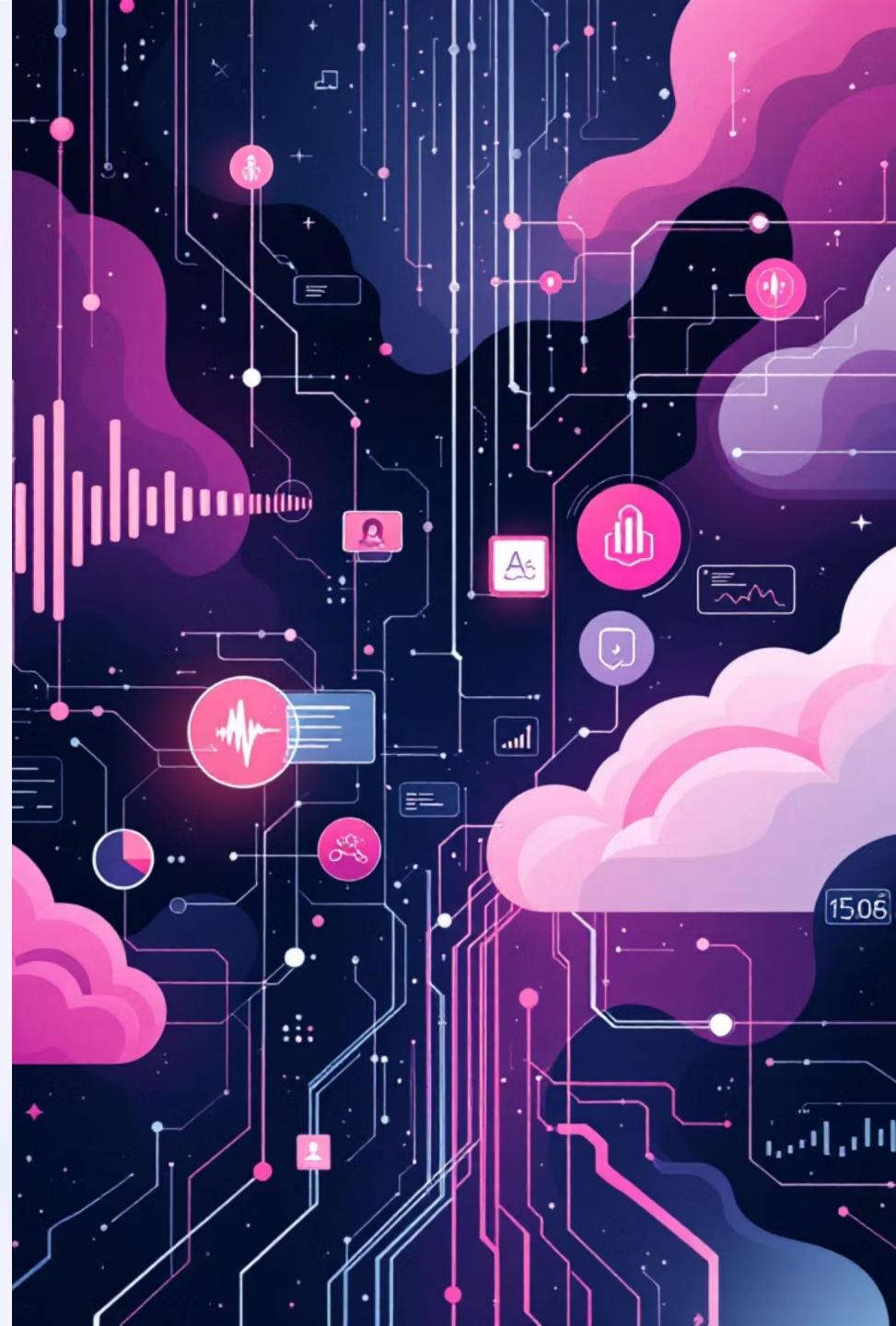


# InsurePlus: Smart Health Insurance Management System

A comprehensive, scalable solution for modern health insurance management built with microservices architecture and modular frontend design



# Transforming Health Insurance Management

## What is InsurePlus?

InsurePlus is an enterprise-grade health insurance management platform designed to streamline operations for administrators, agents, customers, claim officers, and hospitals. Built on modern architectural principles, it delivers seamless experiences across all user roles.

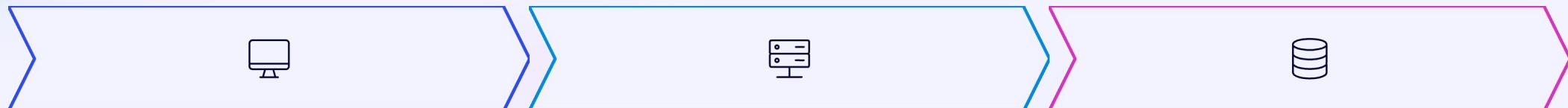
## Key Objectives

- Enable efficient policy and plan management
- Streamline claim processing workflows
- Facilitate hospital network integration
- Provide secure, role-based access control
- Deliver real-time notifications and updates



 SYSTEM ARCHITECTURE

# High-Level Architecture Overview



## Client Side

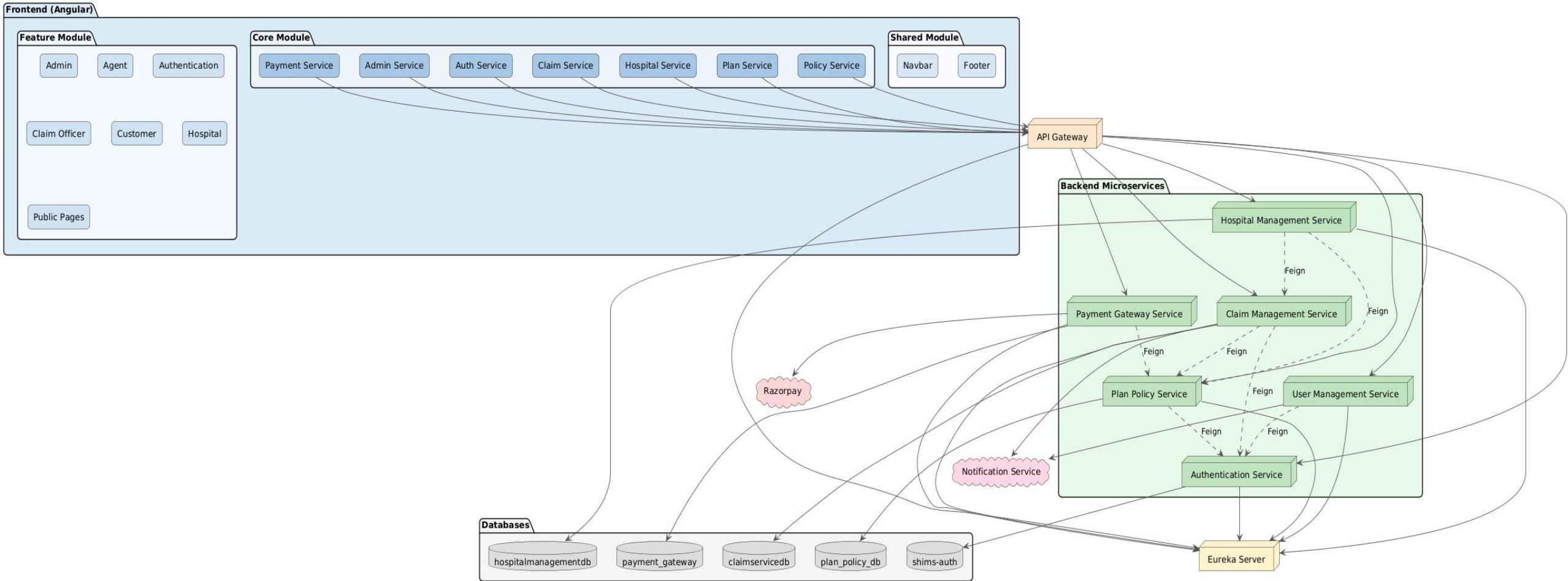
Angular-based frontend with modular architecture: Core Module (services), Feature Module (role-specific components), and Shared Module (common UI elements)

## Server Side

Eight Spring Boot microservices orchestrated through API Gateway and Eureka Server for service discovery, with OpenFeign for inter-service communication

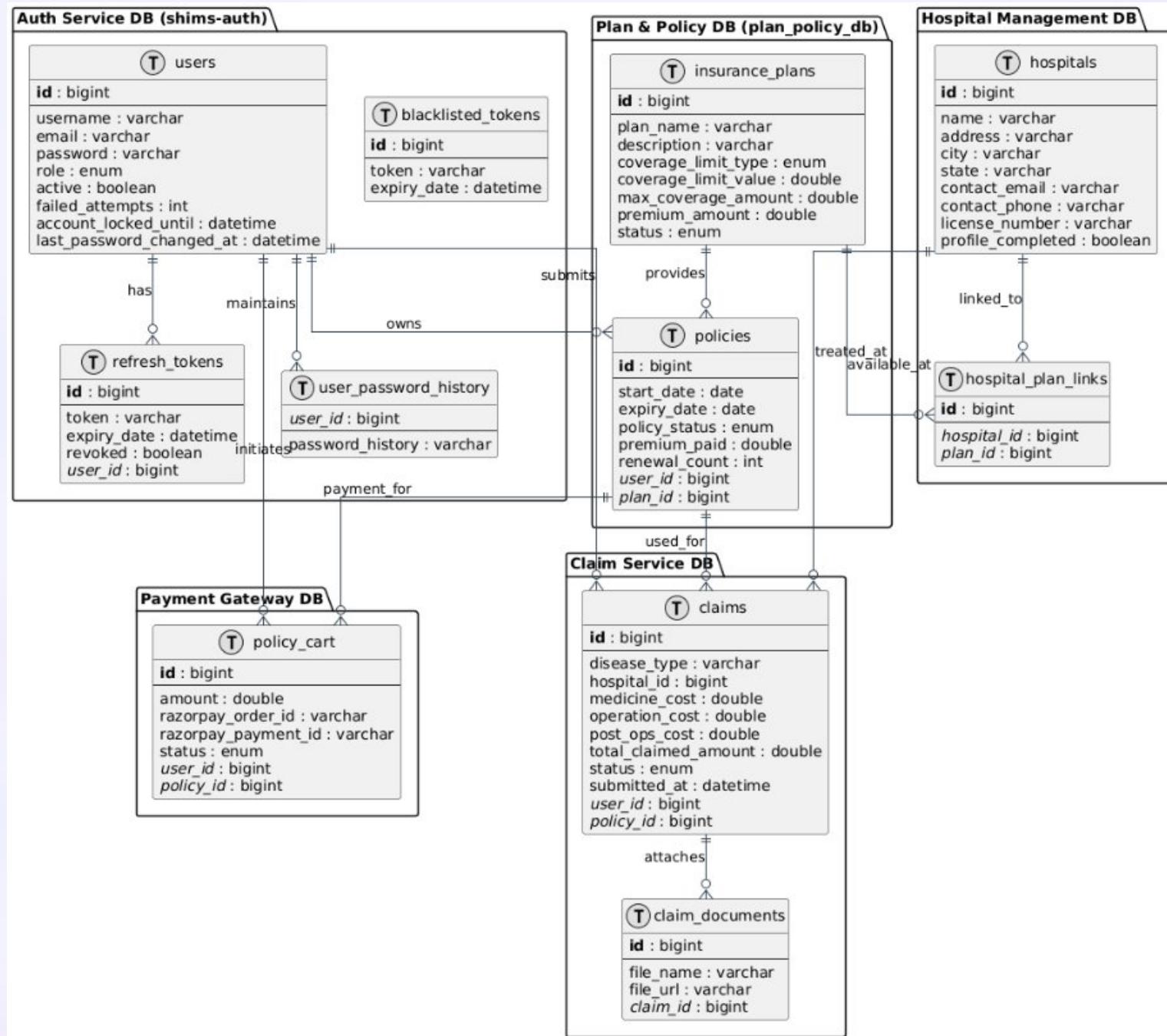
## Data Layer

Multiple MySQL databases providing data isolation and optimised storage for authentication, hospitals, claims, payments, and plan-policy management



# Architecture Diagram Of InsurePlus

# ER DIAGRAM



# Standout Features That Set Us Apart



## Role-Based Access Control (RBAC)

Granular permissions ensuring users access only authorised features based on their roles—Admin, Agent, Customer, Claim Officer, or Hospital staff.



## Lazy Loading Implementation

Feature modules load on-demand, dramatically reducing initial bundle size and improving application startup performance across all devices.



## SMTP Gmail Notifications

Real-time email alerts for critical events including payout confirmations, profile updates, and claim status changes, keeping all stakeholders informed.



## Robust Security Measures

Multi-layered security with password hashing, JWT tokens, HTTPS encryption, and regular security audits protecting sensitive insurance data.



## Razorpay Integration

Seamless payment processing with India's leading payment gateway, supporting multiple payment methods including cards, UPI, and net banking.



AUTHENTICATION & SECURITY

## JWT Authentication Flow



- **Security Benefits:** JWT tokens are stateless, reducing server load whilst providing secure, scalable authentication. Refresh tokens minimise frequent logins whilst maintaining security through short-lived access tokens.

# POSTMAN

POST <http://localhost:8081/api/auth/login> Send

Docs Params Authorization Headers (8) Body **raw** Scripts Settings Cookies

none form-data x-www-form-urlencoded raw binary GraphQL JSON Schema Beautify

```
1 {
2   "email": "neha01@example.com",
3   "password": "Neha@12345"
4 }
```

Body Cookies Headers (11) Test Results [Save Response](#)

200 OK • 242 ms • 971 B • [Save Response](#) [Raw](#) [JSON](#) [Preview](#) [Visualize](#)

```
1 {
2   "userId": 1,
3   "username": "neha01",
4   "email": "neha01@example.com",
5   "role": "ROLE_CUSTOMER",
6   "organizationId": null,
7   "accessToken": "eyJhbGciOiJIUzUxMiJ9.
     eyJzdWIiOiJuZWhhMDFAZxhhxBsZS5jb20iLCJ1c2VybmtzSI6Im5laGEwMSIsInJvbGUiOiJST0xFX0NVU1RPTUVSIiwib3JnYW5pe
     mF0aW9uSWQiOjIiLCJ1c2VybmtzSI6Im5laGEwMSIsInJvbGUiOiJST0xFX0NVU1RPTUVSIiwib3JnYW5pe
     g3MjAzNCwiZxhwIjoxNzY30Dc1NjM0fQ.
     bL2P6fEwPst5Vcgx8sScxhTvuuqdQ-d19jSAGPF-L4DQLTW6j4VfSAbfhuHISFumidHvoI_zceCeYRkw-o0xqg",
9   "refreshToken": "eyJhbGciOiJIUzUxMiJ9.
     eyJzdWIiOiJuZWhhMDFAZxhhxBsZS5jb20iLCJ1c2VybmtzSI6Im5laGEwMSIsInJvbGUiOiJST0xFX0NVU1RPTUVSIiwib3JnYW5pe
     P-GkPW7GsVmsLNBUQaNPJiTq0G73dQ_r6C7kXWsAZfebLLQ3Zxub4c9rfR8pgUxmZBzIlRBCSoJse44fh_E9g"
```

HTTP SHIMS / AuthService / Refresh Save Share

POST <http://localhost:8081/api/auth/refresh> Send

Docs Params Auth Headers (8) Body **raw** Scripts Settings Cookies

raw JSON Schema Beautify

```
1 {
2   "refreshToken": "eyJhbGciOiJIUzUxMiJ9.
     eyJzdWIiOiJuZWhhMDFAZxhhxBsZS5jb20iLCJ1c2VybmtzSI6Im5laGEwMSIsInJvbGUiOiJST0xFX0NVU1RPTUVSIiwib3JnYW5pe
     g3MjAzNCwiZxhwIjoxNzY4NDc20Dm0fQ.
     P-GkPW7GsVmsLNBUQaNPJiTq0G73dQ_r6C7kXWsAZfebLLQ3Zxub4c9rfR8pgUxmZBzIlRBCSoJse44fh_E9g"
3 }
```

Body [Save Response](#)

200 OK • 33 ms • 642 B • [Save Response](#) [Raw](#) [JSON](#) [Preview](#) [Visualize](#)

```
1 {
2   "accessToken": "eyJhbGciOiJIUzUxMiJ9.
     eyJzdWIiOiJuZWhhMDFAZxhhxBsZS5jb20iLCJ1c2VybmtzSI6Im5laGEwMSIsInJvbGUiOiJST0xFX0NVU1RPTUVSIiwib3JnYW5pe
     mF0aW9uSWQiOjIiLCJ1c2VybmtzSI6Im5laGEwMSIsInJvbGUiOiJST0xFX0NVU1RPTUVSIiwib3JnYW5pe
     g3MjAzNCwiZxhwIjoxNzY30Dc1NjM0fQ.
     bL2P6fEwPst5Vcgx8sScxhTvuuqdQ-d19jSAGPF-L4DQLTW6j4VfSAbfhuHISFumidHvoI_zceCeYRkw-o0xqg",
3 }
```

# Robust Multi-Layer Validation System Removed

## Client-Side Validation

Angular reactive forms with real-time validation feedback for hospital details, plan configurations, policy rules, and claim information. Prevents invalid data submission and enhances user experience with immediate error messages.

## Server-Side Validation

Spring Boot validators using Bean Validation (JSR-380) annotations ensure data integrity at the API level. Custom validators enforce business rules such as plan-hospital associations and claim eligibility criteria.

## Real-Time Notifications

SMTP-powered email notifications provide instant feedback on validation outcomes, successful operations, and system alerts. Users receive timely updates on claim processing, payment confirmations, and profile changes.

## Custom Business Rules

Sophisticated validation logic for hospital detail forms, plan-policy relationships, and claim processing workflows. Rules ensure hospitals are properly linked to plans, claims reference valid policies, and all business constraints are enforced.

localhost:4200/auth/register

Home Products Contact Us Log In Register

### Create Account

Join InsurePlus for comprehensive coverage

Username

Required username

Email Address

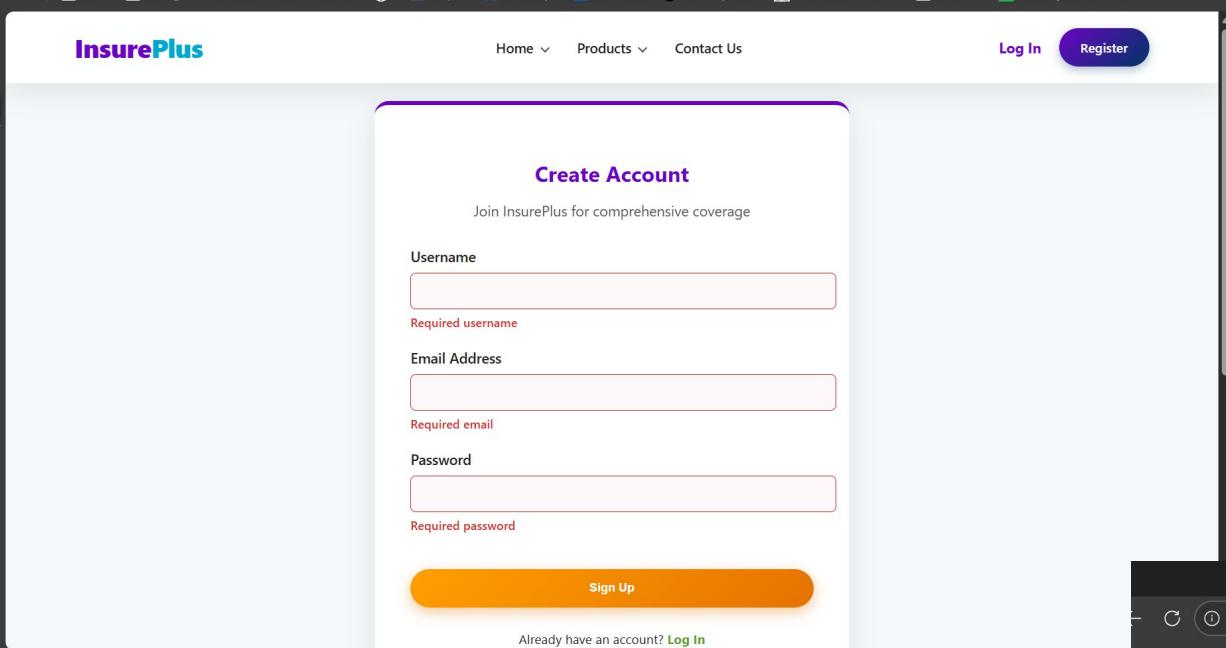
Required email

Password

Required password

**Sign Up**

Already have an account? [Log In](#)



localhost:4200/auth/login

Home Products Contact Us Log In Register

### Welcome Back

Sign in to access your portal

Email Address

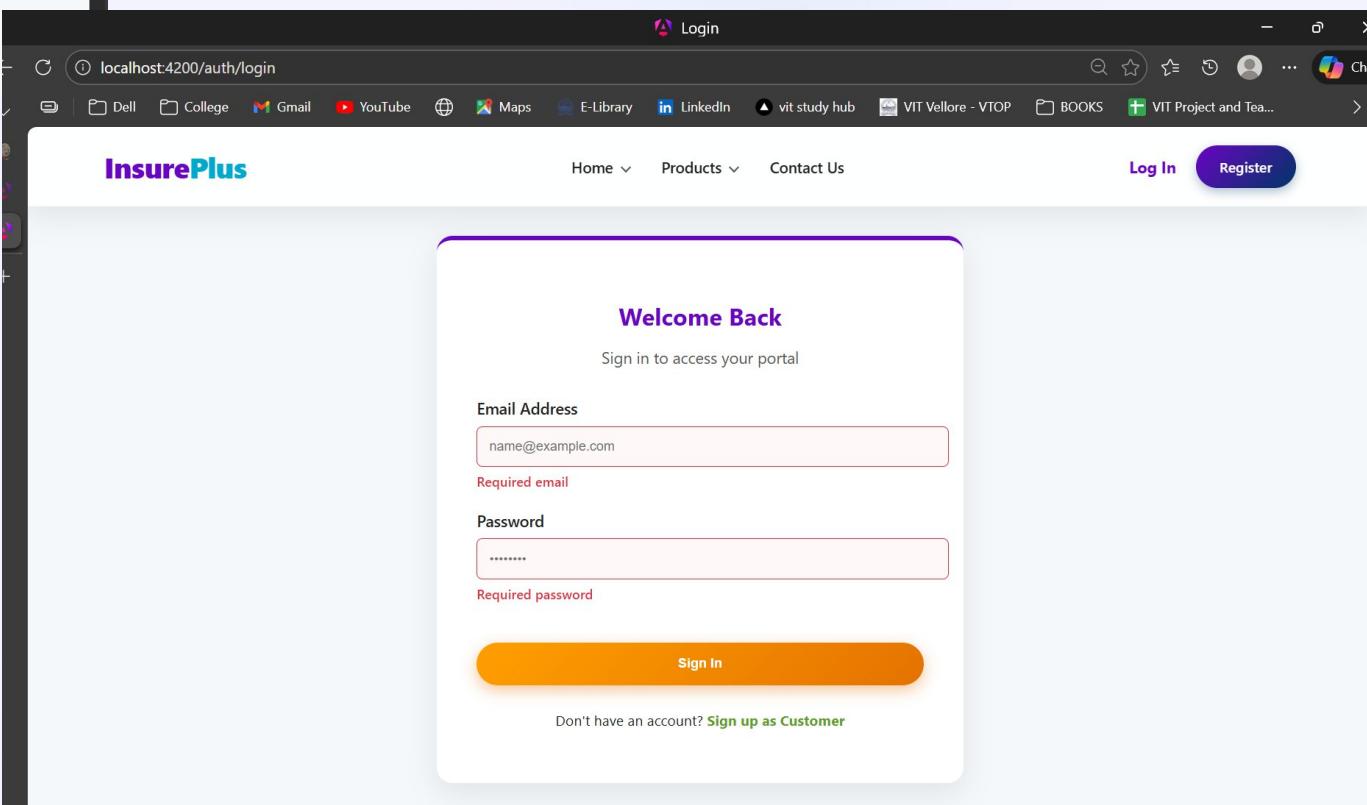
Required email

Password

Required password

**Sign In**

Don't have an account? [Sign up as Customer](#)



The screenshot displays two separate browser windows for the InsurePlus application.

**Top Window (Login Screen):**

- Title Bar:** localhost:4200 says
- Message:** Login failed! Please check credentials.
- Buttons:** OK
- Content:** Welcome Back, Sign in to access your portal, Email Address (name@example.com), Password (\*\*\*\*\*), Signing In..., Don't have an account? [Sign up as Customer](#)

**Bottom Window (Customer Dashboard):**

- Title Bar:** localhost:4200 says
- Message:** Enrollment Failed.
- Buttons:** OK
- Content:** InsurePlus, Buy Insurance, My Claims, Family Health Gold (Covers hospitalization & surgery, Premium: ₹15000, Cover: 110 PERCENT, Enroll Now), Family Health Gold Plus (Covers hospitalization & surgery, Premium: ₹16000, Cover: 20000 AMOUNT, Enroll Now), Pharmacy Family Plan (Covers Pharmaceutical Medical Bills, Premium: ₹10000, Cover: 12000 AMOUNT, Enroll Now)

[← Back to Dashboard](#)[Selected Plan](#)

## Family Health Gold

Covers hospitalization &amp; surgery

Premium

₹15,000

Coverage

110 PERCENT

Plan ID

#3

localhost:4200 says

Enrollment failed. User might already be enrolled.

Dashboard

Log Out

OK

## Enroll Customer

Link a registered user to this plan.

User Email Address

rmneha1234@gmail.com



✓ User Verified: Neha Sharma (ID: 21)

Ready to enroll Neha Sharma into Family Health Gold?



## Provider Portal

[My Profile](#)[Manage Network](#)[Claims Console](#)

localhost:4200 says

Failed to submit claim. Check Policy ID.

OK

## Submit Medical Claim

Patient Policy ID

3

Disease / Treatment

Heart Bypass Surgery

Operation Cost

400000

Medicine Cost

100000

Post-Ops / Other Cost

30000

TOTAL COST

325,000

SUBMITTED

155,000

SUBMITTED

184,820

SUBMITTED

Cancel

Submit Claim

Admin Dashboard

localhost:4200/admin/dashboard

Dell College Gmail YouTube Maps E-Library LinkedIn vit study hub VIT Vellore - VTOP BOOKS VIT Project and Tea...

Hi, admin01 Dashboard Log Out

InsurePlus Admin Panel Overview Manage Users Add User Manage Plans Manage Policies

Admin Console System Overview & User Management

admin01 admin@example.com A

System Analytics Real-time overview of platform performance.

18 TOTAL USERS 3 ACTIVE PLANS 12 TOTAL CLAIMS

User Demographics Claims Pipeline

Change Password

## ADMINISTRATION

# Centralised Admin Dashboard

InsurePlus

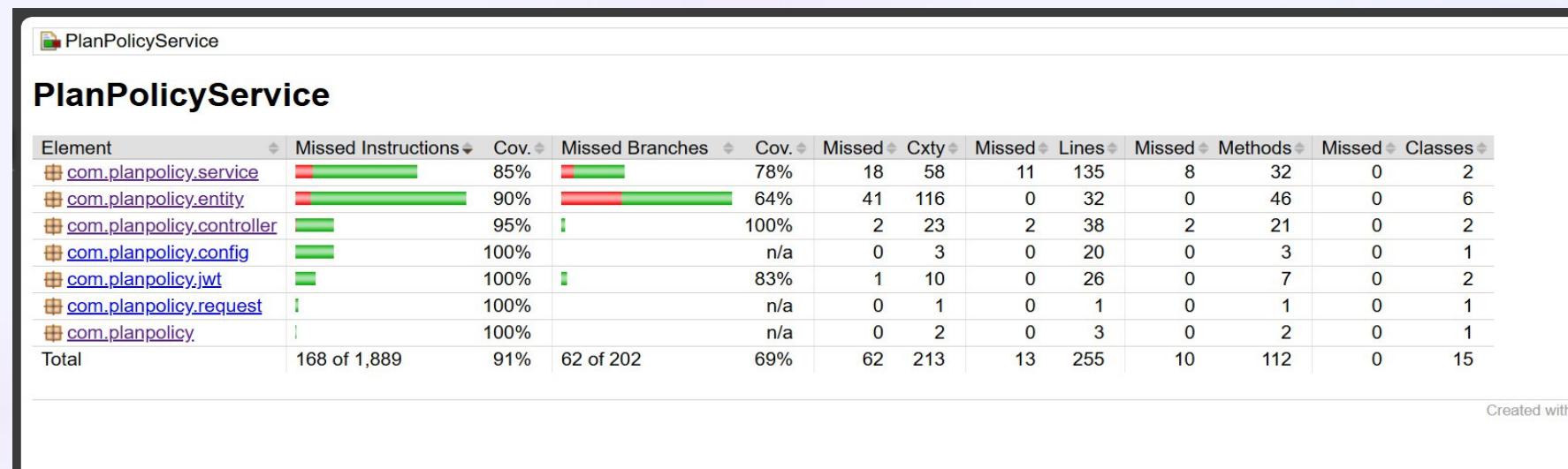
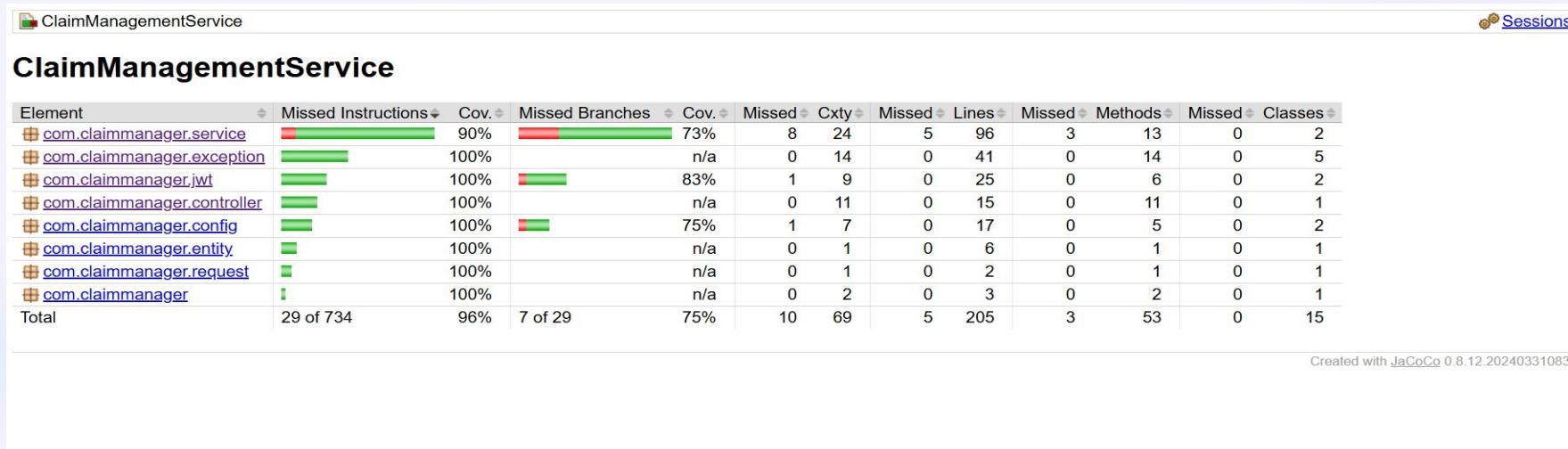
Home Products Contact Us Hi, admin01 Dashboard Log Out

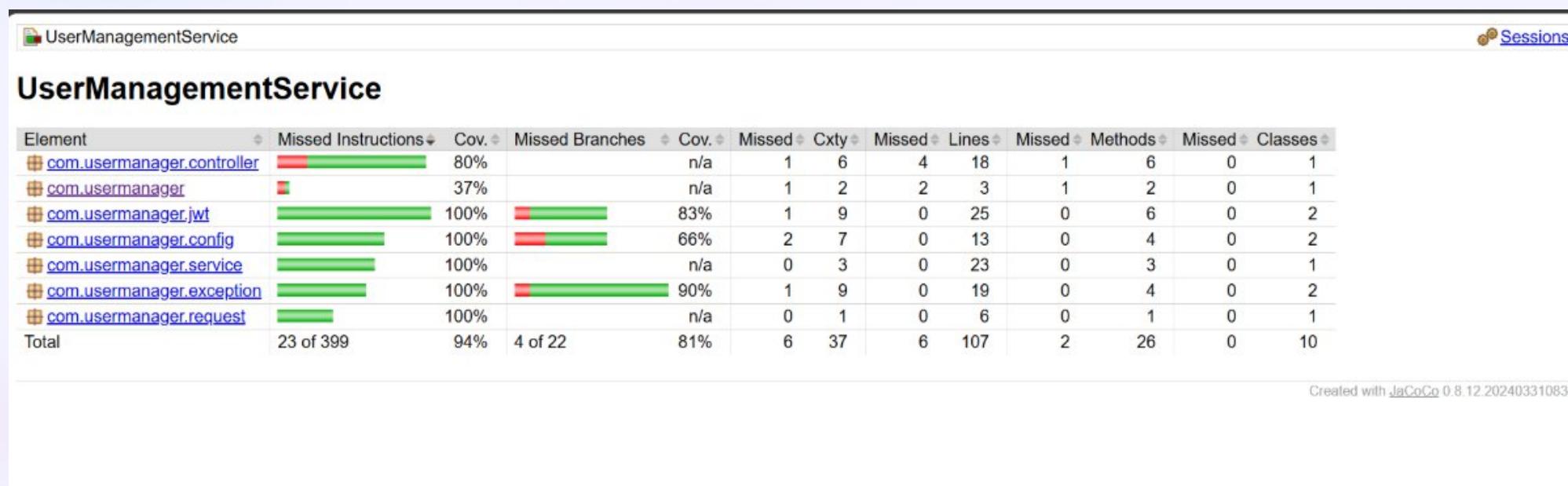
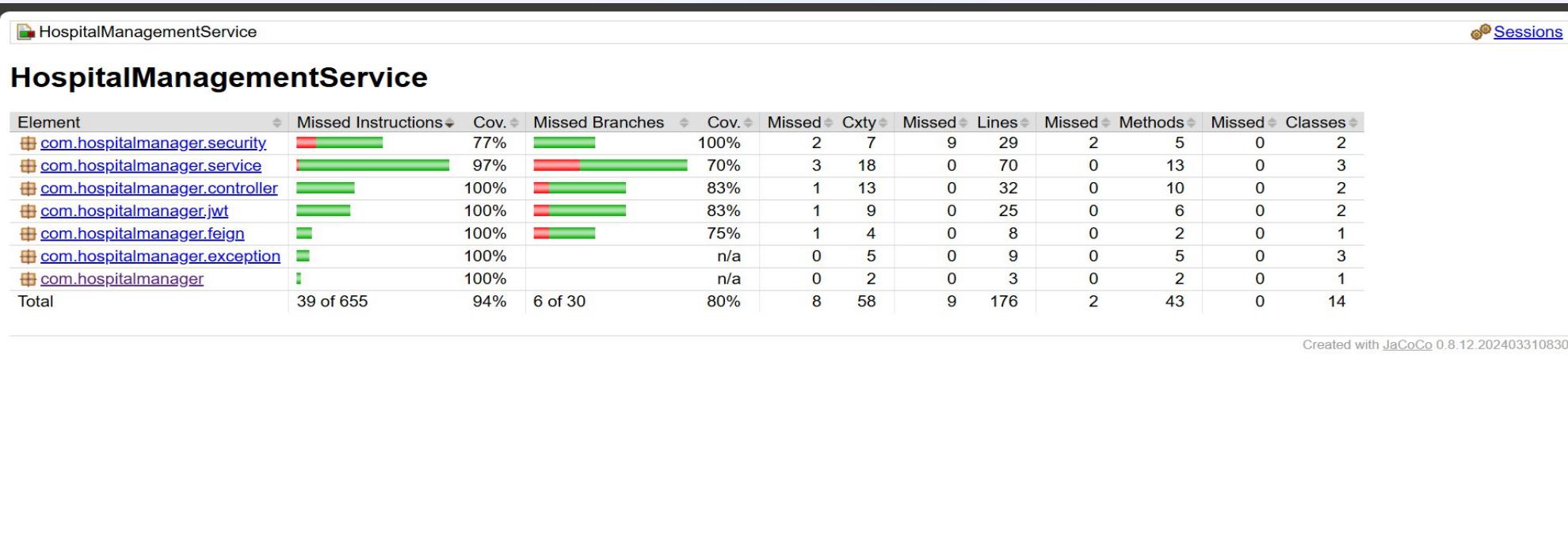
User Demographics

Claims Pipeline

Submitted In Review Approved Paid Rejected

# Ensuring Code Quality Through Comprehensive Testing Using JaCoCo Reporting





# Microservices Architecture with Eureka Service Discovery

The screenshot shows a web browser window with the URL `localhost:8090` in the address bar. The title of the page is "DS Replicas". Below the title, there is a search bar containing the text "localhost". The main content area is titled "Instances currently registered with Eureka" and contains a table with the following data:

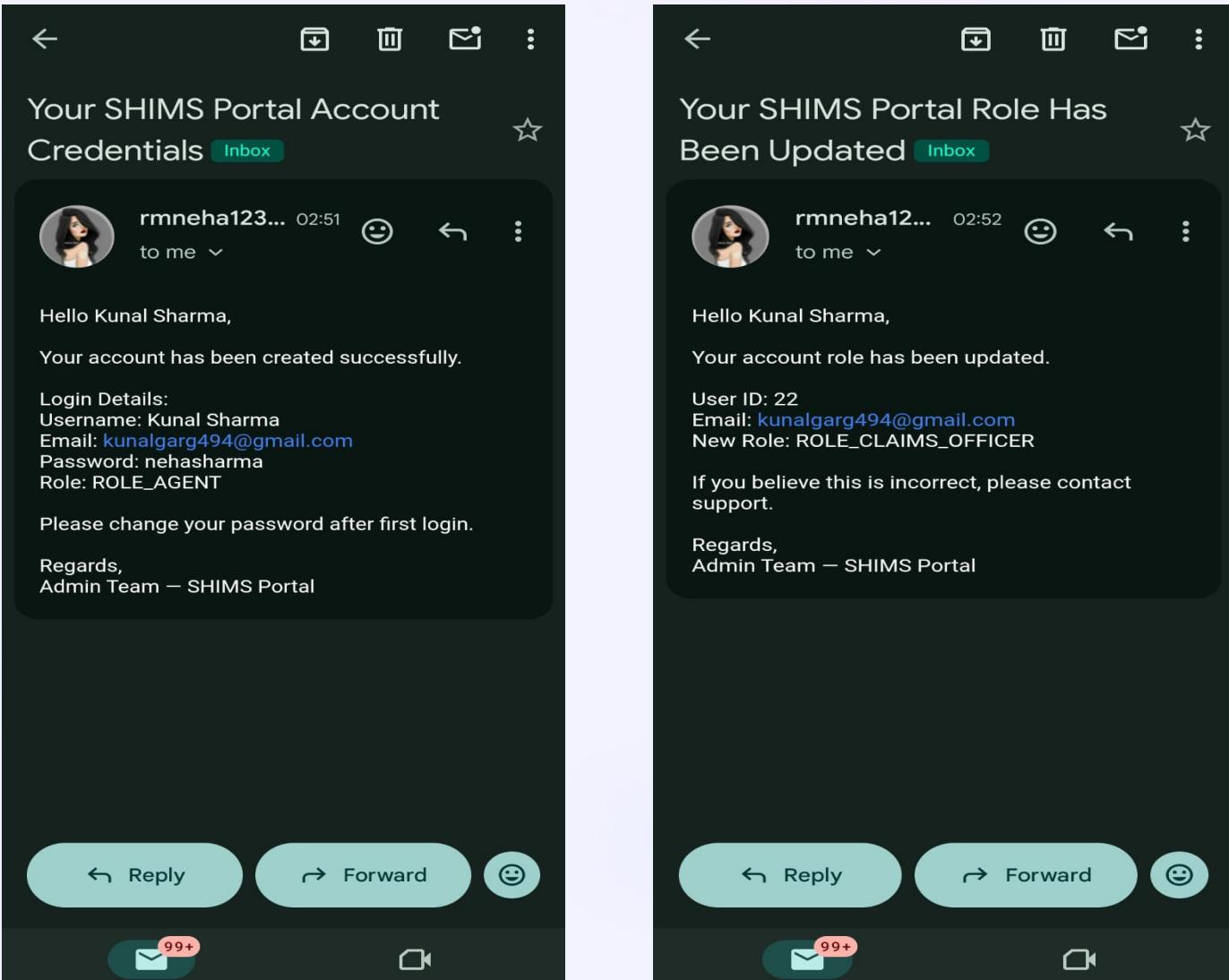
Application	AMIs	Availability Zones	Status
API-GATEWAY	n/a (1)	(1)	UP (1) - <a href="#">DESKTOP-QU5R752.mshome.net:API-Gateway:9000</a>
AUTHENTICATION-SERVICE	n/a (1)	(1)	UP (1) - <a href="#">DESKTOP-QU5R752.mshome.net:Authentication-Service:8081</a>
CLAIMMANAGEMENTSERVICE	n/a (1)	(1)	UP (1) - <a href="#">DESKTOP-QU5R752.mshome.net:ClaimManagementService:8084</a>
HOSPITALMANAGEMENTSERVICE	n/a (1)	(1)	UP (1) - <a href="#">DESKTOP-QU5R752.mshome.net:HospitalManagementService:8085</a>
PAYMENTGATEWAYSERVICE	n/a (1)	(1)	UP (1) - <a href="#">DESKTOP-QU5R752.mshome.net:PaymentGatewayService:8086</a>
PLANPOLICYSERVICE	n/a (1)	(1)	UP (1) - <a href="#">DESKTOP-QU5R752.mshome.net:PlanPolicyService:8082</a>
USERMANAGEMENTSERVICE	n/a (1)	(1)	UP (1) - <a href="#">DESKTOP-QU5R752.mshome.net:UserManagementService:8083</a>

Below the table, there is a section titled "General Info" with a table:

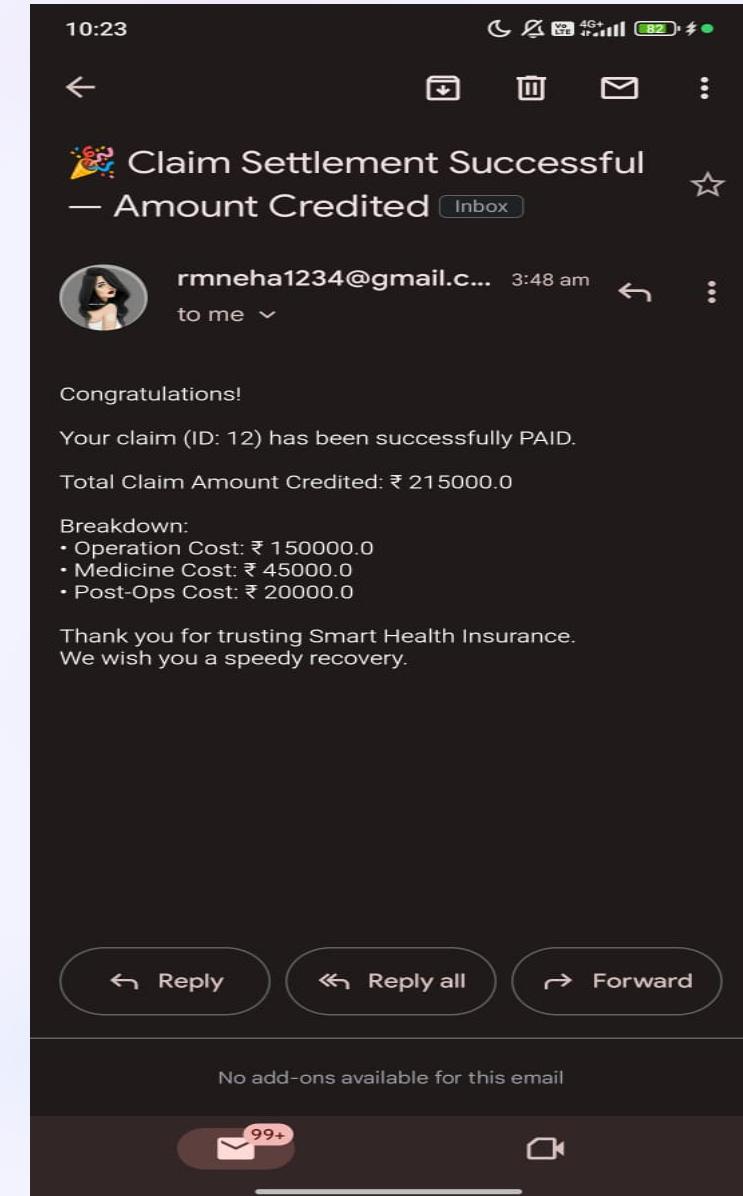
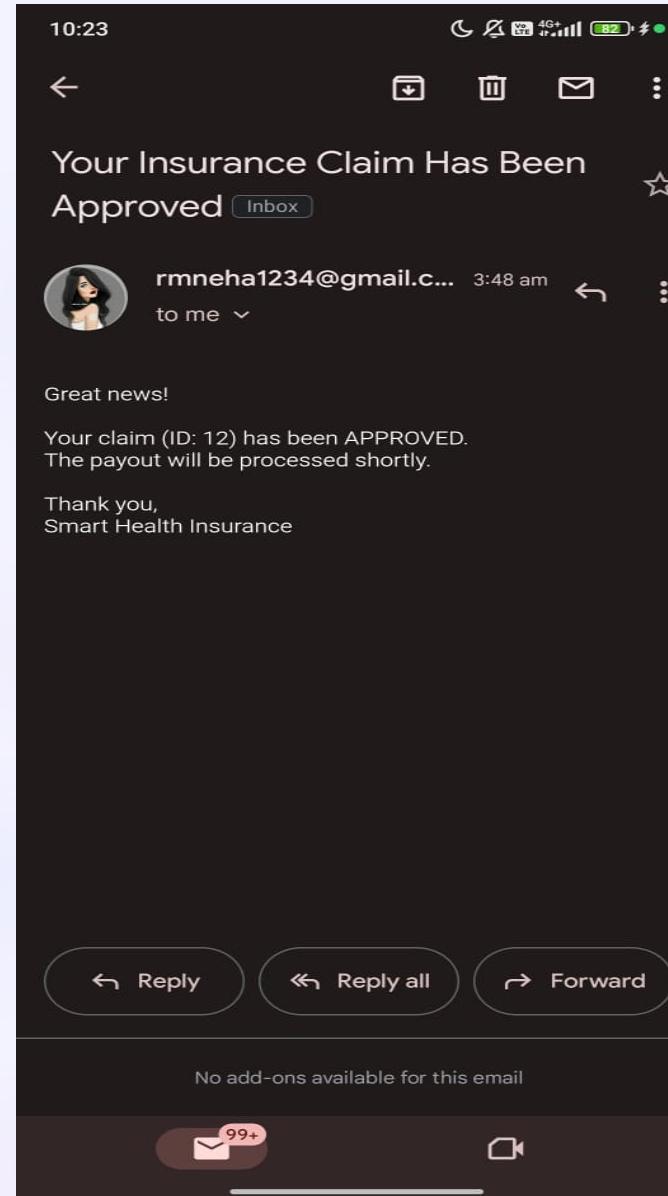
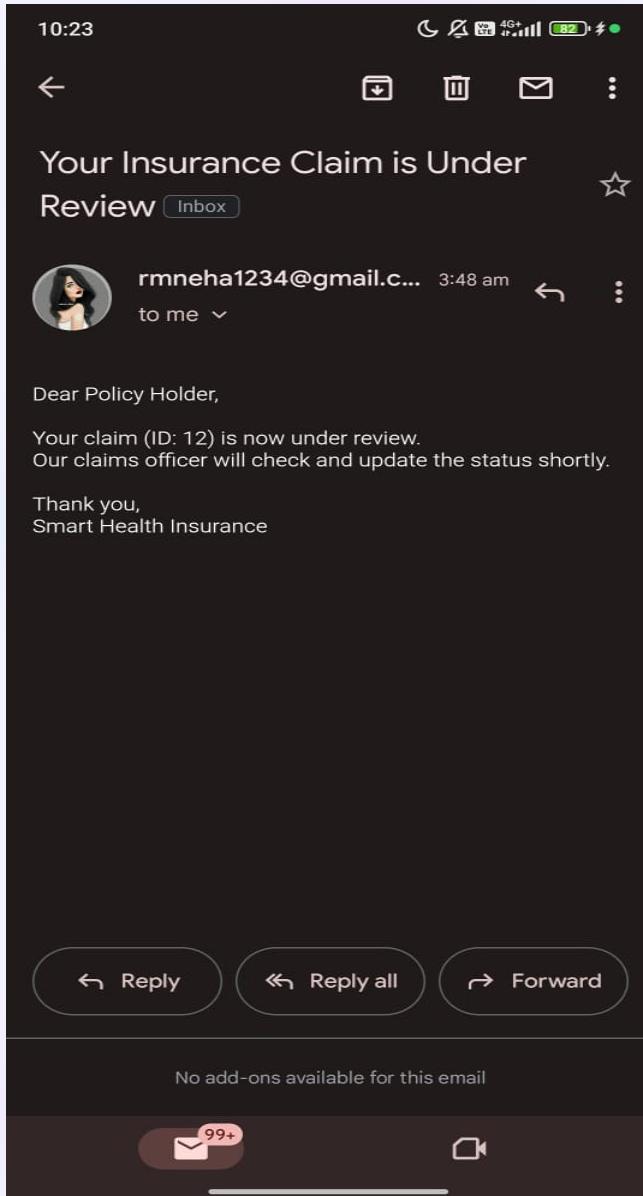
Name	Value
total-avail-memory	128mb

# SMTP Gmail Integration for Notifications

## EMAIL NOTIFICATION FOR USER CREATION AND ROLE UPDATION:



# EMAIL NOTIFICATIONS FOR CLAIM PROCESSING AND STATUS UPDATE OF CLAIMS:



# Payment Integration with Razorpay

localhost:4200/customer/dashboard

Sign in Chat

Dell College Gmail YouTube Maps E-Library LinkedIn vit study hub VIT Vellore - VTOP BOOKS VIT Project and Tea...

Test Mode

Now

**InsurePlus**

Price Summary  
₹15,000

Using as +91 99872 92823

Change Pass Secured by **Razorpay**

Payment Options

Recommended UPI QR

11:52

UPI

Cards

Netbanking

Wallet

Pay Later

Scan the QR using any UPI App

Now

Made with **GAMMA**

The screenshot shows a payment integration interface for an insurance company's customer dashboard. The main dashboard has a purple header with the company logo and navigation links like 'Buy Insurance' and 'My Claims'. A modal window titled 'Payment Options' is open, listing five recommended payment methods: UPI, Cards, Netbanking, Wallet, and Pay Later. Each method is accompanied by a small icon representing the payment gateway. To the right of the payment methods is a QR code labeled 'UPI QR' with the instruction 'Scan the QR using any UPI App'. Below the QR code are icons for various UPI apps. The entire interface is set against a dark background of the customer dashboard, with a red diagonal banner in the top right corner reading 'Test Mode'.



# Streamlined Operations: Docker Implementation

```
C:\Users\Neha Sharma\Desktop\CHUBB TRAINING\CHUBB_ALL_PROJECTS\CAPSTONE-SHIMS\SHIMS-backend>docker ps
```

CONTAINER ID	IMAGE NAMES	COMMAND	CREATED	STATUS	PORTS
64a945a4e593	payment-gateway-service:1.0 payment-gateway-service	"java -jar app.jar -..."	2 minutes ago	Up 2 minutes	0.0.0.0:8086->8086/tcp
ee52e9c39a94	hospital-management-service:1.0 hospital-management-service	"java -jar app.jar -..."	2 minutes ago	Up 2 minutes	0.0.0.0:8085->8085/tcp
241e100a402c	claim-management-service:1.0 claim-management-service	"java -jar app.jar -..."	2 minutes ago	Up 2 minutes	0.0.0.0:8084->8084/tcp
0d5099a60d77	authentication-service:1.0 authentication-service	"java -jar app.jar -..."	2 minutes ago	Up 2 minutes	0.0.0.0:8081->8081/tcp
8f3f689be6af	eureka-server:1.0 eureka-server	"java -jar app.jar -..."	4 minutes ago	Up 4 minutes	0.0.0.0:8090->8090/tcp
65e46e4bb0b3	mysql:8.0 6/tcp mysql-payment	"docker-entrypoint.s..."	4 minutes ago	Up 4 minutes	33060/tcp, 0.0.0.0:3311->330
233c95717eea	mysql:8.0 6/tcp mysql-hospital	"docker-entrypoint.s..."	5 minutes ago	Up 5 minutes	33060/tcp, 0.0.0.0:3310->330
15e72b081351	mysql:8.0 6/tcp mysql-claims	"docker-entrypoint.s..."	5 minutes ago	Up 5 minutes	33060/tcp, 0.0.0.0:3309->330
c5b6352507e6	mysql:8.0 6/tcp mysql-policy	"docker-entrypoint.s..."	6 minutes ago	Up 6 minutes	33060/tcp, 0.0.0.0:3308->330
9bc0f333ccad	mysql:8.0 6/tcp mysql-auth	"docker-entrypoint.s..."	8 minutes ago	Up 8 minutes	33060/tcp, 0.0.0.0:3307->330

```
C:\Users\Neha Sharma\Desktop\CHUBB TRAINING\CHUBB_ALL_PROJECTS\CAPSTONE-SHIMS\SHIMS-backend>docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
user-management-service	1.0	bb9988cf0750	13 minutes ago	479MB
payment-gateway-service	1.0	d58e83ee6a4f	15 minutes ago	548MB
hospital-management-service	1.0	11680d56a8ab	15 minutes ago	523MB
claim-management-service	1.0	68f4e36e6472	16 minutes ago	524MB
plan-policy-service	1.0	6eecae6e8afa	17 minutes ago	525MB
authentication-service	1.0	4bbe9692fee6	17 minutes ago	537MB
api-gateway	1.0	995d3ce7cf52	18 minutes ago	468MB
eureka-server	1.0	3158b5d3bb01	19 minutes ago	478MB
mysql	8.0	271aa4b4c844	39 hours ago	1.06GB
backend-light-api-gateway	latest	0b40242eb674	2 days ago	665MB

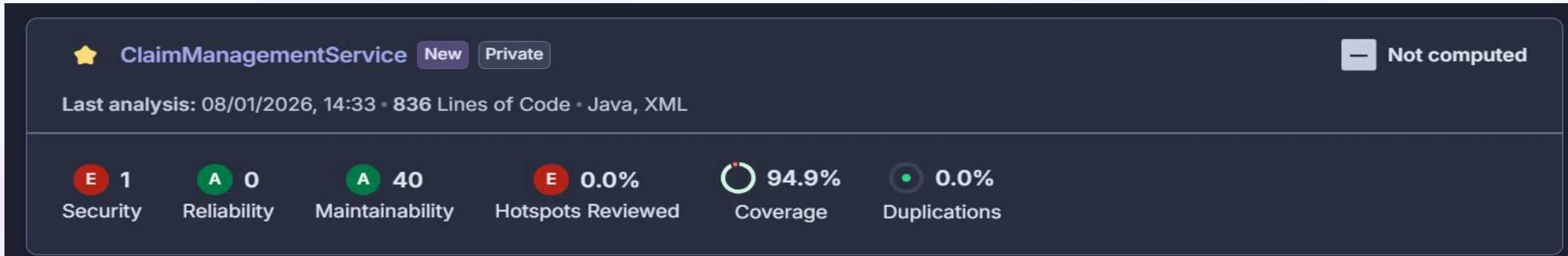
# SonarQube: Continuous Code Quality Analysis

## Static Code Analysis

SonarQube performs comprehensive static analysis, detecting bugs, code smells, and security vulnerabilities across all microservices. Detailed reports highlight technical debt and maintainability

## Quality Gates

Configurable quality gates enforce coding standards and coverage thresholds, preventing substandard code from reaching production. Integration with CI/CD pipelines ensures continuous quality monitoring throughout the development lifecycle.



⭐ HospitalManagementService [New](#) [Private](#)

— Not computed

Last analysis: 09/01/2026, 06:00 · 752 Lines of Code · Java, XML

E 1  
Security

A 0  
Reliability

A 14  
Maintainability

E 0.0%  
Hotspots Reviewed

92.7%  
Coverage

0.0%  
Duplications

⭐ PlanPolicyService [New](#) [Private](#)

— Not computed

Last analysis: 09/01/2026, 06:07 · 811 Lines of Code · Java, XML

E 1  
Security

A 0  
Reliability

A 24  
Maintainability

E 0.0%  
Hotspots Reviewed

83.6%  
Coverage

0.0%  
Duplications

⭐ UserManagementService [New](#) [Private](#)

— Not computed

Last analysis: 08/01/2026, 14:06 · 521 Lines of Code · Java, XML

E 1  
Security

A 0  
Reliability

A 9  
Maintainability

E 0.0%  
Hotspots Reviewed

92.2%  
Coverage

0.0%  
Duplications

# Jenkins: CI/CD Pipeline for Microservices

 Jenkins / SHIMS-backend / #10

 Status  #10 (Jan 8, 2026, 5:54:39 PM)  Add description  Keep this build forever

</> Changes  Started by user Neha Sharma Started 32 sec ago  
Took 20 sec

</> Console Output  This run spent:

- 10 ms waiting;
- 20 sec build duration;
- 20 sec total from scheduled to completion.

</> Edit Build Information  Revision: f2bbd9a99f9697be3b6c34859e4c8d97a7badbc6

</> Delete build '#10'  Repository: [https://github.com/NehaSharma4122/CAPSTONE\\_SHIMS\\_BACKEND.git](https://github.com/NehaSharma4122/CAPSTONE_SHIMS_BACKEND.git)

</> Timings  refs/remotes/origin/master

</> Git Build Data  No changes.

</> Pipeline Overview  Restart from Stage

</> Replay  Previous Build

</> Pipeline Steps  Workspaces

</> Workspaces

```
PS C:\Users\Neha Sharma> docker ps
```

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
40418f527464	capstone-claim-management-service claim-management-service	"java -jar app.jar -..."	4 minutes ago	Up 4 minutes	0.0.0.0:8084->8084/tcp
83fb63fe6c54	capstone-plan-policy-service plan-policy-service	"java -jar app.jar -..."	4 minutes ago	Up 4 minutes	0.0.0.0:8082->8082/tcp
39bd40fbe6de	capstone-payment-gateway-service payment-gateway-service	"java -jar app.jar -..."	4 minutes ago	Up 4 minutes	0.0.0.0:8086->8086/tcp
df15b36b86fa	capstone-user-management-service user-management-service	"java -jar app.jar -..."	4 minutes ago	Up 4 minutes	0.0.0.0:8083->8083/tcp
2581fa626206	capstone-authentication-service authentication-service	"java -jar app.jar -..."	4 minutes ago	Up 4 minutes	0.0.0.0:8081->8081/tcp
79bf89e6e74a	capstone-hospital-management-service hospital-management-service	"java -jar app.jar -..."	4 minutes ago	Up 4 minutes	0.0.0.0:8085->8085/tcp
4c184690575e	capstone-api-gateway api-gateway	"java -jar app.jar -..."	4 minutes ago	Up 4 minutes	0.0.0.0:9000->9000/tcp
3b5aefc95a5d	mysql:8 mysql-claims	"docker-entrypoint.s..."	4 minutes ago	Up 4 minutes	3306/tcp, 33060/tcp
45f387c727bb	mysql:8 mysql-policy	"docker-entrypoint.s..."	4 minutes ago	Up 4 minutes	3306/tcp, 33060/tcp
b7ed264f1f29	mysql:8 mysql-payment	"docker-entrypoint.s..."	4 minutes ago	Up 4 minutes	3306/tcp, 33060/tcp
7c95272c7cbf	mysql:8 mysql-user	"docker-entrypoint.s..."	4 minutes ago	Up 4 minutes	3306/tcp, 33060/tcp
88e92f121548	mysql:8 mysql-auth	"docker-entrypoint.s..."	4 minutes ago	Up 4 minutes	3306/tcp, 33060/tcp
3199cfbd959d	mysql:8 mysql-hospital	"docker-entrypoint.s..."	4 minutes ago	Up 4 minutes	3306/tcp, 33060/tcp
05c1f7aece2d	capstone-eureka-server eureka-server	"java -jar app.jar -..."	4 minutes ago	Up 4 minutes	0.0.0.0:8090->8090/tcp

```
PS C:\Users\Neha Sharma> |
```

# CONFIG SERVER

← → ⌂ [github.com/NehaSharma4122/SHIMS-ConfigServer](https://github.com/NehaSharma4122/SHIMS-ConfigServer) ⌂ Error :

Gmail YouTube Maps VIT Vellore - VTOP LinkedIn vit study hub Resume Placement Notes Interview Preparation (2) Neha Sharma's...

NehaSharma4122 / SHIMS-ConfigServer Type / to search

<> Code Issues Pull requests Actions Projects Wiki Security Insights Settings

 SHIMS-ConfigServer Public Pin Watch 0 Fork 0 Star 0

main 1 Branch 0 Tags Go to file Add file <> Code About

No description, website, or topics provided.

 NehaSharma4122 Add UserManagementService configuration properties 6ff308f · 1 hour ago 8 Commits

 API-Gateway.properties	Add API Gateway configuration properties	1 hour ago
 Authentication-Service.properties	Add configuration for Authentication Service	1 hour ago
 ClaimManagementService.properties	Add ClaimManagementService properties configuration	1 hour ago
 EurekaServer.properties	Add initial configuration for Eureka Server	1 hour ago
 HospitalManagementService.properties	Create HospitalManagementService.properties	1 hour ago
 PaymentGatewayService.properties	Add PaymentGatewayService configuration properties	1 hour ago
 PlanPolicyService.properties	Add configuration for PlanPolicyService	1 hour ago
 UserManagementService.properties	Add UserManagementService configuration properties	1 hour ago

Activity 0 stars 0 watching 0 forks

Releases No releases published Create a new release

Packages No packages published Publish your first package



# THANK YOU !