PROJECT DOCUMENTATION

INSURAI – AI POWERED INSURANCE ASSISTANCE SYSTEM

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1. ABSTRACT

Insurance systems in many organizations still rely on manual processes for policy management, claims handling, and customer support, leading to inefficiencies and delays.
InsurAI – AI Powered Insurance Assistance System is a full-stack web application developed to automate and optimize insurance-related workflows using modern technologies and artificial intelligence.

The system provides role-based access for **Admin, HR, Agent, and Employee**, enabling secure authentication, policy management, claim processing, fraud detection, and AI-powered user assistance.
The application is built using **Spring Boot** for the backend, **React (Vite)** for the frontend, **MYSQL** for cloud database services, and **Cohere AI** for intelligent chatbot responses.

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2. INTRODUCTION

With the growing demand for digital transformation in the insurance sector, organizations require scalable, secure, and intelligent platforms to manage insurance operations efficiently.
InsurAI addresses these needs by offering a centralized insurance portal that supports automation, analytics, and AI-driven interactions.

The system ensures:

- Faster claim processing
- Secure role-based authentication
- Reduced manual intervention
- Improved user experience through AI support

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3. OBJECTIVES OF THE PROJECT

- To develop a secure insurance management platform
- To automate claim submission and tracking
- To provide AI-powered assistance for insurance queries
- To implement role-based dashboards for different users
- To ensure data security using JWT authentication

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4. SYSTEM ARCHITECTURE

4.1 Architecture Overview

The Insurai system follows a **three-tier architecture**:

1. **Presentation Layer** – React frontend
2. **Application Layer** – Spring Boot REST APIs
3. **Data Layer** –MYSQL

4.2 Architecture Diagram (Text Representation)

User

|

Frontend (React + Vite)

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REST APIs (JSON)

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Backend (Spring Boot + JWT Security)

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Database (MYSQL)

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AI Integration (Cohere API)

5. TECHNOLOGY STACK

5.1 Frontend Technologies

- React (Vite)
- JavaScript
- HTML5 & CSS3
- Axios (API integration)
- React Router (Routing)

5.2 Backend Technologies

- Java 17
- Spring Boot
- Spring Security
- JWT Authentication
- Spring Data JPA
- Hibernate ORM

5.3 Database

- **MYSQL**

5.4 AI & Cloud Services

- Cohere AI (Chatbot & intelligent responses)
- Supabase Storage (File handling)

5.5 Tools

- Git & GitHub
- Postman
- Eclipse IDE
- Netlify

6. MODULE DESCRIPTION

6.1 Admin Module

- Admin login with JWT authentication
- Manage users (HR, Agent, Employee)
- View and manage insurance claims
- Fraud detection dashboard
- Audit logs and reports
- Policy management

6.2 HR Module

- Employee onboarding
- Assign policies to employees
- Monitor fraud-related claims
- Generate reports and analytics

6.3 Agent Module

- View assigned claims
- Resolve employee queries
- Update claim status
- Manage availability
- View reports

6.4 Employee Module

- User registration and login
- View insurance policies
- Submit insurance claims
- Track claim status
- Ask questions via AI chatbot
- View notifications and support

7. AUTHENTICATION & SECURITY

- JWT-based authentication
- Role-based authorization
- Password encryption using BCrypt
- Custom authentication filters for Admin, HR, Agent, and Employee
- CORS configuration enabled
- Secure REST APIs

8. API TESTING

All backend APIs were tested using **Postman**.

Example: Admin Login API

Endpoint:

POST http://localhost:8080/admin/login

Request Body:


```
{
  "email": "admin@insurai.com",
  "password": "Admin@123"
}
```


Response:


```
{
  "message": "Login successful",
  "name": "Admin",
  "role": "ADMIN",
```

"token": "<JWT_TOKEN>"
}

9. TESTING & VALIDATION

- Backend APIs tested using Postman
- Frontend tested on live Netlify deployment
- Role-based routing validated
- JWT token validation tested
- Multiple user flows verified

10. ADVANTAGES OF THE SYSTEM

- Fully automated insurance workflows
- Secure authentication and authorization
- AI-powered user support
- Cloud-based scalable architecture
- User-friendly dashboards
- Real-time claim tracking

11. LIMITATIONS

- Backend currently runs locally (can be deployed to cloud in future)
- AI chatbot depends on external API availability
- Limited analytics customization in current version

12. FUTURE ENHANCEMENTS

- Cloud deployment of backend (AWS / Azure)
- Advanced AI-based fraud detection
- Mobile application integration
- Payment gateway integration
- Advanced analytics dashboards

13. CONCLUSION

InsurAI is a complete AI-powered insurance assistance platform that demonstrates the practical implementation of full-stack Java development with modern frontend technologies and AI integration.
The project successfully meets its objectives by providing a secure, scalable, and intelligent solution for insurance management.

14. REFERENCES

- Spring Boot Documentation
- React & Vite Documentation
- Cohere AI API Documentation