Tab 1

Islamic University of Technology

Department of Computer Science and Engineering

Lab 4: Project Management

Course Code: CSE 4408

Course Title: System Analysis and Design

Section: 1(B)

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1. Initial Project Plan and Schedule

a) Work Breakdown Structure (WBS)

Top-level phases and activities:

Phase	Activities
Initiation	• Defining project vision • Forming development team • Validating the need through forms and queries
Planning	• Breaking the project into sprints • Choosing tools and tech stack
Analysis	• Identifying system requirements and components • Preparing DFD, use case diagram, and ERD
Design	• UI design • Database schema design • Defining system interface interactions
Development	• Sprint-wise and iterative development • Building backend and defining data flow between backend and frontend • Integrating maps and API
Testing	• Continuous testing is integrated into each sprint • Integration testing of the whole system • User Acceptance Testing (UAT)
Deployment	• Conducting a pilot launch • Providing setup support • Executing phased rollout
Maintenance	• Setting up system for regular updates • Monitoring Pharmacy Compliance • Collecting Feedback for future upgrades • Preparing Documentation

Table-1: WBS

b) Time Estimates and Justification:

Phase	Duration(Weeks)	Justification
Initiation	2	Time needed for idea finalization and stakeholder validation
Planning	1	Quick due to lightweight Agile planning
Analysis	2	Required to develop diagrams and identify system needs
Design	8	Includes both frontend UI design and database schema planning
Development	9	Sprint-wise development of backend, frontend, and APIs
Testing	3	Integration testing, bug fixing, and UAT incorporated
Deployment	1	Pilot roll-out and phased setup in selected pharmacies
Maintenance	Ongoing	Includes monthly updates, bug fixes, and performance monitoring

Table -2: Time Estimation

c) Gantt Chart and PERT Chart:

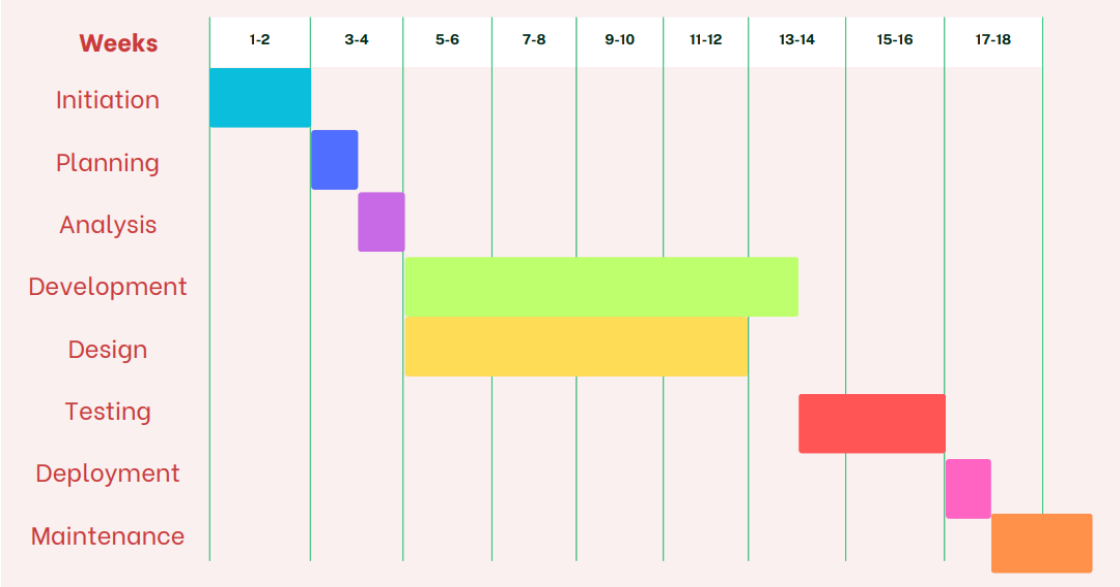

Figure 1: Gantt Chart

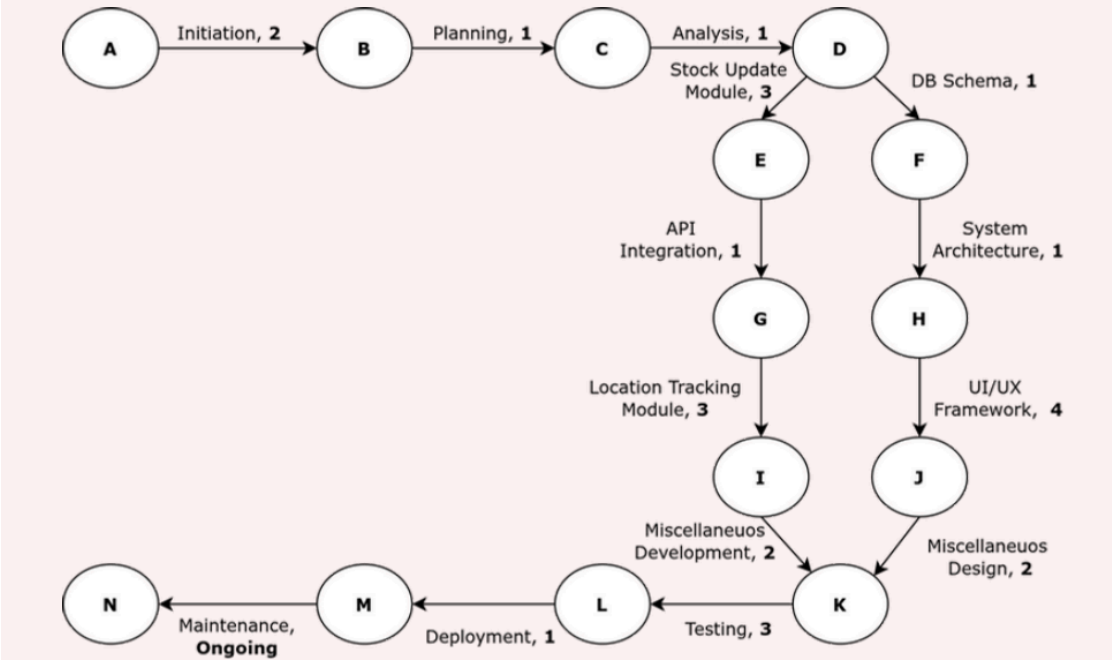

Figure 2: PERT Chart

2. Team Composition and Risk Analysis

a) Project Team Roles and Skills:

Role	Skills required	Phases
Business Analyst	Requirement elicitation, stakeholder interviews, storyboarding	Planning, Analysis
Programmer	MERN Stack, RESTful API development	Development, Testing
Database Specialist	MongoDB schema design, query optimization	Design, Development
UI/UX Designer	Wireframing (Figma), responsive layout, usability testing	Design, Testing
Domain Expert	Pharmacy operations knowledge, drug database understanding	Analysis, Testing

Table 3: Team skills

b) Assessment of Project Risks:

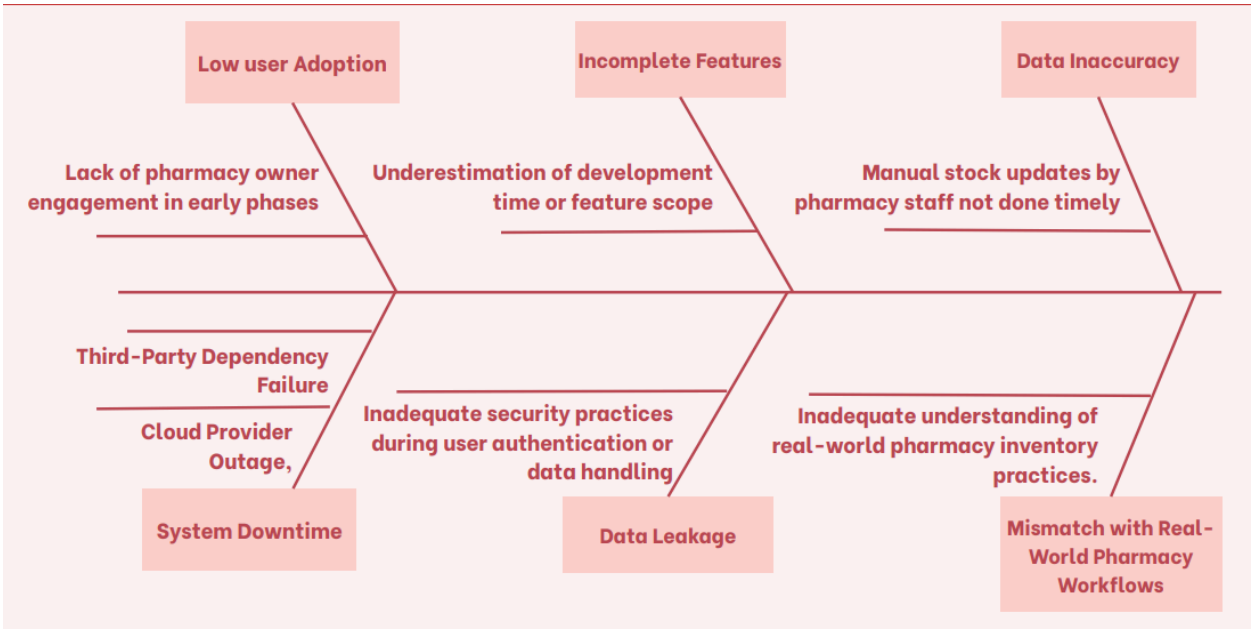

Figure 3: Fishbone Structure of Risks and Their Causes

1. **Risk: Low User Adoption**

   Cause: If pharmacy owners are not involved early or do not see value in the system, they may hesitate to use it. This would directly reduce the accuracy and usefulness of the platform for users

2. **Risk: Incomplete Feature Set:**

   Cause: Underestimating the technical complexity or the time required for certain modules may result in missing or poorly implemented features, especially under tight academic deadlines.

3. **Risk: Data Inaccuracies**

   Cause: Since stock updates are manually managed by pharmacy staff, any delay or oversight may lead to outdated or incorrect information on the platform, eroding user trust.

4. **Risk: Mismatch with Pharmacy Workflows**

   Cause: If the system's design does not reflect real-world practices used by pharmacies, users (especially pharmacy staff) may find it inconvenient or reject it entirely.

5. **Risk: Data Leakage**

   Cause: Insecure authentication mechanisms or poor data protection could compromise sensitive user or pharmacy data. Proper encryption and validation protocols must be enforced.

6. **Risk: System Downtime**

   Cause: Reliance on third-party services, such as cloud hosting or mapping APIs, introduces risks, including unexpected outages. Backup and contingency plans must be considered.

3. Project Charter and Proposal Outline

a) Project Charter:

i) Objective: Provide users quick access to medical resources through a centralized pharmacy locator and stock viewer.

ii) Scope:

In-scope:

- User interface to search/order medicines and view availability
- Display of pharmacy details and stock info
- Location and category-based search/filtering
- Portals for providers to update stock
- Rating and feedback system

Out of scope:

- No automated stock update system
- No detailed patient health history/ diagnosis tracking
- No advertisements/monetization features

iii) Methods:

- Agile methodology, iterative delivery with testing at each stage
- MERN stack implementation.
- Object-oriented approach for modular system design.

iv) Participants:

Stakeholders:

1. End-users (currently students)
2. Pharmacy owners

Project Team:

1. Project Manager
2. Business Analyst
3. Programmer
4. Database Specialist
5. UI/UX Designer
6. Domain Expert

v) Deliverables:

- Functional web application (frontend + backend)
- User guide, deployment manual, system documentation.
- API documentation
- Testing Reports
- User feedback summary

vi) Evaluation Criteria:

- A post-usage survey to evaluate the ease of navigation, visual clarity, response time, and overall satisfaction.
- Number of successful searches
- Zero critical bugs on launch

vii) Timeline:

1. Initiation → Week 1-2
2. Planning → Week 3
3. Analyzing System → Week 4
4. Design → Week 5-12
5. Development → Week 5-13
6. Testing → Week 14-16
7. Deployment → Week 17
8. Maintenance → Ongoing after deploy

viii) Training Plan:

- Quick start guide
- Live demo sessions
- Collect short post-training surveys or feedback
- Use results to update training materials and address misunderstandings

ix) Maintenance:

- Post-launch feedback collection
- Monthly bug-fixes
- Monitor key performance metrics
- Provision of proper documentation during the handover process

b) Project Proposal Outline:

i) Executive Summary:

- **Who**: University students & nearby pharmacies
- **What:** A secure web app for real-time pharmacy info & stock tracking
- **When/Where**: Launched within one semester for the campus & surrounding area
- **Why**: Solve issues with medicine availability and manual searching
- **How**: Agile development, student-led team
- **Recommendations**: Allocate testing support and pharmacy onboarding sessions
- **Desired Action:** Approval to move to development & pilot testing phase

ii) Outline of Systems Study:

Data Collection Methods:

- Surveys
- Competitor analysis
- Feedback from UI/UX prototype testing
- Prototype testing with sample users

Participants:

- Students (target users)
- Pharmacy owners (stock providers)

iii) Detailed Results of Study:

Key Problems Identified:

- No centralized stock info
- Confusion and travel during urgent needs
- No direct student-pharmacy communication

Opportunities Identified:

- Real-time pharmacy search
- Trusted, user-friendly interface
- Build a verified pharmacy database
- Category and location-based search/filter

iv) Alternative Analysis:

1. **Continue Manual Search**
    - **Pros:** No Setup
    - **Cons**: Delays, high effort, no tracking, hassle
2. **Use general search platforms (e.g., Google Maps)**
    - **Pros:** Location info present
    - **Cons**: No medicine data or reliability
3. **(Recommended): Build MedRadar**
    - **Pros:** Custom, verified, role-based access
    - **Cons**: small development team, no prior experience in this field

v) Systems Analysts' Recommendation:

Recommended Solution: Develop MedRadar

Why:

- Aligns with actual user needs
- Scalable and modular
- Supports human-centered design and the university's digital vision

vi) Proposal Summary:

- **Objective**: Improve access to medicine by digitizing local pharmacy data
- **Feasibility & Backing:** Sufficient
- **Recommendation**: Proceed with MedRadar system build
- **Final Note**: MedRadar will reduce stress and improve health access for students

4. Conclusion

MedRadar is feasible in terms of cost, technology, and operations. It supports healthcare access goals and offers a scalable, community-driven solution for real-time medicine availability.