

# **MedTrack: AWS Cloud-Enabled Healthcare Management System**

## **Project Description:**

In today's fast-evolving healthcare landscape, efficient communication and coordination between doctors and patients are crucial. MedTrack is a cloud-based healthcare management system that streamlines patient doctor interactions by providing a centralized platform for booking appointments, managing medical histories, and enabling diagnosis submissions. To address these challenges, the project utilizes Flask for backend development, AWS EC2 for hosting, and DynamoDB for managing data. MedTrack allows patients to register, log in, book appointments, and submit diagnosis reports online. The system ensures real-time notifications, enhancing communication between doctors and patients regarding appointments and medical submissions. Additionally, AWS Identity and Access Management (IAM) is employed to ensure secure access control to AWS resources, allowing only authorized users to access sensitive data. This cloud-based solution improves accessibility and efficiency in healthcare services for all users.

## **Scenarios:**

### **Scenario 1: Efficient Appointment Booking System for Patients**

In the MedTrack system, AWS EC2 provides a reliable infrastructure to manage multiple patients accessing the platform simultaneously. For example, a patient can log in, navigate to the appointment booking section, and easily submit a request for an appointment. Flask handles backend operations, efficiently retrieving and processing user data in real-time. The cloud-based architecture allows the platform to handle a high volume of appointment requests during peak periods, ensuring smooth operation without delays.

### **Scenario 2: Secure User Management with IAM**

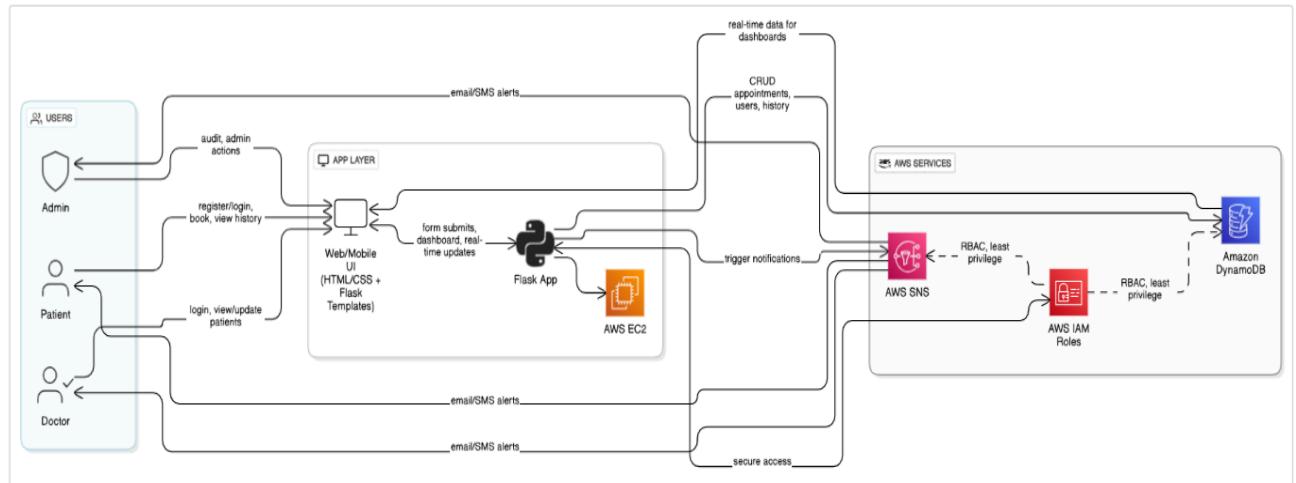
MedTrack utilizes AWS IAM to manage user permissions and ensure secure access to the system. For instance, when a new patient registers, an IAM user is created with specific roles and permissions to access only the features relevant to them. Doctors have their own IAM configurations, allowing them access to patient records and appointment details while maintaining strict security protocols. This setup ensures that sensitive data is accessible only to authorized users.

### **Scenario 3: Easy Access to Medical History and Resources**

The MedTrack system provides doctors and patients with easy access to medical histories and relevant resources. For example, a patient logs in to view their medical history and upcoming appointments. Doctors diagnose conditions and prescribe necessary medications to their patients. Flask manages real-time data fetching from DynamoDB, while EC2 hosting ensures the platform performs seamlessly even when multiple users access it simultaneously, offering a smooth and uninterrupted user experience.

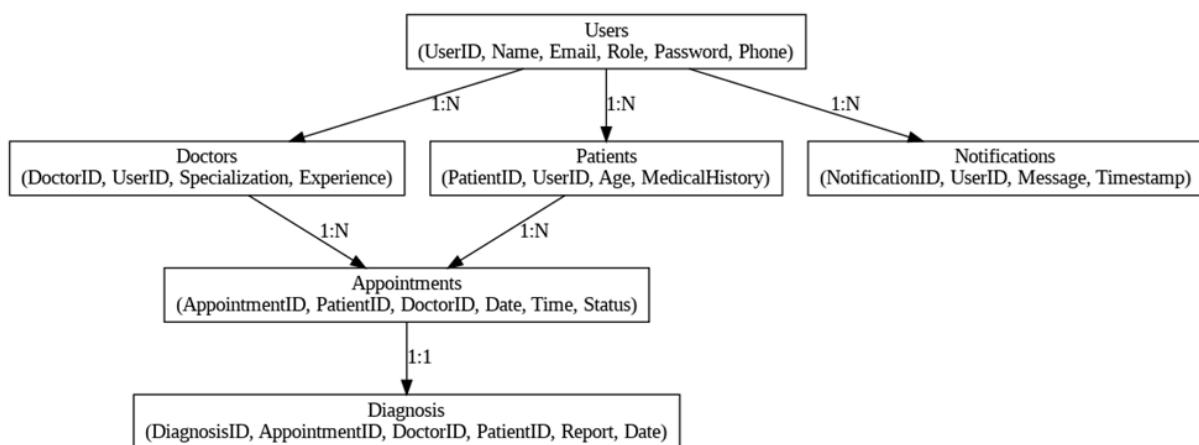
## Architecture

This AWS-based architecture powers a scalable and secure web application using Amazon EC2 for hosting the backend, with a lightweight framework like Flask handling core logic. Application data is stored in Amazon DynamoDB, ensuring fast, reliable access, while user access is managed through AWS IAM for secure authentication and control. Real-time alerts and system notifications are enabled via Amazon SNS, enhancing communication and user engagement.



## Entity Relationship (ER) Diagram

An ER (Entity-Relationship) diagram visually represents the logical structure of a database by defining entities, their attributes, and the relationships between them. It helps organize data efficiently by illustrating how different components of the system interact and relate. This structured approach supports effective database normalization, data integrity, and simplified query design.



## Pre-requisites

- AWS Account Setup:  
<https://docs.aws.amazon.com/accounts/latest/reference/getting-started.html>
- AWS IAM (Identity and Access Management):  
<https://docs.aws.amazon.com/IAM/latest/UserGuide/introduction.html>
- AWS EC2 (Elastic Compute Cloud):  
<https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/concepts.html>
- AWS DynamoDB:  
<https://docs.aws.amazon.com/amazondynamodb/Introduction.html>
- Amazon SNS:  
<https://docs.aws.amazon.com/sns/latest/dg/welcome.html>
- Git Documentation:  
<https://git-scm.com/doc>
- VS Code Installation: (download the VS Code using the below link or you can get that in Microsoft store)  
<https://code.visualstudio.com/download>

## **Project WorkFlow**

### **Milestone 1. AWS Account Setup and Login**

**Activity 1.1:** Set up an AWS account if not already done.

**Activity 1.2:** Log in to the AWS Management Console.

### **Milestone 2. DynamoDB Database Creation and Setup**

**Activity 2.1:** Create a DynamoDB Table.

**Activity 2.2:** Configure Attributes for User Data and Book Requests.

### **Milestone 3. SNS Notification Setup**

**Activity 3.1:** Create SNS topics for book request notifications.

**Activity 3.2:** Subscribe users and library staff to SNS email notifications.

### **Milestone 4. Backend Development and Application Setup**

**Activity 4.1:** Develop the Backend Using Flask.

**Activity 4.2:** Integrate AWS Services Using boto3.

### **Milestone 5. IAM Role Setup**

**Activity 5.1:** Create IAM Role

**Activity 5.2:** Attach Policies

### **Milestone 6. EC2 Instance Setup**

**Activity 6.1:** Launch an EC2 instance to host the Flask application.

**Activity 6.2:** Configure security groups for HTTP, and SSH access.

### **Milestone 7. Deployment on EC2**

**Activity 7.1:** Upload Flask Files

**Activity 7.2:** Run the Flask App

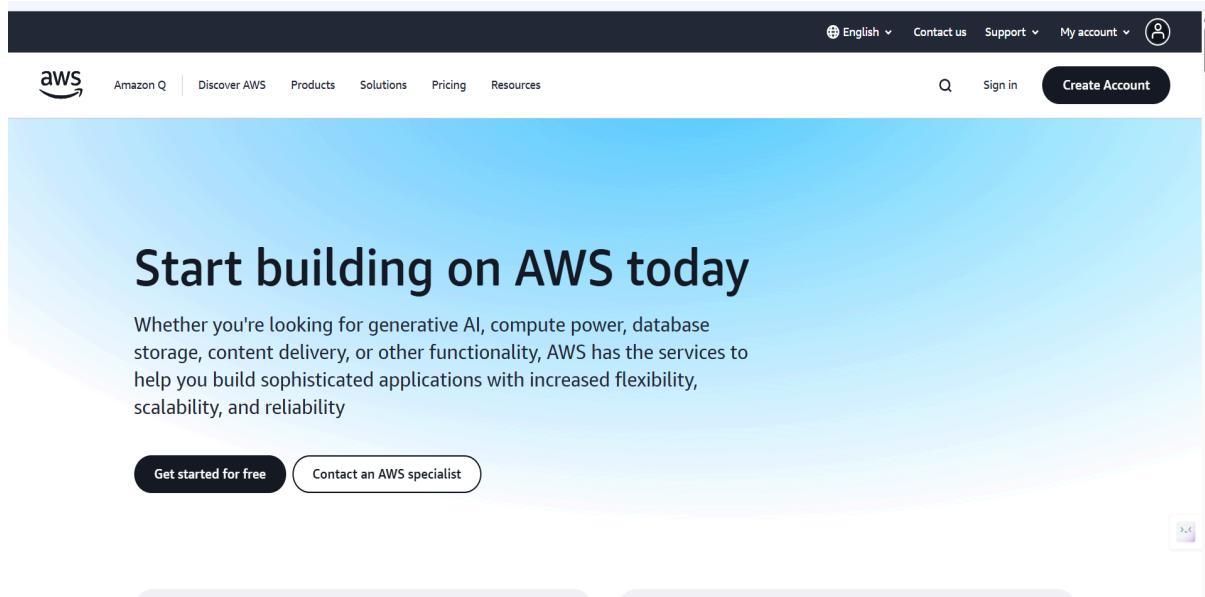
### **Milestone 8. Testing and Deployment**

**Activity 8.1:** Conduct functional testing to verify user registration, login, book requests, and notifications.

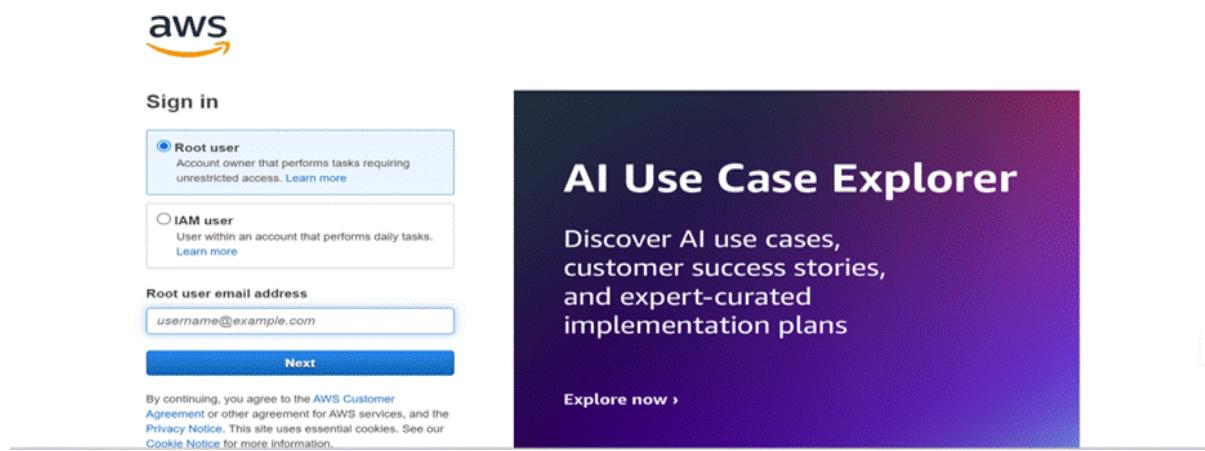
## Milestone 1. AWS Account Setup and Login

**Activity 1.1:** Set up an AWS account if not already done.

- Sign up for an AWS account and configure billing settings.



- **Activity 1.2:** Log in to the AWS Management Console
  - After setting up your account, log in to the AWS Management Console.



## Milestone 2. DynamoDB Database Creation and Setup

### Activity 2.1: Create a DynamoDB Table.

- In the AWS Console, navigate to DynamoDB and click on create tables.

The screenshot shows the AWS EC2 Instances page. On the left, there's a sidebar with 'EC2' selected. Under 'Instances', it lists 'Instances' (with one item), 'Launch Templates', 'Spot Requests', 'Savings Plans', 'Reserved Instances', 'Dedicated Hosts', and 'Capacity Reservations'. On the right, a search bar for 'dynamoDB' is at the top. Below it, the 'Services' section has 'DynamoDB' highlighted. Other services listed are 'Amazon DocumentDB' and 'CloudFront'. The 'Features' section includes 'Settings' (with 'DynamoDB feature'), 'Clusters' (with 'DynamoDB feature'), and 'DHCP options sets' (with 'VPC feature'). A message 'Were these results helpful?' with 'Yes' and 'No' buttons is at the bottom. The main content area shows a single instance card:

Instance state	Actions	Launch instances
passec	View alarms +	us-east-1c ec2-54-145-226-169.compute-1.amazonaws.com
Private IP4 addresses 172.31.19.228		
Public DNS ec2-54-145-226-169.compute-1.amazonaws.com   open address		

At the bottom, the URL is https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances: and the page footer includes © 2025, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, and Cookie preferences.

The screenshot shows the DynamoDB Dashboard. On the left, a sidebar has 'Dashboard' selected under 'Tables' and 'DAX' sections. The main dashboard has two sections: 'Alarms (0) Info' and 'DAX clusters (0) Info'. The 'Create resources' section on the right contains a large orange 'Create table' button and a smaller 'Create DAX cluster' button. A 'What's new' section at the bottom right mentions 'AWS Cost Management now provides purchase recommendations for Amazon DynamoDB...'.

- **Activity 2.2:** Create a DynamoDB table for storing registration details and book requests.
  - Create medtrack\_users table with partition key “Email” with type String and click on create tables.

**Table details** Info

DynamoDB is a schemaless database that requires only a table name and a primary key when you create the table.

**Table name**  
This will be used to identify your table.

**Partition key**  
The partition key is part of the table's primary key. It is a hash value that is used to retrieve items from your table and allocate data across hosts for scalability and availability.

**Sort key - optional**  
You can use a sort key as the second part of a table's primary key. The sort key allows you to sort or search among all items sharing the same partition key.

**Table settings**

**Default settings**  
The fastest way to create your table. You can modify most of these settings after your table has been created. To modify these settings now, choose 'Customize settings'.

**Customize settings**  
Use these advanced features to make DynamoDB work better for your needs.

Table class	DynamoDB Standard	Yes
Capacity mode	Provisioned	Yes
Provisioned read capacity	5 RCU	Yes
Provisioned write capacity	5 WCU	Yes
Auto scaling	On	Yes
Local secondary indexes	-	No
Global secondary indexes	-	Yes
Encryption key management	Owned by Amazon DynamoDB	Yes
Deletion protection	Off	Yes
Resource-based policy	Not active	Yes

**Tags**  
Tags are pairs of keys and optional values, that you can assign to AWS resources. You can use tags to control access to your resources or track your AWS spending.

No tags are associated with the resource.  
  
You can add 50 more tags.

- Create medtrack\_appointments Table with partition key “appointment\_id” with type String and click on create tables.

The screenshot shows the 'Create table' wizard in the AWS DynamoDB console. The 'Table details' section includes a 'Share your feedback on Amazon DynamoDB' survey banner. The 'Table name' is set to 'medtrack\_appointments'. The 'Partition key' is 'appointment\_id' of type String. The 'Sort key - optional' field is empty. In the 'Table settings' section, the 'Default settings' radio button is selected, and the table class is 'DynamoDB Standard'. Provisioned read capacity is set to 5 RCU and provisioned write capacity to 5 WCU. Other settings like auto scaling, local secondary indexes, and encryption key management are also configured. The 'Tags' section shows no tags are associated with the resource. At the bottom right are 'Cancel' and 'Create table' buttons.

- Create medtrack\_prescriptions Table with partition key “prescription\_id” with type String and click on create tables.

The screenshot shows the 'Create table' wizard in the AWS DynamoDB console. The 'Table details' section includes a 'Share your feedback on Amazon DynamoDB' survey banner. The 'Table name' is set to 'medtrack\_prescriptions'. The 'Partition key' is 'prescription\_id' of type String. The 'Sort key - optional' field is empty. In the 'Table settings' section, the 'Default settings' radio button is selected, and the table class is 'DynamoDB Standard'. Provisioned read capacity is set to 5 RCU and provisioned write capacity to 5 WCU. Other settings like auto scaling, local secondary indexes, and encryption key management are also configured. The 'Tags' section shows no tags are associated with the resource. At the bottom right are 'Cancel' and 'Create table' buttons.

- Similarly Create medtrack\_medication\_remainders Table with partition key “reminder\_id” with type String and click on create tables.

The screenshot shows the AWS DynamoDB console. The left sidebar has 'DynamoDB' selected under 'Tables'. The main area displays a table titled 'Tables (4) Info' with the following data:

Name	Status	Partition key	Sort key	Indexes	Replication Regions	Deletion protection	Favorite
medtrack_appointments	Active	appointment_id (\$)	-	0 0	Off	Off	☆
medtrack_medication_reminders	Active	reminder_id (\$)	-	0 0	Off	Off	☆
medtrack_prescriptions	Active	prescription_id (\$)	-	0 0	Off	Off	☆
medtrack_users	Active	email (\$)	-	0 0	Off	Off	☆

A green success message at the top right says: "The medtrack\_medication\_reminders table was created successfully."

## Milestone 3. SNS Notification Setup

**Activity 3.1:** Create SNS topics for book request notifications.

- In the AWS Console, search for SNS and navigate to the SNS Dashboard.

The screenshot shows the AWS search interface for 'sns'. On the left, there's a sidebar with navigation links for DynamoDB, Tables, and DAX. The main area displays search results under 'Services' and 'Features' categories. Under 'Services', there are cards for 'Simple Notification Service' (SNS managed message topics for Pub/Sub), 'Route 53 Resolver' (Resolve DNS queries in your Amazon VPC and on-premises network), and 'Route 53' (Scalable DNS and Domain Name Registration). Under 'Features', there are cards for 'Events' (ElastiCache feature), 'SMS' (AWS End User Messaging feature), and 'Hosted zones' (Route 53 feature). At the bottom, there's a feedback section and a 'Resources' search bar.

The screenshot shows the Amazon SNS homepage. It features a 'New Feature' announcement about in-place message archiving and replay for FIFO topics. Below this, there's a section titled 'Application Integration' with a large heading 'Amazon Simple Notification Service' and a sub-section 'Pub/sub messaging for microservices and serverless applications.' To the right, there's a 'Create topic' form with a 'Topic name' field containing 'MyTopic', a 'Next step' button, and a link to 'Start with an overview'. At the bottom right, there's a 'Pricing' section.

- Click on **Create Topic** and choose a name for the topic.

The screenshot shows the 'Topics' page in the Amazon SNS console. It lists 'Topics (0)' and includes a search bar, edit, delete, publish message, and create topic buttons. A note says 'No topics' and 'To get started, create a topic.' with a 'Create topic' button below it.

- Choose Standard type for general notification use cases and Click on Create Topic.

**Details**

**Type** [Info](#)  
Topic type cannot be modified after topic is created

**FIFO (first-in, first-out)**

- Strictly-preserved message ordering
- Exactly-once message delivery
- Subscription protocols: SQS

**Standard**

- Best-effort message ordering
- At-least once message delivery
- Subscription protocols: SQS, Lambda, Data Firehose, HTTP, SMS, email, mobile application endpoints

**Name**  
Medtrack  
Maximum 256 characters. Can include alphanumeric characters, hyphens (-) and underscores (\_).

**Display name - optional** [Info](#)  
To use this topic with SMS subscriptions, enter a display name. Only the first 10 characters are displayed in an SMS message.  
My Topic  
Maximum 100 characters.

**Encryption - optional**  
Amazon SNS provides in-transit encryption by default. Enabling server-side encryption adds at-rest encryption to your topic.

**Access policy - optional** [Info](#)  
This policy defines who can access your topic. By default, only the topic owner can publish or subscribe to the topic.

**Access policy - optional** [Info](#)  
This policy defines who can access your topic. By default, only the topic owner can publish or subscribe to the topic.

**Data protection policy - optional** [Info](#)  
This policy defines which sensitive data to monitor and to prevent from being exchanged via your topic.

**Delivery policy (HTTP/S) - optional** [Info](#)  
The policy defines how Amazon SNS retries failed deliveries to HTTP/S endpoints. To modify the default settings, expand this section.

**Delivery status logging - optional** [Info](#)  
These settings configure the logging of message delivery status to CloudWatch Logs.

**Tags - optional**  
A tag is a metadata label that you can assign to an Amazon SNS topic. Each tag consists of a key and an optional value. You can use tags to search and filter your topics and track your costs. [Learn more](#)

**Active tracing - optional** [Info](#)  
Use AWS X-Ray active tracing for this topic to view its traces and service map in Amazon CloudWatch. Additional costs apply.

[Cancel](#) [Create topic](#)

- Configure the SNS topic and note down the **Topic ARN**.

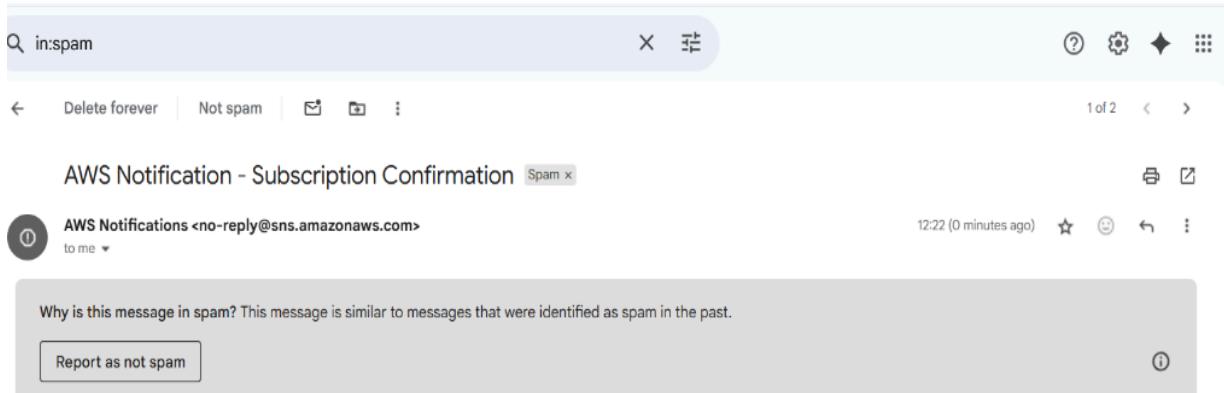
The screenshot shows the AWS SNS Topics page. A blue banner at the top right says "New Feature: Amazon SNS now supports High Throughput FIFO topics. Learn more". Below it, a green banner says "Topic Medtrack created successfully. You can create subscriptions and send messages to them from this topic." On the left sidebar, under "Mobile", there are links for "Push notifications" and "Text messaging (SMS)". The main content area is titled "Medtrack" and shows "Details" for the topic. It includes fields for Name (Medtrack), ARN (arn:aws:sns:us-east-1:418272775181:Medtrack), and Type (Standard). To the right, there are fields for Display name (empty) and Topic owner (418272775181). Below the details, a navigation bar has "Subscriptions" selected. The "Subscriptions (0)" section shows a table with columns for ID, Endpoint, Status, and Protocol. There are buttons for "Edit", "Delete", "Request confirmation", "Confirm subscription", and "Create subscription".

- **Activity 3.2:** Subscribe users and staff to relevant SNS topics to receive real-time notifications when a book request is made.
  - Subscribe users (or admin staff) to this topic via email. When a book request is made, notifications will be sent to the subscribed emails.

The screenshot shows the "Create subscription" wizard. Step 1: Details. It shows the Topic ARN (arn:aws:sns:us-east-1:418272775181:Medtrack) and the Protocol (Email) selected. The Endpoint field contains "manishvamsi1@gmail.com". A note at the bottom says "After your subscription is created, you must confirm it." Step 2: Subscription filter policy - optional. It says "This policy filters the messages that a subscriber receives." Step 3: Redrive policy (dead-letter queue) - optional.

- After subscription request for the mail confirmation

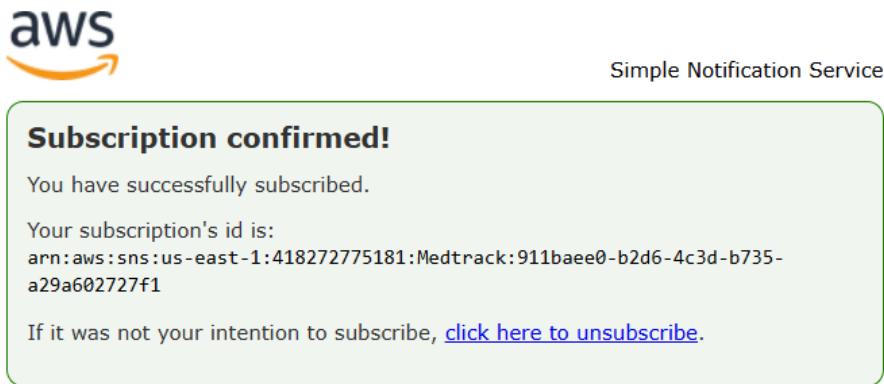
- Navigate to the subscribed Email account and Click on the confirm subscription in the AWS Notification- Subscription Confirmation mail.



You have chosen to subscribe to the topic:  
**arn:aws:sns:us-east-1:418272775181:Medtrack**

To confirm this subscription, click or visit the link below (If this was in error no action is necessary)  
[Confirm subscription](#)

Please do not reply directly to this email. If you wish to remove yourself from receiving all future SNS subscription confirmation requests please send an email to [sns-opt-out](#)

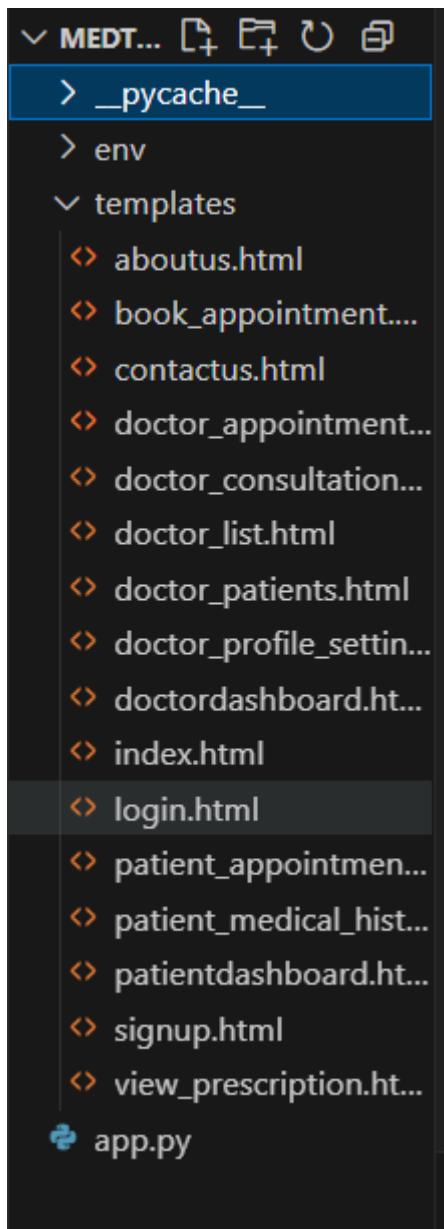


- Successfully done with the SNS mail subscription and setup, store the ARN link.

## Milestone 4. Backend Development and Application Setup

**Activity 4.1:** Develop the Backend Using Flask.

- File Explorer Structure



- **Description of the code:**

- **Flask App Initialization:**

```
from flask import Flask, render_template, request, redirect, url_for, session, flash
from datetime import datetime, timedelta
from functools import wraps
import os
import boto3
from botocore.exceptions import ClientError
```

**Description:** import essential libraries including Flask utilities for routing, Boto3 for DynamoDB operations, SMTP and email modules for sending mails, and Bcrypt for password hashing and verification.

```
app = Flask(__name__)
```

- **Dynamodb Setup:**

```
try:  
    # boto3 will automatically use credentials from an attached IAM Role on EC2  
    # or from environment variables (AWS_ACCESS_KEY_ID, AWS_SECRET_ACCESS_KEY) / AWS CLI config locally.  
    dynamodb = boto3.resource('dynamodb', region_name=AWS_REGION)  
    sns_client = boto3.client('sns', region_name=AWS_REGION)  
  
    users_table = dynamodb.Table(USER_TABLE)  
    appointments_table = dynamodb.Table(APPOINTMENTS_TABLE)  
    medical_records_table = dynamodb.Table(MEDICAL_RECORDS_TABLE)  
  
    # Test DynamoDB connection by attempting to access a table (e.g., describe table)  
    users_table.load()  
    appointments_table.load()  
    medical_records_table.load()  
    print(f"Successfully connected to AWS DynamoDB in region {AWS_REGION} and SNS.")
```

**Description:** Initialize the DynamoDB resource for the ap-south-1 region and set up access to the Users and Requests tables for storing user details and book requests.

- **SNS Connection**

```
message = (f"Appointment cancelled: Patient {patient_email}'s appointment "  
          f"with Dr. {appointment['doctor_name']} on {appointment['date']} "  
          f"at {appointment['time']} has been cancelled.")  
try:  
    sns_client.publish(TopicArn=SNS_TOPIC_ARN, Message=message, Subject="Medtrack Appointment Cancelled")  
    logger.info(f"SNS notification sent for appointment cancellation: {appointment_id}.")  
except Exception as sns_e:  
    logger.error(f"Failed to send SNS notification for cancellation: {sns_e}")
```

```
message = (f"New appointment booked: Patient {patient_name} ({patient_email}) "  
          f"with Dr. {doctor_name} on {appointment_date} at {appointment_time} "  
          f"for reason: {reason}.")  
try:  
    sns_client.publish(TopicArn=SNS_TOPIC_ARN, Message=message, Subject="New Medtrack Appointment")  
    logger.info(f"SNS notification sent for new appointment: {new_appointment['appointment_id']}.")  
except Exception as sns_e:  
    logger.error(f"Failed to send SNS notification for appointment booking: {sns_e}")
```

```
message = (f"Your appointment with Dr. {appointment['doctor_name']} "  
          f"on {appointment['date']} at {appointment['time']} has been updated to: {new_status}.")  
try:  
    sns_client.publish(TopicArn=SNS_TOPIC_ARN, Message=message, Subject="Medtrack Appointment Update")  
    logger.info(f"SNS notification sent for appointment status update: {appointment_id}.")  
except Exception as sns_e:  
    logger.error(f"Failed to send SNS notification for status update: {sns_e}")
```

**Description:** Configure SNS to send notifications when a book request is submitted. Paste your stored ARN link in the sns\_topic\_arn space, along with the region\_name where the SNS topic is created.

- **Routes for Web Pages:**

- **Index Route:**

```
@app.route('/')
def index():
    return render_template('index.html')
```

- **Register Route:**

Verifies user credentials, increments login count, and redirects to the dashboard on success.

```
@app.route('/register', methods=['GET', 'POST'])
def register():
    if request.method == 'POST':
        name = request.form['name']
        email = request.form['email']
        password = request.form['password']
        confirm_password = request.form['confirm_password']
        user_type = request.form['user_type']

        if password != confirm_password:
            flash('Passwords do not match. Please try again.', 'error')
            return redirect(url_for('register'))

        try:
            response = USERS_TABLE.get_item(Key={'email': email})
            if 'Item' in response:
                flash('Email already registered. Please login or use a different email.', 'error')
                return redirect(url_for('register'))

            new_user = {
                'email': email,
                'name': name,
                'password': password,
                'user_type': user_type
            }
            if user_type == 'doctor':
                new_user['specialization'] = request.form.get('specialization', '')
                new_user['location'] = request.form.get('location', '')
                new_user['medical_license'] = request.form.get('medical_license', '')
            elif user_type == 'patient':
                new_user['age'] = request.form.get('age', '')
                new_user['gender'] = request.form.get('gender', '')

            USERS_TABLE.put_item(Item=new_user)
            flash('Account created successfully! Please login.', 'success')
            return redirect(url_for('login'))
        except Exception as e:
            logger.error(f"Error during user registration in DynamoDB: {e}")
            flash('An error occurred during registration. Please try again.', 'error')
            return redirect(url_for('register'))
```

- **Login Route (GET/POST):** The **login route** handles user authentication by verifying credentials stored in **DynamoDB**. Upon successful login, it increments the **login count** and redirects the user to their dashboard.

```

@app.route('/signup', methods=['GET', 'POST'])
def signup():
    if users_table is None:
        flash('Database connection not established. Cannot sign up.', 'error')
        return render_template('signup.html', error='Database connection error.')
    if request.method == 'POST':
        name, email, password, confirm_password, user_type = request.form['signupName'], request.form['signupEmail'], request.form['signupPassword']
        if not all([name, email, password, confirm_password, user_type]) or password != confirm_password:
            return render_template('signup.html', error='All fields are required and passwords must match.')
        try:
            response = users_table.get_item(Key={'email': email})
            if response.get('Item'):
                return render_template('signup.html', error='Email already registered. Please login or use a different email.')
            new_user_document = {'email': email, 'password': password, 'user_type': user_type, 'name': name}
            if user_type == 'patient':
                dob, gender = request.form.get('dateOfBirth'), request.form.get('gender')
                if not all([dob, gender]): return render_template('signup.html', error='Patient details (Date of Birth, Gender) are required.')
                new_user_document['patient_profile'] = {'dateOfBirth': dob, 'gender': gender}
            elif user_type == 'doctor':
                specialization, license = request.form.get('specialization'), request.form.get('licenseNumber')
                if not all([specialization, license]): return render_template('signup.html', error='Doctor details (Specialization, License Number) are required.')
                new_user_document['doctor_profile'] = {'specialization': specialization, 'licenseNumber': license, 'experience': 0, 'achievements': []}
            users_table.put_item(Item=new_user_document)
            flash(f'Registration successful as {user_type.capitalize()}! Please login.', 'success')
            return redirect(url_for('login'))
        except ClientError as e:
            print(f'DynamoDB Error during signup: {e}')
            return render_template('signup.html', error='Database error during signup.')
    return render_template('signup.html', error=request.args.get('error'))

```

- **Logout Route:** The logout functionality allows users to securely end their session, clearing any session data and redirecting them to the login page.

```

# --- Logout Route ---
@app.route('/logout')
def logout():
    session.clear()
    print("User logged out. Session cleared.")
    return redirect(url_for('index'))

```

- **Book Appointment Route:** The book appointment route allows users to select a date, time, and doctor for their appointment. Upon submission, the system stores the appointment details in DynamoDB and sends a confirmation notification via SNS.

```

@app.route('/patient_appointments')
@login_required(user_type='patient')
def patient_appointments():
    user_email = session['user_email']
    pending, upcoming, prescription_ready, past = [], [], [], []
    current_date_time = datetime.now()

    try:
        # DynamoDB Scan with FilterExpression (less efficient for large tables, consider GSI for patientEmail)
        response = appointments_table.scan( (function) conditions: Any
            FilterExpression=boto3.dynamodb.conditions.Attr('patientEmail').eq(user_email)
        )
        appointments = response.get('Items', [])
    except ClientError as e:
        print(f"DynamoDB Error in patient_appointments: {e}")
        flash('Could not load appointments. Database error.', 'error')

    for appt in appointments:
        try:
            appt_dt = datetime.strptime(f'{appt["date"]} {appt["time"]}', '%Y-%m-%d %H:%M')
            if appt['status'] == 'Pending': pending.append(appt)
            elif appt['status'] == 'Accepted':
                if appt_dt <= current_date_time:
                    appointments_table.update_item(
                        Key={'unique_appointment_id': appt['unique_appointment_id']},
                        UpdateExpression="SET #s = :status",
                        ExpressionAttributeNames={'#s': 'status'},
                        ExpressionAttributeValues={':status': 'Completed'}
                    )
                appt['status'] = 'Completed'
            (past if appt['status'] == 'Completed' else upcoming).append(appt)
        except ValueError:
            print(f"Error parsing date/time for appointment {appt.get('unique_appointment_id')}. Placing in general active list.")
            (upcoming if appt.get('status') in ['Pending', 'Accepted', 'PrescriptionProvided'] else past).append(appt)
    except ClientError as e:
        print(f"DynamoDB Error in patient_appointments: {e}")
        flash('An unexpected error occurred.', 'error')

    _update_session_user_data(user_email)
    return render_template('patient_appointments.html',
                           pending_appointments=pending, upcoming_appointments=upcoming,
                           prescription_ready_appointments=prescription_ready, past_appointments=past)

```

```

# Sort lists after categorization
pending.sort(key=lambda x: (x['date'], x['time']))
upcoming.sort(key=lambda x: (x['date'], x['time']))
prescription_ready.sort(key=lambda x: (x['date'], x['time']))
past.sort(key=lambda x: (x['date'], x['time']), reverse=True) # Past usually sorted descending

except ClientError as e:
    print(f"DynamoDB Error in patient_appointments: {e}")
    flash('Could not load appointments. Database error.', 'error')
except Exception as e:
    print(f"Error in patient_appointments: {e}")
    flash('An unexpected error occurred.', 'error')

_update_session_user_data(user_email)
return render_template('patient_appointments.html',
                           pending_appointments=pending, upcoming_appointments=upcoming,
                           prescription_ready_appointments=prescription_ready, past_appointments=past)

```

- **Issue Prescription Route:** This route enables doctors to issue new prescriptions to patients. It stores the prescription details in DynamoDB and sends an SNS notification to inform the patient.

```

@app.route('/view_patient_prescription<string:unique_appointment_id_param>', methods=['GET'])
@login_required(user_type='patient')
def view_patient_prescription(unique_appointment_id_param):
    patient_email = session['user_email']
    try:
        response_appt = appointments_table.get_item(Key={'unique_appointment_id': unique_appointment_id_param})
        appointment = response_appt.get('Item')

        if not appointment or appointment['patientEmail'] != patient_email or appointment['status'] != 'PrescriptionProvided':
            flash('Prescription not found or already viewed/completed.', 'error')
            return redirect(url_for('patient_appointments'))

        response_record = medical_records_table.get_item(Key={'unique_appointment_id': unique_appointment_id_param})
        medical_record = response_record.get('Item')

        if not medical_record:
            flash('Medical record not found for this prescription.', 'error')
            appointments_table.update_item(
                Key={'unique_appointment_id': appointment['unique_appointment_id']},
                UpdateExpression="SET #s = :status",
                ExpressionAttributeNames={'#s': 'status'},
                ExpressionAttributeValues={':status': 'Completed'}
            )
            return redirect(url_for('patient_appointments'))

        appointments_table.update_item(
            Key={'unique_appointment_id': appointment['unique_appointment_id']},
            UpdateExpression="SET #s = :status",
            ExpressionAttributeNames={'#s': 'status'},
            ExpressionAttributeValues={':status': 'Completed'}
        )
        flash('Appointment consultation completed. The details have been added to your medical history.', 'success')
        return render_template('view_prescription.html', appointment=appointment, medical_record=medical_record)
    except ClientError as e:
        print(f"DynamoDB Error in view_patient_prescription: {e}")
        flash('Database error while fetching prescription.', 'error')
        return redirect(url_for('patient_appointments'))

```

- **Deployment Code:**

```

if __name__ == '__main__':
    app.run(debug=True, host='0.0.0.0', port=5000)

```

## Milestone 5. IAM Role Setup

### Activity 5.1: Create IAM Role

- In the AWS Console, go to IAM and create a new IAM Role for EC2 to interact with DynamoDB and SNS.

Searched for 'IAM'

**Services**

- Features
- Resources **New**
- Documentation
- Knowledge articles
- Marketplace
- Blog posts
- Events
- Tutorials

**Search results for 'IAM'**

**Services**

Show more ▾

- IAM** ☆ Manage access to AWS resources
- IAM Identity Center** ☆ Manage workforce user access to multiple AWS accounts and cloud applications
- Resource Access Manager** ☆ Share AWS resources with other accounts or AWS Organizations
- AWS App Mesh** ☆ Easily monitor and control microservices

**Select trusted entity** info

Step 1 **Select trusted entity**

Step 2  Add permissions

Step 3  Name, review, and create

**Trusted entity type**

- AWS service** Allow AWS services like EC2, Lambda, or others to perform actions in this account.
- AWS account** Allow entities in other AWS accounts belonging to you or a 3rd party to perform actions in this account.
- Web identity** Allows users federated by the specified external web identity provider to assume this role to perform actions in this account.
- SAML 2.0 federation** Allow users federated with SAML 2.0 from a corporate directory to perform actions in this account.
- Custom trust policy** Create a custom trust policy to enable others to perform actions in this account.

**Use case**  
Allow an AWS service like EC2, Lambda, or others to perform actions in this account.

**Service or use case**

Choose a service or use case

**Cancel** **Next**

**Select trusted entity** info

Step 1 **Select trusted entity**

Step 2  Add permissions

Step 3  Name, review, and create

**Trusted entity type**

- AWS service** Allow AWS services like EC2, Lambda, or others to perform actions in this account.
- AWS account** Allow entities in other AWS accounts belonging to you or a 3rd party to perform actions in this account.
- Web identity** Allows users federated by the specified external web identity provider to assume this role to perform actions in this account.
- SAML 2.0 federation** Allow users federated with SAML 2.0 from a corporate directory to perform actions in this account.
- Custom trust policy** Create a custom trust policy to enable others to perform actions in this account.

**Use case**  
Allow an AWS service like EC2, Lambda, or others to perform actions in this account.

**Service or use case**

Choose a service or use case

**EC2**

**Choose a use case for the specified service.**

**Use case**

- EC2** Allows EC2 instances to call AWS services on your behalf.
- EC2 Role for AWS Systems Manager** Allows EC2 Instances to call AWS services like CloudWatch and Systems Manager on your behalf.
- EC2 Spot Fleet Role** Allows EC2 Spot Fleet to request and terminate Spot Instances on your behalf.
- EC2 - Auto Scaling** Allows Auto Scaling to access and update EC2 spot fleets on your behalf.
- EC2 - Spot Fleet Tagging** Allows EC2 to launch spot instances and attach tags to the launched instances on your behalf.
- EC2 - Spot Instances** Allows EC2 Spot Instances to launch and manage spot instances on your behalf.
- EC2 - Scheduled Instances** Allows EC2 Scheduled Instances to manage instances on your behalf.

**Cancel** **Next**

- **Activity 5.2: Attach Policies.**

Attach the following policies to the role:

- AmazonDynamoDBFullAccess: Allows EC2 to perform read/write operations on DynamoDB.
- AmazonSNSFullAccess: Grants EC2 the ability to send notifications via SNS.

The screenshot shows the 'Add permissions' step of the IAM role creation wizard. The search bar at the top right is set to 'sns'. The list of policies includes:

- [AmazonSNSFullAccess](#) (AWS managed)
- [AmazonSNSReadOnlyAccess](#) (AWS managed)
- [AmazonSQSRole](#) (AWS managed)
- [AWSLambdaBasicExecutionRoleSNS](#) (AWS managed)
- [AWSIoTDeviceDefenderPublishFindingsToSNSTargetAction](#) (AWS managed)

At the bottom, there's a link to 'Set permissions boundary - optional' and navigation buttons for 'Cancel', 'Previous', and 'Next'.

The screenshot shows the 'Name, review, and create' step of the IAM role creation wizard. The 'Role details' section contains:

- Role name:** EC2\_MedTrack\_Role
- Description:** Allows EC2 instances to call AWS services on your behalf.

Below this is the 'Step 1: Select trusted entities' section, which displays the JSON code for the trust policy:

```

1+ [ "Version": "2012-10-17", "Statement": [ { "Effect": "Allow", "Action": [ "sts:AssumeRole" ], "Principal": { "Service": [ "ec2.amazonaws.com" ] } } ]
  
```

The screenshot shows the AWS IAM Roles page. At the top, a green banner indicates that the role 'EC2\_MedTrack\_Role' has been created. Below this, the 'Roles (9)' section is displayed, listing the following roles:

Role name	Trusted entities	Last activity
AWSServiceRoleForTrustedAdvisor	AWS Service: trustedadvisor (Service)	-
EC2_MedTrack_Role	AWS Service: ec2	-
OrganizationAccountAccessRole	Account: 058264256896	53 minutes ago
rsoaccount-new	Account: 058264256896	22 minutes ago

Below the table, there are three sections: 'Roles Anywhere', 'Access AWS from your non AWS workloads', and 'X.509 Standard'. The 'Temporary credentials' section is also visible on the right.

## ● Milestone 6. EC2 Instance Setup

- **Note:** Load your Flask app and Html files into GitHub repository.

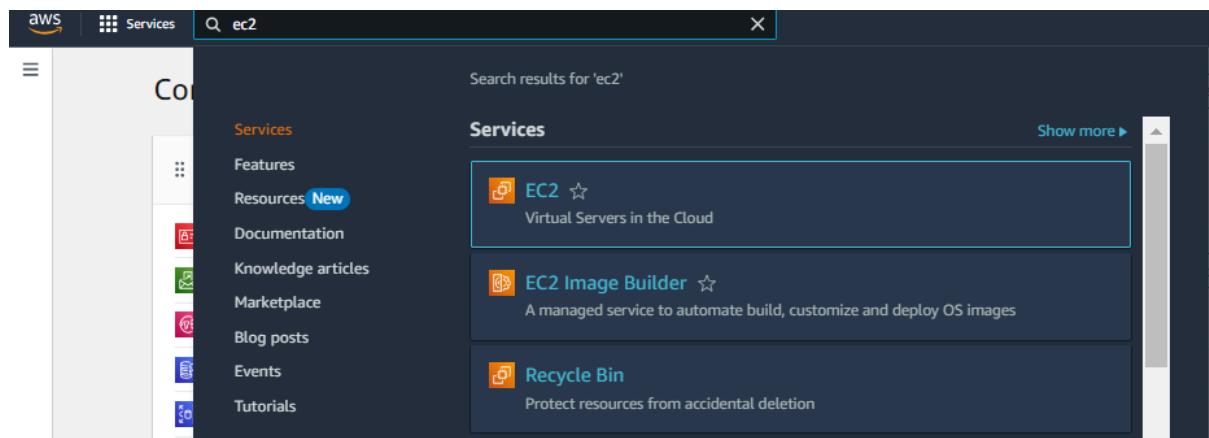
The screenshot shows a GitHub repository page for 'Manjula1307' with the title 'Create demo-video link'. The commit history is as follows:

- first commit (5 days ago)
- Initial commit (5 days ago)
- initial commit (5 days ago)
- Update app.py (5 days ago)

Below the commit history, there are two tabs: 'Local' and 'Codespaces'. Under 'Local', there are three cloning methods: 'Clone' (with icons for HTTPS, SSH, and GitHub CLI), a copy icon for the URL 'https://github.com/Manjula1307/medtrack.git', and links for 'Open with GitHub Desktop' and 'Download ZIP'.

### Activity 6.1: Launch an EC2 instance to host the Flask application.

- **Launch EC2 Instance**
  - In the AWS Console, navigate to EC2 and launch a new instance.



- Click on Launch instance to launch EC2 instance

The screenshot shows the AWS EC2 Instances page. The left sidebar includes links for EC2 Dashboard, EC2 Global View, Events, Instances (selected), Instance Types, Launch Templates, Spot Requests, and Savings Plans. The main content area has a header 'Instances Info' with filters for Name, Instance ID, Instance state, Status check, Alarm status, Availability Zone, and Public IPv4 DNS. A search bar at the top says 'Find Instance by attribute or tag (case-sensitive)'. Below the header, it says 'Last updated less than a minute ago' and 'All states'. A message 'No instances' and 'You do not have any instances in this region' is displayed, along with a large 'Launch instances' button.

This screenshot shows the 'Launch an instance' wizard. Step 1: Name and tags. It asks for a name ('medtrack-server') and allows adding additional tags. Step 2: Application and OS Images (Amazon Machine Image). It shows a search bar and a grid of AMI icons for Amazon Linux, macOS, Ubuntu, Windows, Red Hat, SUSE Linux, and Debian. Step 3: Quick Start, showing a grid of other AMI icons like AWS Lambda, AWS Mac, and various Linux distributions. Step 4: Summary, which includes fields for Software Image (AMI), Virtual server type (t2.micro), Firewall (New security group), and Storage (1 volume(s) - 8 GiB). At the bottom are 'Cancel', 'Launch instance', and 'Preview code' buttons.

This screenshot continues the 'Launch an instance' wizard. Step 1: Name and tags (skipped). Step 2: AMI selection. It shows the 'Amazon Machine Image (AMI)' section with a dropdown for 'Mac' and a list of AMIs. One item is selected: 'Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type' (ami-000ec6c25978d5999). Step 3: Description, detailing the AMI's features and specifications. Step 4: Summary, identical to the previous screenshot. At the bottom are 'Cancel', 'Launch instance', and 'Preview code' buttons.

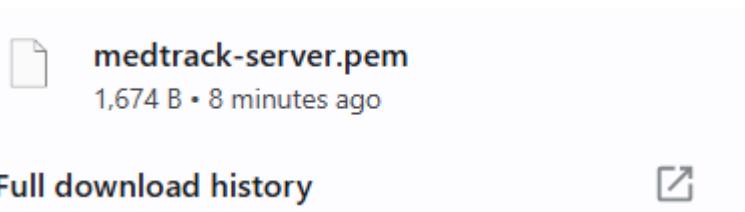
- Create and download the key pair for server access:

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - required

Select

Create new key pair



- **Activity 6.2: Configure security groups for HTTP, and SSH access.**

For network settings during EC2 instance launch:

1. In the **Network Settings** section, select the **VPC** and **Subnet** you wish to use (if unsure, the default VPC and subnet should work).
2. Ensure **Auto-assign Public IP** is enabled so your instance can be accessed from the internet.
3. In **Security Group**, either select an existing one or create a new one that allows SSH (port 22) access to your EC2 instance for remote login.

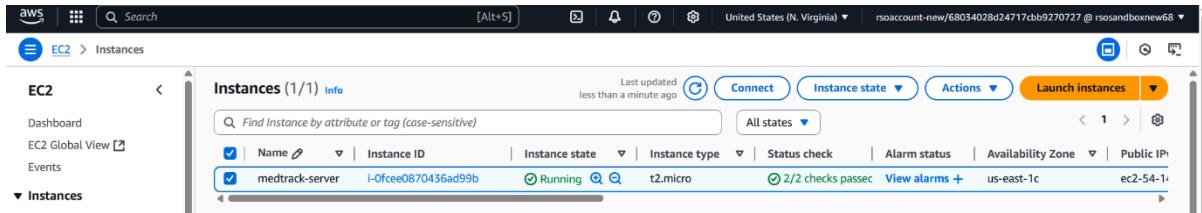
aws | Search [Alt+S] | United States (N. Virginia) | rsoaccount-new/68034028d24717ccb9270727 @ rsosandboxnew68

EC2 > Instances > Launch an instance

Success Successfully initiated launch of instance (i-0fce0870436ad99b)

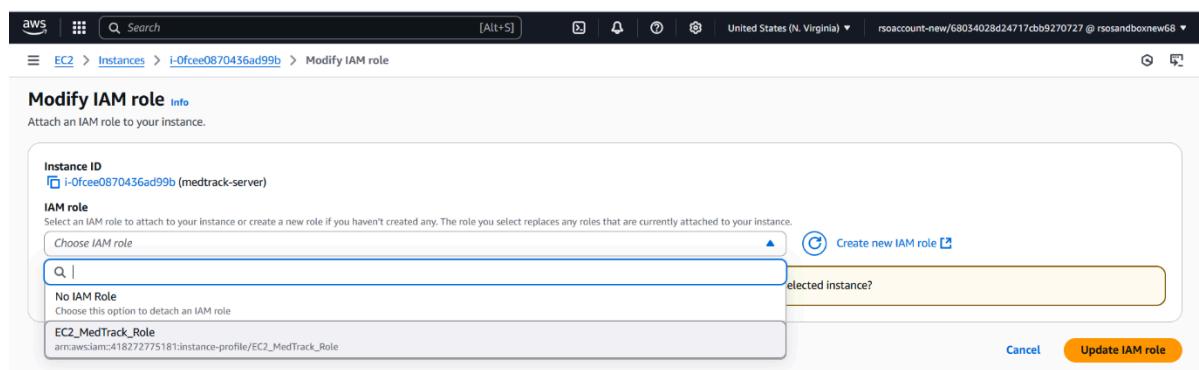
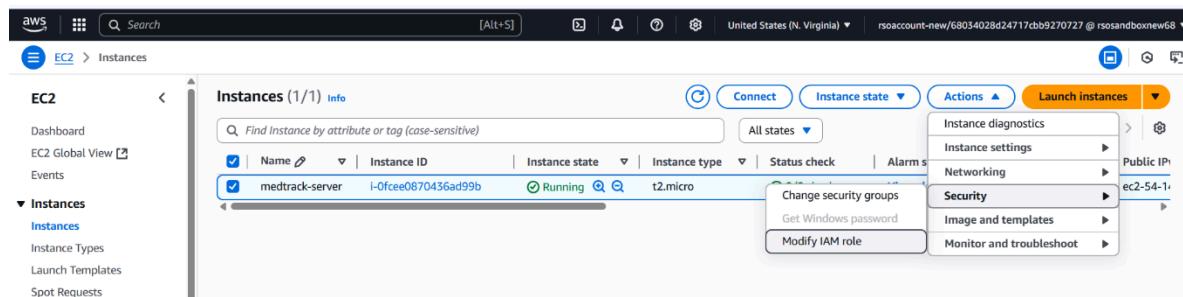
- To connect to EC2 using **EC2 Instance Connect**, start by ensuring that an **IAM role** is attached to your EC2 instance. You can do this by selecting your instance, clicking on **Actions**, then navigating to Security and selecting **Modify IAM Role** to attach the appropriate role. After the IAM role is connected, navigate to the EC2 section in the **AWS Management Console**. Select the EC2 instance you wish to connect to. At the top of the EC2 Dashboard, click the Connect button. From the connection methods

presented, choose **EC2 Instance Connect**. Finally, click Connect again, and a new browser-based terminal will open, allowing you to access your EC2 instance directly from your browser.



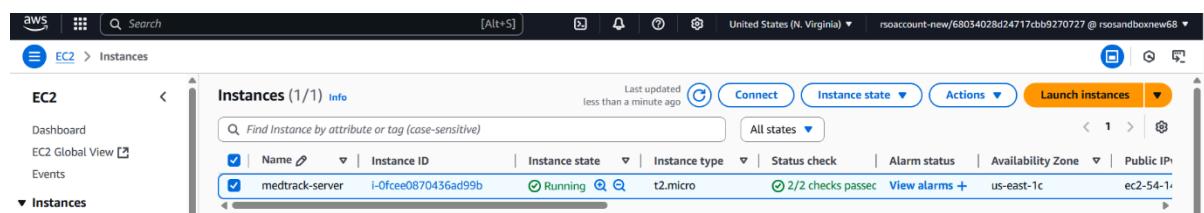
To modify the **IAM role** for your EC2 instance:

1. Go to the **AWS IAM Console**, select **Roles**.
2. Click **Attach Policies**, then choose the required policies (e.g., **DynamoDBFullAccess**, **SNSFullAccess**) and click **Attach Policy**.
3. If needed, update the instance to use this modified role by selecting the EC2 instance, clicking **Actions**, then **Security**, and **Modify IAM role** to select the updated role.

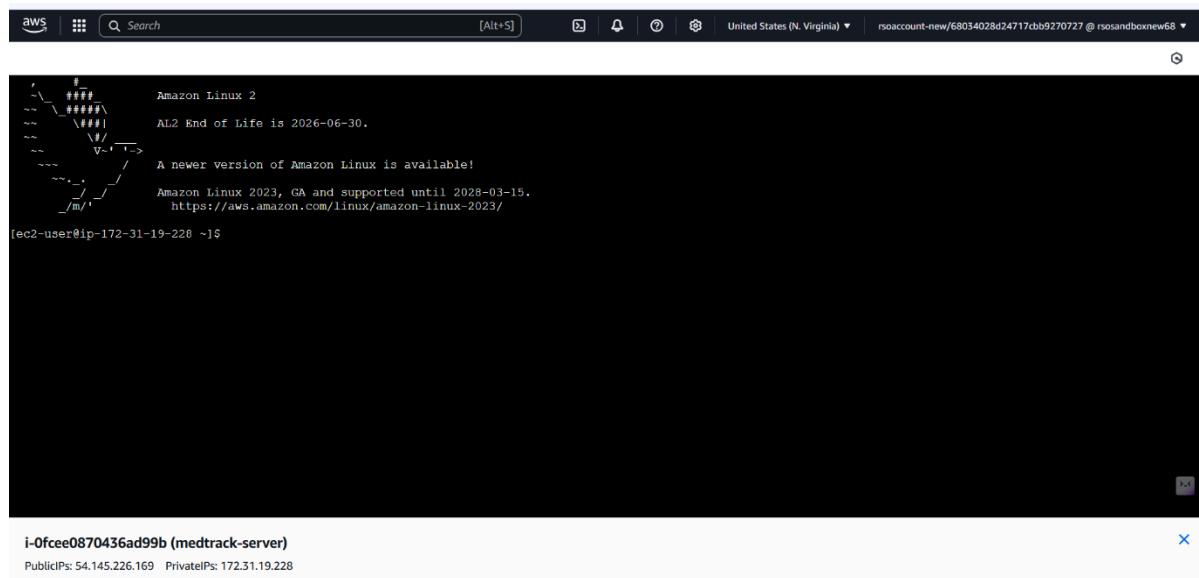
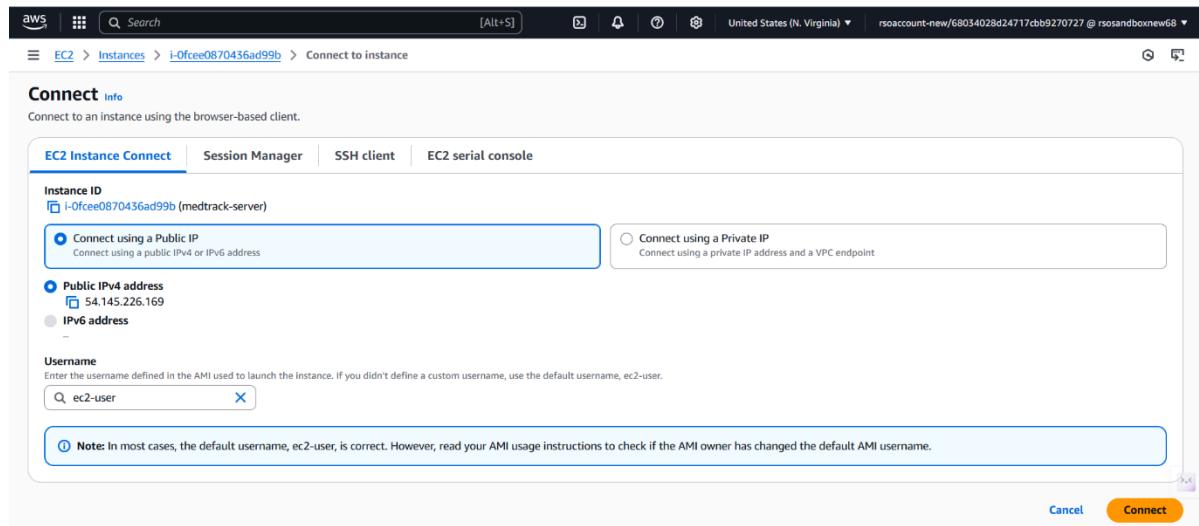


- Connect to your EC2 instance:

1. Go to the **EC2 Dashboard**, select your running instance, and click **Connect**.



- Now connect the EC2 with the files



## **Milestone 7: Deployment on EC2**

Deployment on an EC2 instance involves launching a server, configuring security groups for public access, and uploading your application files. After setting up necessary dependencies and environment variables, start your application and ensure it's running on the correct port. Finally, bind your domain or use the public IP to make the application accessible online.

### **Activity 7.1: Install Software on the EC2 Instance**

**Install Python3, Flask, and Git:**

**On Amazon Linux 2:**

```
sudo yum update -y  
sudo yum install python3 git  
sudo pip3 install flask boto3
```

**Verify Installations:**

```
flask --version  
git --version
```

### **Activity 7.2: Clone Your Flask Project from GitHub**

**Clone your project repository from GitHub into the EC2 instance using Git.**

Run: ‘git clone <https://github.com/your-github-username/your-repository-name.git>’

Note: change your-github-username and your-repository-name with your credentials here: ‘git clone https://github.com/Ravi-teja-777/medtrack\_app.git’

- This will download your project to the EC2 instance.

**To navigate to the project directory, run the following command:**

```
cd MedTrack
```

**Once inside the project directory, configure and run the Flask application by executing the following command with elevated privileges:**

**Run the Flask Application**

```
sudo flask run --host=0.0.0.0 --port=5000
```

```

root@ip-172-31-19-228 MedTrack]# git pull origin master
fatal: couldn't find remote ref master
[root@ip-172-31-19-228 MedTrack]# git pull origin main
From https://github.com/ManishVamsi/MedTrack
 * branch            main       -> FETCH_HEAD
Already up to date.
[root@ip-172-31-19-228 MedTrack]# ls
app.py  env  templates
[root@ip-172-31-19-228 MedTrack]# python3 app.py
/usr/local/lib/python3.7/site-packages/boto3/compat.py:82: PythonDeprecationWarning: Boto3 will no longer support Python 3.7 starting December 13, 2023. To continue receiving service updates, bug fixes, and security updates please upgrade to Python 3.8 or later. More information can be found here: https://aws.amazon.com/blogs/developer/python-support-policy-updates-for-aws-sdks-and-tools/
    warnings.warn(warning, PythonDeprecationWarning)
INFO:botocore.credentials:Found credentials from IAM Role: EC2_Medtrack_Role
INFO: main :Boto3 clients and DynamoDB tables initialized successfully, assuming IAM Role credentials.
 * Serving Flask app 'app'
 * Debug mode: on
INFO:werkzeug:WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:5000
 * Running on http://172.31.19.228:5000
INFO:werkzeug:Press CTRL+C to quit!
INFO:werkzeug: * Restarting with stat
/usr/local/lib/python3.7/site-packages/boto3/compat.py:82: PythonDeprecationWarning: Boto3 will no longer support Python 3.7 starting December 13, 2023. To continue receiving service updates, bug fixes, and security updates please upgrade to Python 3.8 or later. More information can be found here: https://aws.amazon.com/blogs/developer/python-support-policy-updates-for-aws-sdks-and-tools/
    warnings.warn(warning, PythonDeprecationWarning)
INFO:botocore.credentials:Found credentials from IAM Role: EC2_Medtrack_Role
INFO: main :Boto3 clients and DynamoDB tables initialized successfully, assuming IAM Role credentials.
WARNING:werkzeug: * Debugger is active!
INFO:werkzeug: * Debugger PIN: 841-459-071

```

i-Ofcee0870436ad99b (medtrack-server)  
PublicIPs: 54.145.226.169 PrivateIPs: 172.31.19.228

## Verify the Flask app is running:

<http://your-ec2-public-ip>

- Run the Flask app on the EC2 instance

## Access the website through:

Public-IPs: <https://54.145.226.169:5000/>

## Milestone 8: Testing and Deployment

- **Activity 8.1: Conduct functional testing to verify user registration, login, book requests, and notifications.**

### Functional testing to verify the project

#### Home Page:

The Home Page of your project is the main entry point for users, where they can interact with the system. It typically includes:

1. Input Fields: For users to enter basic information like appointment requests, diagnosis submissions, or service bookings.
2. Navigation: Links to other sections such as the login page, dashboard, or service options.
3. Responsive Design: Ensures the page is accessible across devices with a clean, user-friendly interface.

The Home Page serves as the initial interface that directs users to the key functionalities of your web application.

The screenshot shows the homepage of a medical application named 'MedConnect'. At the top left is the logo '+ MedConnect'. To its right is a navigation bar with links: Home, Services, Our Promise, About Us, and Contact. On the far right are two buttons: 'Login' (white background) and 'Sign Up' (blue background). The main content area has a blue gradient background. In the center, the text 'Accessible Healthcare, Expert Guidance.' is displayed in large white font. Below it is a smaller line of text: 'Receive personalized medical attention from caring professionals who understand your needs. Your well-being is our priority.' At the bottom of this section is a white button labeled 'Find Your Doctor'. At the very bottom of the page, the text 'Dedicated Services for Your Health Journey' is centered above three service cards.

#### Dedicated Services for Your Health Journey

This service card features a teal speech bubble icon at the top. Below it is the title 'Personalized Consultations' in bold. Underneath is a brief description: 'Connect with doctors who genuinely listen and provide tailored advice.' A small teal line icon is located at the bottom right corner of the card.

This service card features a teal plus sign icon at the top. Below it is the title 'Easy Prescription Renewals' in bold. Underneath is a brief description: 'Seamless process for renewing your medications without hassle.' A small teal line icon is located at the bottom right corner of the card.

This service card features a teal equals sign icon at the top. Below it is the title 'Secure Health Journey' in bold. Underneath is a brief description: 'Your private health data is protected with utmost care and security.' A small teal line icon is located at the bottom right corner of the card.

## **DOCTOR AND PATIENT REGISTRATION PAGE:**

The Doctor Registration Page allows doctors to register and create an account on the platform. It typically includes:

1. Input Fields: For doctor details such as name, specialty, qualifications, and contact information.
2. Login Credentials: Fields for setting a username and password for secure access.
3. Submit Button: A button to submit the registration details, which will then be stored in the database after validation.

## **PATIENT AND DOCTOR LOGIN PAGES:**

The Patient and Doctor Login Pages allow users to securely access their accounts on the platform. Each login page typically includes:

1. Username and Password Fields: Users enter their credentials (username and password) to authenticate their account.
2. Login Button: A button to submit login details and validate user access.

Once logged in, patients and doctors are redirected to their respective dashboards to manage appointments, medical records, and other relevant tasks.

Full Name

Full Name

Email Address

Email Address

Password

Password

Confirm Password

Confirm Password

I am a:

Patient  Doctor

I am a:

Patient  Doctor

## Patient Details

Date of Birth

dd-mm-yyyy

## Doctor Details

Specialization

e.g., Cardiology, Pediatrics

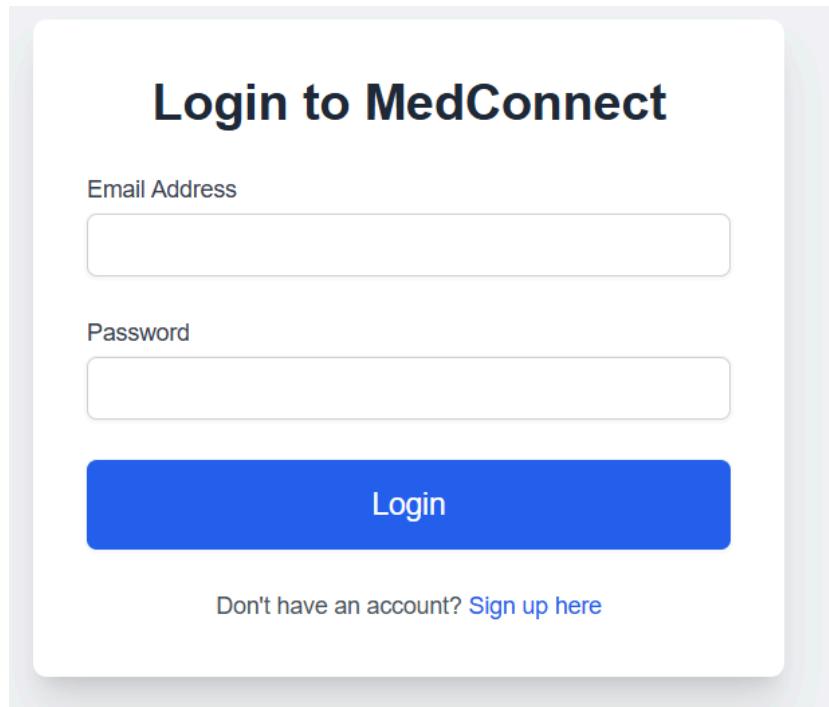
Gender

Select Gender

Medical License Number

Sign Up

Sign Up



### User Dashboard:

The User Dashboard (for patients) provides an easy interface to manage appointments and track their status. It typically includes:

1. Book Appointment Section: A form for selecting a doctor, choosing an appointment time, and submitting the request.
2. Appointment Status: A section showing the current status of appointments (e.g., confirmed, pending, or completed) with options to view details or cancel.
3. Medication Remainders: Patients can easily set up personalized reminders for their medications, including dosage, frequency, and specific times.

This dashboard helps patients book new appointments and keep track of their healthcare schedules.

## Your Patient Dashboard

### My Appointments



View your upcoming and past medical appointments.

[View Appointments](#)

### Consult a Doctor



Initiate a new online consultation with an available doctor.

[Start Consultation](#)

### My Health Records



Access your past consultations, prescriptions, and lab results.

[View Records](#)

## Available Doctors for Consultation

**Dr. Venugopal**

General Medicine

License: MAH/2018/B/123456

[Consult Now](#)**Dr. Amrita**

cardiology

License: MAH/2019/B/673456

[Consult Now](#)**Dr. Nandini**

dentist

License: 1AS3E2U

[Consult Now](#)

Booking with:  
**Venugopal**  
General Medicine  
(venugopal@gmail.com)

Appointment Date  
05-07-2025

Appointment Time  
09:00

Describe Your Issue  
cough, headache, slight fever

MedConnect

Appointment booked successfully! Doctor will review your request.

## My Appointments

Pending Appointments      Upcoming Appointments      Prescription Ready      Past Appointments

### Appointment with Venugopal

Specialization: General Medicine

Date: 2025-07-05

Time: 09:00

Issue: cough, headache, slight fever

Status: Pending

MedConnect

Back to Dashboard

## My Medical Records

### Consultation Summary (2025-07-04)

2025-07-04

Doctor: Venugopal

Diagnosis: consume hot water,take steam

Prescription: dolo650-3 times a day

Notes:

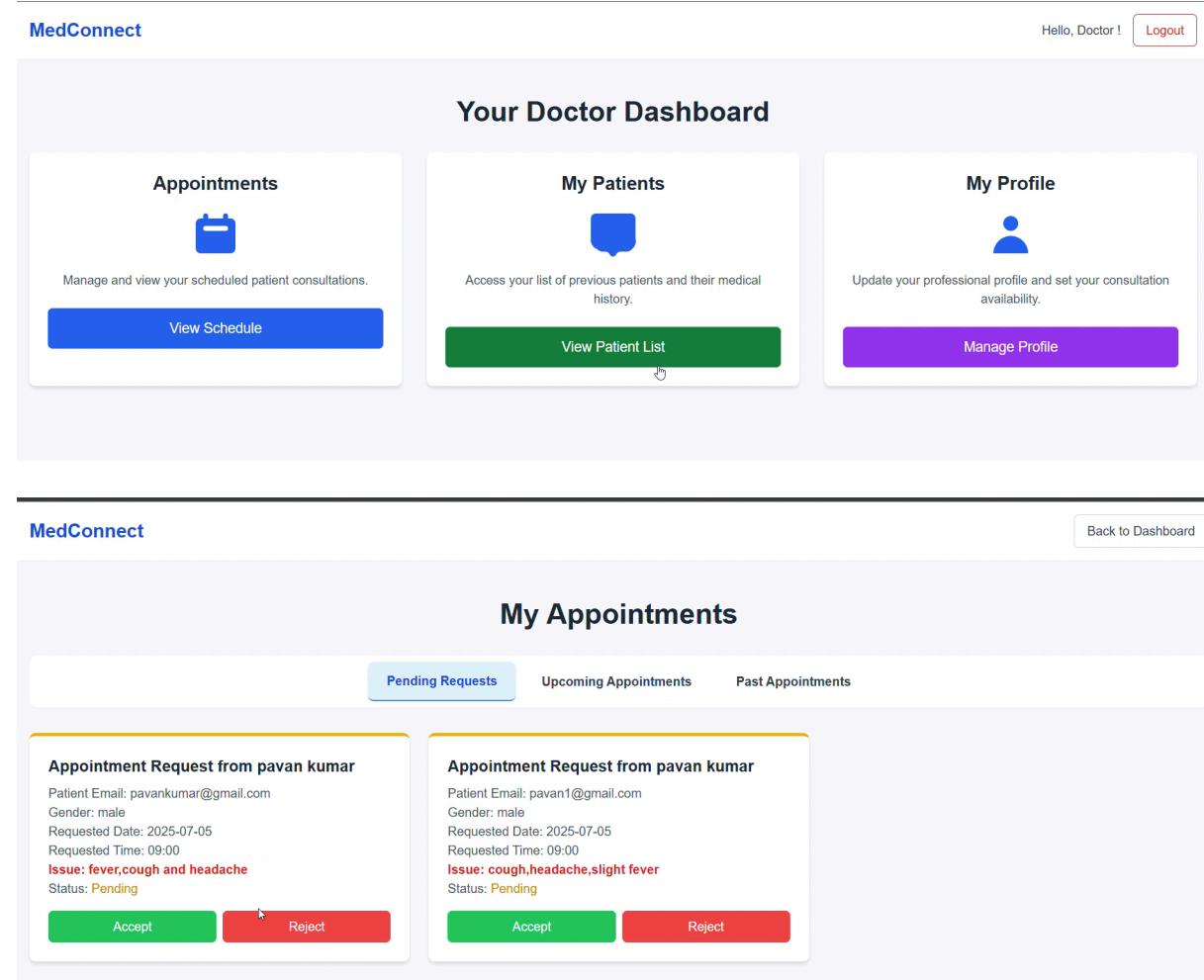
## Doctor Dashboard:

The **Doctor Dashboard** provides doctors with a comprehensive view of their upcoming appointments and patient details. It typically includes:

- Upcoming Appointments List:** A table or list showing patient names, appointment times, and appointment statuses (e.g., confirmed, pending).
- Patient Details:** Quick access to each patient's medical history, contact information, and previous visit records.

### 3. Appointment Actions: Options to view, confirm , or cancel appointments, ensuring efficient management.

The dashboard serves as the main interface for doctors to manage their schedules, track patient interactions, and provide timely care.



The image displays two screenshots of the MedConnect application interface for doctors.

**Top Screenshot: Your Doctor Dashboard**

- Appointments:** Manage and view your scheduled patient consultations. Includes a blue calendar icon and a "View Schedule" button.
- My Patients:** Access your list of previous patients and their medical history. Includes a blue speech bubble icon and a "View Patient List" button.
- My Profile:** Update your professional profile and set your consultation availability. Includes a blue person icon and a "Manage Profile" button.

**Bottom Screenshot: My Appointments**

- Pending Requests:** Shows two pending appointment requests from "pavan kumar".
  - Appointment Request from pavan kumar:** Patient Email: pavankumar@gmail.com, Gender: male, Requested Date: 2025-07-05, Requested Time: 09:00, Issue: fever,cough and headache, Status: Pending. Buttons: Accept (green) and Reject (red).
  - Appointment Request from pavan kumar:** Patient Email: pavan1@gmail.com, Gender: male, Requested Date: 2025-07-05, Requested Time: 09:00, Issue: cough,headache,slight fever, Status: Pending. Buttons: Accept (green) and Reject (red).
- Upcoming Appointments:** Not visible in the screenshot.
- Past Appointments:** Not visible in the screenshot.

## My Appointments

Pending Requests      **Upcoming Appointments**      Past Appointments

**Consultation with pavan kumar**

Patient Email: pavan1@gmail.com  
Gender: male  
Date: 2025-07-05  
Time: 09:00  
**Issue:** *cough, headache, slight fever*  
Status: Accepted

**View & Complete**

---

**pavan kumar**  
Email: pavan1@gmail.com  
Date: 2025-07-05 | Time: 09:00

**Patient's Reported Issue:**  
*cough, headache, slight fever*

**Diagnosis**  
Enter diagnosis...

**Prescription**  
Enter prescription details (e.g., Medication Name, Dosage, Frequency)...

**Additional Notes**  
Any other relevant observations or instructions...

### DynamoDB Database:

#### 1. **medtrack\_users:**

This table stores all user profiles for the Medtrack application, including patient and doctor accounts. It contains essential login credentials, personal details, and user-specific attributes like specialization or age.

#### 2. **medtrack\_appointments:**

This table is dedicated to managing all scheduled medical appointments within the system. It records details such as the patient, doctor, date, time, reason for visit, and the current status of each appointment.

#### 3. **medtrack\_prescriptions:**

This table holds all digital prescriptions issued by doctors through the application. It details the prescribed medication, dosage, instructions, the prescribing doctor, and the patient it was issued for.

#### 4. **medtrack\_medication\_reminders:**

This table stores personalized medication reminders set by patients to help them adhere to their treatment plans. It includes the medication name, dosage, frequency, times, and tracks whether a dose has been taken

Table: medtrack_users - Items returned (2/4)					
<span style="float: right;">Actions ▾</span> <span style="float: right;">Create item</span>					
Scan started on July 04, 2025, 13:57:18					
<span style="float: right;">◀ 1 ▶ ⚙</span>					
email (String)	age	gender	location	medical_license	name
<input type="checkbox"/> <a href="#">ghgfhf@gmail.com</a>	66	other			Hjj
<input checked="" type="checkbox"/> <a href="#">kmanishvamsi@gmail...</a>			Hyderabad,...	ML12345	Steve
<input checked="" type="checkbox"/> <a href="#">manishvamsi1@gmail...</a>	20	male			Mani
<input type="checkbox"/> <a href="#">html@gmail.com</a>	66	male			John

Table: medtrack_prescriptions - Items returned (1)				
<span style="float: right;">Actions ▾</span> <span style="float: right;">Create item</span>				
Scan started on July 04, 2025, 13:57:35				
<span style="float: right;">◀ 1 ▶ ⚙</span>				
prescription_id (String)	date_prescribed	doctor_name	dosage	instructions
<input type="checkbox"/> <a href="#">61e8c798-0c09-4f35-ab44-4...</a>	2025-07-04	Steven	1 tablet	Take with food

Table: medtrack_appointments - Items returned (2)					
<span style="float: right;">Actions ▾</span> <span style="float: right;">Create item</span>					
Scan started on July 04, 2025, 13:57:41					
<span style="float: right;">◀ 1 ▶ ⚙</span>					
appointment_id (String)	date	doctor_name	patient_email	patient_name	⋮
<input type="checkbox"/> <a href="#">ec321f59-39c3-44c4-b2c8-d...</a>	2025-07-04	Steven	html@gmail.com	John doe	...
<input type="checkbox"/> <a href="#">15e91b04-d588-473...</a> <span style="color: blue;">🔗 ↻</span>	2025-07-04	Steven	manishvamsi1@...	Manish	...

## Conclusion:

The **MedTrack application** has been successfully developed and deployed using a robust cloud-based architecture tailored for modern healthcare environments. Leveraging AWS services such as EC2 for hosting, DynamoDB for secure and scalable patient data management, and SNS for real-time alerts, the platform ensures reliable and efficient access to essential medical tracking services. This system addresses critical challenges in healthcare such as managing patient records, monitoring medication schedules, and ensuring timely communication between healthcare providers and patients.

The cloud-native approach enables seamless scalability, allowing MedTrack to support increasing numbers of users and data without compromising performance or reliability. The integration of Flask with AWS ensures smooth backend operations, including patient registration, medication reminders, and health updates. Thorough testing has validated that all features—from user onboarding to alert notifications—function reliably and securely.

In conclusion, the MedTrack application delivers a smart, efficient solution for modernizing healthcare management, improving patient care, and streamlining communication between medical staff and patients. This project highlights the transformative power of cloud-based technologies in solving real-world challenges in the healthcare sector.