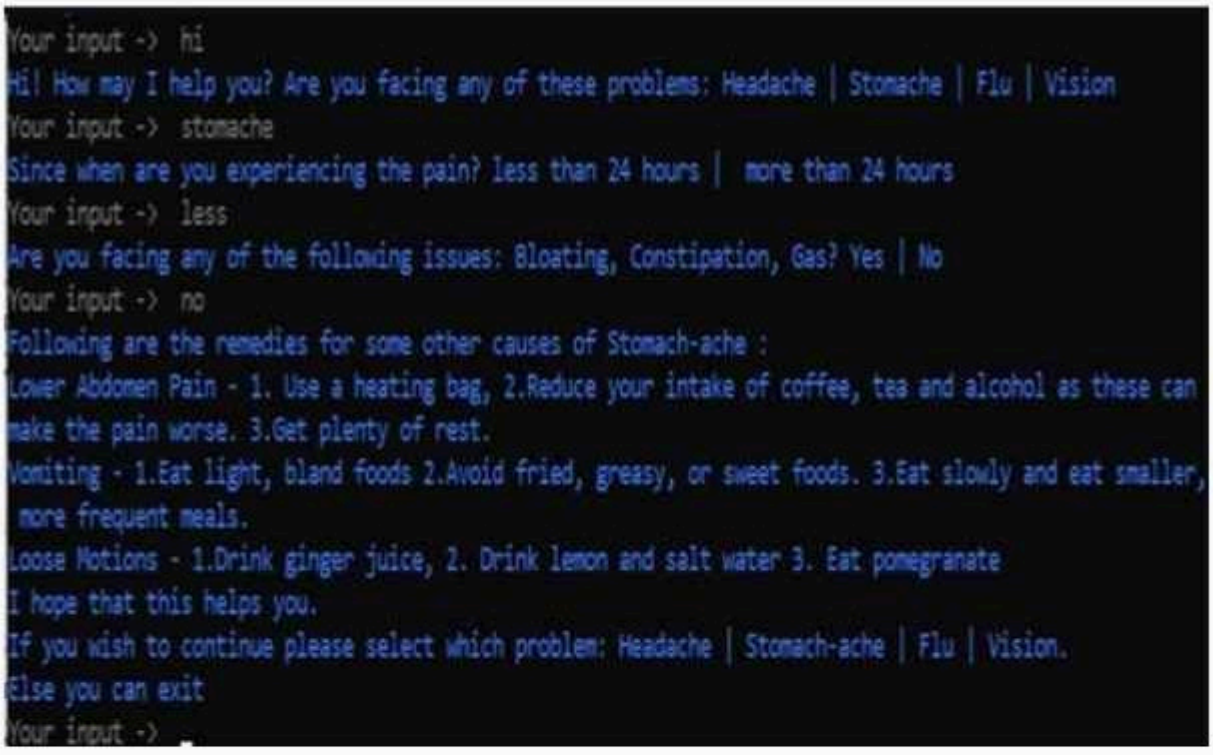
Step1)

Step 2)

Step 3)


Create table
Delete table
Filter by table name
Actions
Name
healthcare-data
Close
Overview
Items
Metrics
Alarms
Capacity
Indexes
Global Tables
Backups
More
Create item
Actions
Scan [Table] healthcare-data: phoneNo
Viewing 1 to 2 items
phoneNo
bp
name
oxymeter
pulse
temp
Ajay Yadav
Akshata

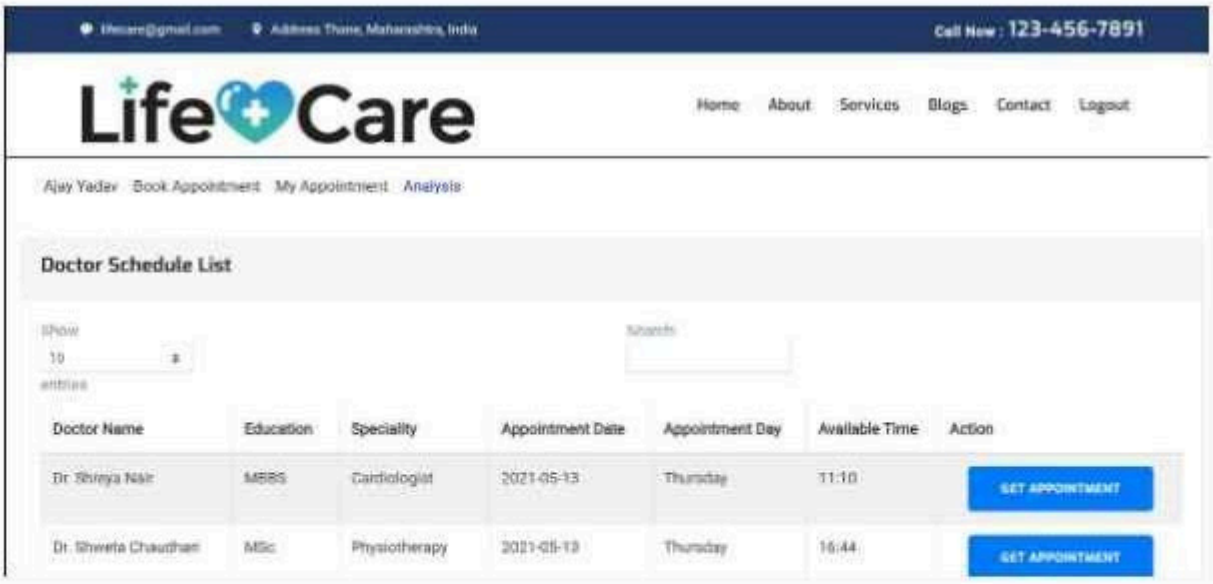
Step 4)


Your input -> hi
Hi! How may I help you? Are you facing any of these problems: Headache | Stomache | Flu | Vision
Your input -> stomache
Since when are you experiencing the pain? less than 24 hours | more than 24 hours
Your input -> less
Are you facing any of the following issues: Bloating, Constipation, Gas? Yes | No
Your input -> no
Following are the remedies for some other causes of Stomach-ache :
Lower Abdomen Pain - 1. Use a heating bag, 2.Reduce your intake of coffee, tea and alcohol as these can make the pain worse. 3.Get plenty of rest.
Vomiting - 1.Eat light, bland foods 2.Avoid fried, greasy, or sweet foods. 3.Eat slowly and eat smaller, more frequent meals.
Loose Motions - 1.Drink ginger juice, 2. Drink lemon and salt water 3. Eat pomegranate
I hope that this helps you.
If you wish to continue please select which problem: Headache | Stomach-ache | Flu | Vision.
Else you can exit
Your input ->

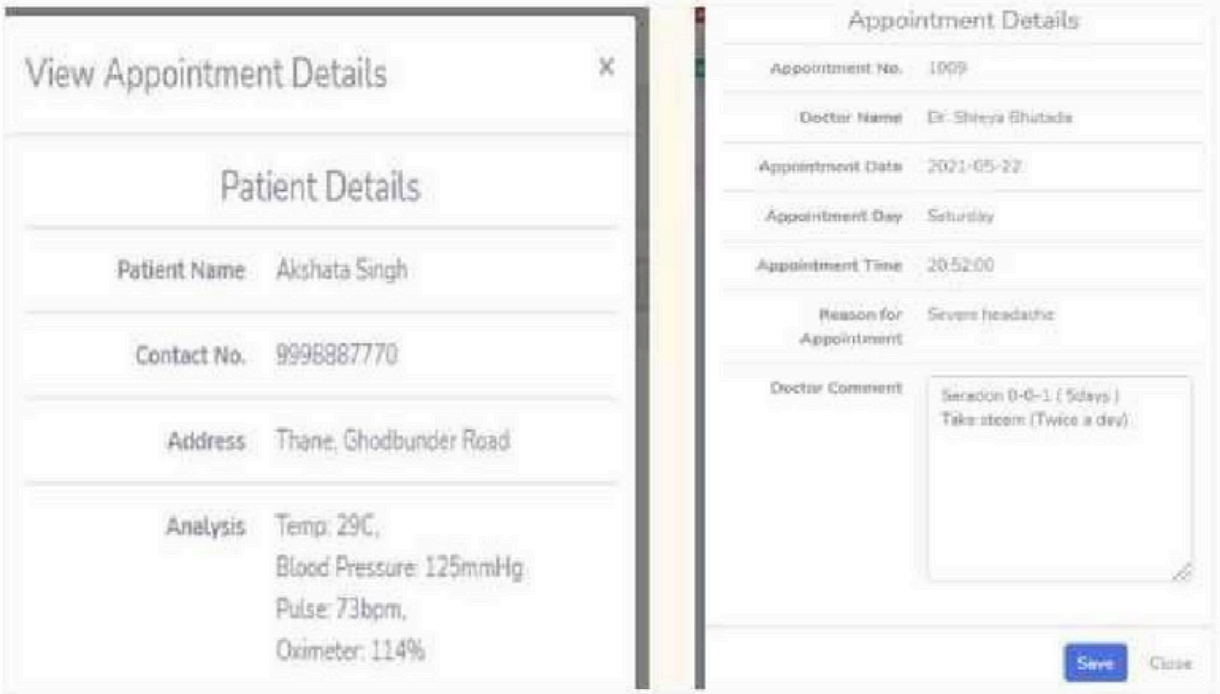
Step5)

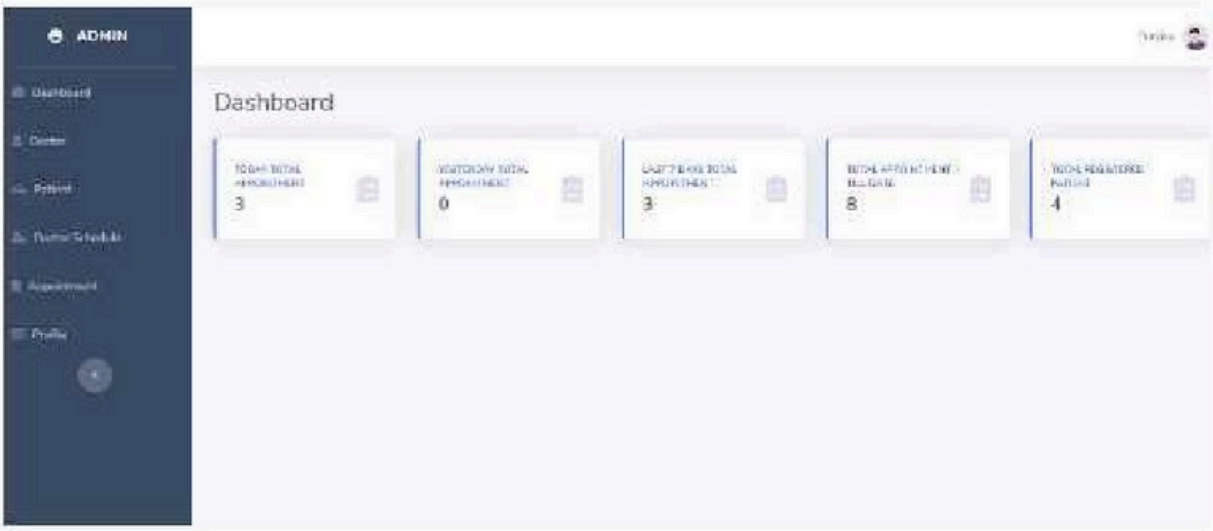

Life Care
Home
About
Services
Doctors
Blogs
Contact
Login/Register
We Care Your Health

Step6)


Call Now : 123-456-7891
Life Care
Home
About
Services
Blogs
Contact
Logout
Ajay Yadav
Book Appointment
My Appointment
Analysis
Doctor Schedule List
Doctor Name
Education
Speciality
Appointment Date
Appointment Day
Available Time
Action
Dr. Shreya Nair
MBBS
Cardiologist
2021-05-13
Thursday
11:10
GET APPOINTMENT
Dr. Shweta Chaudhari
MSc
Physiotherapy
2021-05-13
Thursday
16:44
GET APPOINTMENT

Step7)


View Appointment Details
Patient Details
Patient Name
Akshata Singh
Contact No.
9998887770
Address
Thane, Ghodbunder Road
Analysis
Temp: 29C,
Blood Pressure: 125mmHg
Pulse: 73bpm,
Oximeter: 114%
Appointment Details
Appointment No.
1009
Doctor Name
Dr. Shreya Bhatade
Appointment Date
2021-05-22
Appointment Day
Saturday
Appointment Time
20:52:00
Reason for Appointment
Severe headache
Doctor Comment
Session 0-0-1 (5days)
Take steam (Twice a day)
Save
Close


ADMIN
Dashboard
3
0
3
8
4