Software Requirements Specification (Group - 9)

Automated Invoice & HR Document Processing and Reconciliation System

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1. Introduction

1.1 Purpose

This document specifies the requirements for the **Automated Invoice & HR Document Processing and Reconciliation System.**

1.2 Scope

The system automates:

- Invoice processing and reconciliation
- HR document analysis and structured data extraction
- Secure user authentication and personalized dashboards

Key objectives:

- Reduce manual invoice handling
- Extract structured data from HR documents
- Enable scalable document processing using AWS SQS
- Provide secure access and activity tracking

1.3 Definitions, Acronyms, and Abbreviations

- **OCR** – Optical Character Recognition
- **JWT** – JSON Web Token
- **SQS** – Simple Queue Service

1.4 Overview

This SRS describes system features, user roles, interfaces, functional and non-functional requirements.

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2. Overall Description

2.1 Product Perspective

The system is a **web-based enterprise application** built using:

- MERN-like architecture (React + Node.js)
- SQL-based relational database
- AWS SQS for asynchronous document processing
- OCR based extraction modules

2.2 Product Functions

- Secure user authentication using JWT
- Invoice upload, extraction, validation, and reconciliation
- HR document upload and resume data extraction
- Excel sheet generation for HR records
- Dashboard for tracking invoices and document history

2.3 Operating Environment

- Web browser (Chrome, Edge, Firefox)
- Backend: Node.js server
- Database: SQL (MySQL / PostgreSQL)
- Cloud Services: AWS SQS

2.4 Design and Implementation Constraints

- OCR accuracy depends on document quality
- AWS credentials required for SQS integration
- JWT tokens must be securely stored and managed

2.5 Assumptions and Dependencies

- Documents are uploaded in supported formats (PDF, JPG, PNG)
- HR documents are text-based resumes or forms

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3. External Interface Requirements

3.1 User Interface

- Login and registration pages
- Role-based dashboards
- Invoice and HR document upload forms
- Downloadable Excel reports
- Invoice history and status views

3.2 Software Interfaces

- AWS SQS for message-based processing

- OCR Engine
- SQL Database Server
- Excel file generator library

3.3 Communication Interfaces

- REST APIs over HTTPS
- Secure JWT-based authorization headers

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4. System Features (Functional Requirements)

4.1 Authentication and Authorization Module

- System shall authenticate users using JWT
- System shall enforce role-based access control
- Users shall remain logged in until token expiration
- Users shall only access their own invoice and document history

4.2 Invoice Upload and Processing Module

- Users can upload invoices in multiple formats
- All invoice documents shall be sent to AWS SQS
- System shall process invoices asynchronously
- System shall support multiple invoice formats and layouts

4.3 Invoice Data Extraction

- Extract invoice number, vendor name, date, line items, tax, and total amount
- Assign confidence scores to extracted fields
- Store extracted data in SQL tables

4.4 Invoice Validation and Reconciliation (Optional)

- Detect duplicate invoices
- Match invoices with purchase orders and payment records
- Mark invoices as matched, partially matched, or mismatched

4.5 HR Documentation Module

- HR users can upload resumes or HR documents
- System shall extract candidate name, years of experience, job position / role
- System shall store extracted HR data in SQL database
- System shall generate and export HR data as an Excel sheet

4.6 Dashboard and History Tracking

- Users can view uploaded invoices, invoice processing status, HR document history

4.7 Reporting Module

- Generate invoice reports in Excel formats (vendor-wise, status-wise)
- Export HR details in Excel format

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5. Non-Functional Requirements

5.1 Performance

- Invoice processing should complete within 5 seconds per document
- System should handle concurrent uploads efficiently

5.2 Security

- JWT-based authentication
- Secure password storage using hashing
- Encrypted data transmission (HTTPS)

5.3 Scalability

- System shall scale horizontally using SQS queues
- Database shall support growing data volume

5.4 Maintainability

- Modular architecture
- Easy integration of new document types

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6. Data Requirements (SQL Schema Overview)

- Users (user_id, role, credentials)
- Invoices (invoice_id, vendor, amount, status, user_id)
- Invoice_Items
- HR_Documents (doc_id, name, experience, position)

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7. Conclusion

This system provides a secure, scalable, and intelligent solution for invoice and HR document automation. It integrates cloud services, authentication, and structured data extraction to significantly reduce manual effort..