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Lab-1 HOTEL MANAGEMENT SYSTEM

A) Problem Statement.

Ans The hospitality industry is constantly evolving with guest expectations rising and competition fierce than ever. With the rising demand for efficient operations, streamlined bookings and personalised guest experiences, selecting the best hotel management software becomes crucial to enhance efficiency and guest satisfaction.

B) IEEE Standard Requirements Document

I. Introduction

⇒ Purpose of the Document.

- Supercharge Efficiency: Streamline operations from front desk to back desk office.
- Elevate guest experience: convenience and personalisation
- Reduce errors, save Time: Automate Repitition Tasks
- Enhance security: Data protection and Business control.

⇒ Scope

- Reservation Management
- Room Assignment and Availability
- Billing and invoicing
- Housekeeping Management
- Inventory management.
- Reporting and Analytics

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⇒ Overview.

A HMS acts as the central nervous system of a Hotel, streamlining operations by managing all aspects of a business in one place.

II General Description

Having an effiient HMS allows you to spend more time taking care of the needs of your guests and avoid time on repitetive administrative tasks. It helps minimise frustrations and easily manage your hotel property.

III Functional Requirements

- Booking / Reservation
- Food services
- Housekeeping
- Reporting and Analytics

IV Interface requirements

⇒ Software Interface

- Web server : Windows / Linux OS
- Database server : MongoDB, etc
- Development end : Java, HTML, JS, etc

⇒ Hardware Interfaces

- Server side : Monitor, RAM 4GB, Disk 10GB
- Client side : Processor, Monitor, Ram 512 mb Disk 2GB.
- Communication interface HTTP/HTTPS

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V. Performance Requirements
- Quick data base updation
- Query results should be quick
- Efficient login system
- Responsive customer inquiry
- Visually pleasing UI

VI. Design constraints
- Reduced connection b/w staff and guests
- Reliance on Internet for cloud based software
- Cyber attack risk

VII. Non-Functional Requirements
- Performance - efficiency of the software
- Safety ~~security~~ - client safety, software security
- Security - protection from external threats
- User satisfaction - best service to the client to enhance experience.

VIII. Preliminary Schedule and Budget.

⇒ Schedule

Phase 1 : Planning and Requirements gathering (1 month)
Phase 2: System design (1 month)
Phase 3: Development (3 months)
Phase 4: Testing (1 month)
Phase 5: Deploy and Train (1 month)
Phase 6: Maintenance and support (ongoing)

⇒ Budget estimation
- Personell cost ≈ 2 lakhs (Project manager, Developers, UI/UX, QA, System Admin)
- Hardware & Licenses ≈ 1 lakh
- Contingency and Miscellaneous ≈ 50,000

Total estimate ≈ 3 lakhs.

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CREDIT CARD PROCESSING

A) ~~Introduction~~ Problem Statement.

Credit card processing is vital for businesses to accept electronic payments securely and efficiently. In this digital world, CCP is essential for verification, ensuring funds, easy money transfer.

B) SRS Document

I. Introduction

Purpose

⇒ Credit card processing is a critical component in processing transactions, whether online or in store or over the phone. It is slowly becoming one of the most convenient and acceptable modes of online payment.

⇒ Scope

- Stakeholders - card owners, merchant, bank, card networks
- Transaction process
- Tech infrastructure
- Security standards
- Fee and Revenue models

II. General Description

The processing involves, Initiation, data transmission, authorisation, approval, funds transfer.

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III Functional Requirements

- User Auth - validate card details
- Payment processing - generate invoice & report
- Transaction management - invoice generation
- Security and compliance - Fraud detection, OTP
- Funding and settlement - Allow refund & dispute resolution

IV Interface Requirements

- UI
- Payment screen
- Transaction history
- Payment API

VI Design constraints

- Fraudulent activity
- Multiple payments
- High processing fee

VII ~~Start~~ Preliminary schedule and budget.

⇒ Schedule

Phase	Duration
Requirements gathering	1 mo
System design	1.5 mo
Core development	3 mo
Frontend dev	2 mo
API integration	2 mo
Testing	2mo
Deployment	1 mo.

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LIBRARY SYSTEM MANAGEMENT.

* Manual library management is slow, error-prone and inefficient. Tasks like book search, issue/return tracking, fine calculation become difficult with paper records. An automated system is needed to manage books & users more efficiently.

* PURPOSE

The purpose of this system is to computerise the management of library operations. It will allow librarians to manage books, members and borrowing records efficiently.

* SCOPE

It will provide a digital platform to store book details, member info and transaction history. It reduces manual work and redundancy and ensures quick information access.

* OVERVIEW

The system will maintain centralised database of books and users. Librarians can add, update or delete book entries, while members can log in and search books.

* FUNCTIONAL REQUIREMENTS

- To add, update, delete book records
- Register and manage member accounts
- Search by book title, category & author
- Track fine & borrowing history, and the dates of all this.

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* INTERFACE REQUIREMENTS.
  - User interface : simple web-based interface with login pages, search bar & dashboards
  - Admin interface : For librarians for books and user management
  - DB management : A relational (SQL) database for storing & retrieving data.

* PERFORMANCE REQUIREMENTS
  - System should support atleast 200 concurrent users
  - search results should have quick load time
  - Database should handle 10,000 records efficiently.

* DESIGN CONSTRAINTS
  - Built using opensource technologies (Java / Python)
  - works on common browsers (google chrome, firefox, etc)
  - Secure login system with password protection

* NON-FUNCTIONAL REQ.
  - Reliability : Must ensure 99% uptime
  - security : Passwords stored with encryption, role-based access
  - Usability : Interface must be simple for users
  - Maintainability : Easy to update records & new features.

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* SCHEDULE

Week 1-2 : Requirements gathering and analysis

Week 3-4 : Database design and setup

Week 5-7 : Implementation of core modules

Week 8-9 : Integration, testing

Week 10 : Deploy.

* Cost ESTIMATION.

Software development	~ ₹50,000
Maintenance	~ ₹10,000
Database & hosting	~ ₹10,000

Total estimated cost ~ ₹ 70,000

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STOCK MAINTENANCE SYSTEM

* Problem statement:

Manual stock management in warehouses leads to errors such as incorrect inventory counts, delayed stock updates and difficulty in tracking product availability. This causes financial loss, overstocking. A digital solution is hence needed to streamline inventory tracking and reporting

* PURPOSE:

The purpose of this system is to provide reliable and efficient method for maintaining stock levels, monitoring item movements and generating reports.

* SCOPE.

- To maintain item details (id, name, price, etc)
- Track inflow and outflow of stock.
- Generation of reports (daily / weekly / monthly)
- Secure access for admin and staff.

* OVERVIEW

The stock Maintenance system will be a software application. It records transaction and real time update track. It supports role based access control.

* FUNCTIONAL REQUIREMENTS

- User login / logout with authenticat"
- Add, update, delete details
- Record transation
- generate inventory reports.

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* INTERFACE REQ
  - Windows/Linux
  - Database (SQL, MongoDB)
  - Data security and backups

* NON-FUNCTIONAL REQ
  - Performance : Should handle atleast 10k product details effortlessly
  - Security : Role-based auth, password auth, secure transactions
  - Usability : Easy to learn for non-technical staff
  - Reliability - Backup and recovery features.

* SCHEDULE

Week 1-2	Requirement gathering & analysis
Week 3-4	System design
Week 5-8	Development of core modules
Week 9-10	Testing & integration
Week 11	Deployment and training

* COST/BUDGET

Software development	₹50000 - 80000
Database & hosting	~ ₹10000 /yr
Hardware	~ ₹25000
Maintenance	~ ₹10000/yr

estimated total initial cost ~₹1,20,000

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PASSPORT AUTHENTICATION SYSTEM

* Problem statement:

Manual passport application process is time-consuming, error-prone and requires applicants to visit offices multiple times. Delays in verification and lack of real time tracking creates inefficiencies for both applicants and authorities. An automated system is required to simplify passport application & verification

* PURPOSE

The passport system aims to streamline the process of application, verification, approval and delivery. It allows citizens to apply online and track its status and ensures secure handling of personal data.

* SCOPE

- online registration and application submission
- upload necessary docs.
- Automated verification workflow (Police, govt)
- Tracking of application for users.
- Notifications via email/SMS.

* SYSTEM OVERVIEW.

The system will be a web-based platform accessible to both citizens and govt authorities

- citizens can apply online, submit docs, schedule appointments, track status
- Officials can verify details & approve/reject/issue passports.
- System maintains centralized databases for records and reporting.

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* FUNCTIONAL REQ

- User login / registration with authentication
- Online passport application submission
- Document upload and validation
- Appointment scheduling for biometric & document verification
- Application status tracking.

* INTERFACE REQ

UI : Web portal with citizen dashboard & official dashboard

Input : Personal details, document, appointment slots

Output : Receipt, status,

Other : Payment gateways, databases

* DESIGN CONSTRAINTS

- Must comply with govt security & privacy regulations
- Should handle large volumes of applications concurrently
- Multi-language interface

* NON-FUNCTIONAL REQ

- Security : End to end encryption, role-based access, secure data storage
- Usability : Simple navigation for citizens
- Reliability : Backup & recovery.
- Scalability : Nationwide expansion

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* SCHEDULE

Week 1-3 : Requirement gathering and analysis
Week 4-6 : System design
Week 7-12 : Development of modules
Week 13-15 : Integration and security testing
Week 16 : Deployment and maintenance

* PRELIMINARY BUDGET

Software development ~ ₹5,00,000
Database & Hosting ~ ₹1,00,000
Hardware & Networking ~ ₹3,00,000
Maintenance ~ ₹1,00,000

Total initial cost estimation ~ ₹9,00,000