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Page No.:
Date:

Q2) Credit Card Processing System

Problem Statement: Design and implement a Credit Card Processing System that enables authorization, authentication and ensures a secure system.

SRS Document:

1. Introduction

1.1 Purpose of Document:

This document specifies the requirements required for the Credit Card Processing System (CCPS). It defines the scope, functionality, performance, and constraints of the system to ensure secure, efficient, and reliable processing of credit card transactions.

1.2 Scope of Document:

The Credit Card Processing System (CCPS) will enable authorization, authentication, transaction settlement, and reporting of credit card payments. It will serve merchants, banks, cardholders, ensuring compliance with financial regulations (PCI-DSS). The system will integrate with merchant POS systems, online portals, and banking networks.

1.3 Overview:

The system will:

- Validate customer credentials
- Process payments in real time
- Support refunds and cancellations
- Maintain transaction logs
- Provide reporting dashboards.

2) General Description:

The system acts as middleware between merchants and financial institutions. It captures transaction details, verifies them against card networks, ensures funds availability, and provides confirmation. Users include:

- Merchants (initiate payment requests)
- Cardholders (authorize payments)
- Banks/ payment gateways (approve / settle funds)

3) Functional Requirements

FR1: Authenticate cardholders using card number, CVV, and OTP/PIN.
FR2: Authorize transaction amount with issuing bank.
FR3: Handle approvals, declines, refunds, and reversals
FR4: Generate digital receipts and transaction IDs
FR5: Maintain secure logs of all transaction
FR6: Support multi-currency payments.
FR7: Provide reporting for merchants and banks.

4) Interface Requirement

- User Interface: Web dashboard for merchants, payment page for customers
- External interface: Integration with POS terminals, mobile apps and online store
- API interfaces: REST APIs for bank authorization and merchant systems

5) Performance Requirement

- System must handle up to 5000 transaction / second
- Response time for authorization ≤ 3 seconds
- Uptime requirement: 99.9% availability.

6) Design Constraints

- Must comply with PCI-DSS standards
- Encrypt all sensitive data
- Follow ISO 8583 message format for transaction exchange
- Limited to integration with Visa, MasterCard, RuPay, and Amex networks initially.

7) Non-Functional Attributes:

- Security: End to End encryption; fraud detection
- Reliability: Automatic failover, redundancy
- Usability: Simple payment interface for users
- Maintenability: Modular architect for easy upgrades
- Scalability: support growth in users and transaction volume.

8) Preliminary Schedule and Budget

- Schedule:

Requirement Analysis - 2 weeks
System Design - 3 weeks
Development - 8 weeks
Testing - 4 weeks
Deployment and Traing - 2 weeks
Total = ~ 19 weeks

Budget:

Development Costs - ₹ 20,00,000
Hardware / Infrastructure - ₹ 8,00,000
Security / Compliance - ₹ 5,00,000
Testing & maintenance - ₹ 7,00,000
Total = ₹ 40,00,000