CREDIT CARD PROCESSING SYSTEM

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- **Problem Statement** :- credit card transactions are a major mode of payment worldwide, but the process involves multiple challenges like fraud detection, transaction delays, security risks, & scalability issues. The goal of this system is to design a secure, reliable & efficient credit-card processing system that can authorize & authentication.

(1) **Purpose** :- The purpose of the credit card processing System is to provide a secure, fast & reliable platform.
- **Safe Transactions**: Protect cardholder data using encryption, authentication (PIN/OTP), & compilance with PCI DSS standards.
- **Efficiency**: Authorize, authenticate, & Settle payments in real-time (<2 sec)
- **Fraud Prevention**: Use AI/ML to detect unusual or suspicion transaction & prevent financial fraud.
- **Integration**: Provide APIs for merchants & banks to integrate with the payment sytem
- Transparency & Scalability.

(2) **Scope** :- The CCP System • Process online & offline card payments securely.
- Support multiple card types (Visa etc)
- authenticate cardholders using PIN/OTP.
- Detect & prevent fraudulent transaction.
- Provide integration APIs for merchant, banks & payment gateways.

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③ Overview :- Users :- Cardholders & merchants initiate transactions.
- System :- Handles authorization, authentication, fraud detection & settlement.
- Bank/Issuer - Validates funds & process payments.
- Admin - Manages accounts, system monitoring & compliance reporting.

④ General Description :- [Users] • Cardholders : initiate transactions, make purchases.
• Merchants : accept payments & receive settlements.
• Admins : Manages fraud detection, compliance & transaction monitoring.
• Banks / Gateways : Verify accounts, approve and settle transactions.
- [System] • Real-time payment authorization
• Fraud detection using AI/ML anomaly detection.
• Secure encryption (SSL/TLS, AES)
• Integration with banking APIs
• Transaction history & reporting.

⑤ Function Requirements :- (1) Transaction Processing
• Verify card details & balance
• Approve/decline trans.

(2) Fraud Detection
• AI-based anomaly detection for unusual patterns
• OTP, CVV, PIN verification.

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③ Settlement
- Transfer funds between issuer & acquirer bank.
- Generate settlement reports.

④ User - Management
- Register users & merchants
- Maintain transaction history.

⑤ Reporting

⑥ Non-Functional Req :- • Performance : Must process transactions within 2 sec.
• Security : PCI DSS compliance, data encryption, 2FA authentication.
• Scalability : support millions of concurrent users.
• Usability : Simple UI for merchants & cardholders.

⑦ Interface Requirements • User Interface (UI) : web & mobile dashboards for users & merchants.
• API interface : Rest APIs for merchants & banks
• Hardware Interface : POS terminals, ATMs.

⑧ Performance Requirements • Response Time : < 2 sec / transaction.
• Fraud detection accuracy : ≥ 95%
• System throughput : ≥ 10,000 transactions/second.

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(9) Design Constraints :- Must comply with PCI DSS security standards.
- Compatible with global card networks (Visa, Rupay).
- Regulatory compliance (KYC, AML).

(10) Schedule & Budget :- Estimated time ~ 16 weeks.
- Estimated Budget ~ $90,000