Date: 10/06/2025

Lab Practical #01:

Research and list the core responsibilities of a project manager. Draw a mind map for it.

Practical Assignment #01:

Research and list the core responsibilities of a project manager. Draw a mind map for it.

Description:

Description:

Project Planning:

- Define project scope, goals, and deliverables.
- Create timelines and allocate resources.
- Plan for i18n tasks like Unicode and locale support.

Team Coordination:

- Assign tasks to developers and localization specialists.
- Facilitate cross-functional and global team collaboration.

Stakeholder Communication:

- Provide regular project updates to clients and executives.
- Gather and align requirements for global markets.

Risk Management:

- Identify and mitigate risks like text overflow in i18n.
- Monitor risks using tools like risk registers.

Budget and Resource Management:

- Track costs for development and localization services.
- Optimize resource allocation for efficiency.

Quality Assurance:

- Oversee testing for functionality and i18n compliance.
- Ensure deliverables meet quality and cultural standards.

Agile/Scrum Facilitation:

- Lead sprint planning and daily stand-ups.
- Include i18n tasks in Agile workflows.

Date: 10/06/2025

Documentation:

- Maintain project plans and i18n guidelines.
- Create handover documents for project closure.

Communication:

- Convey updates clearly across global teams.
- Adapt communication for cultural and linguistic needs.

Problem-Solving:

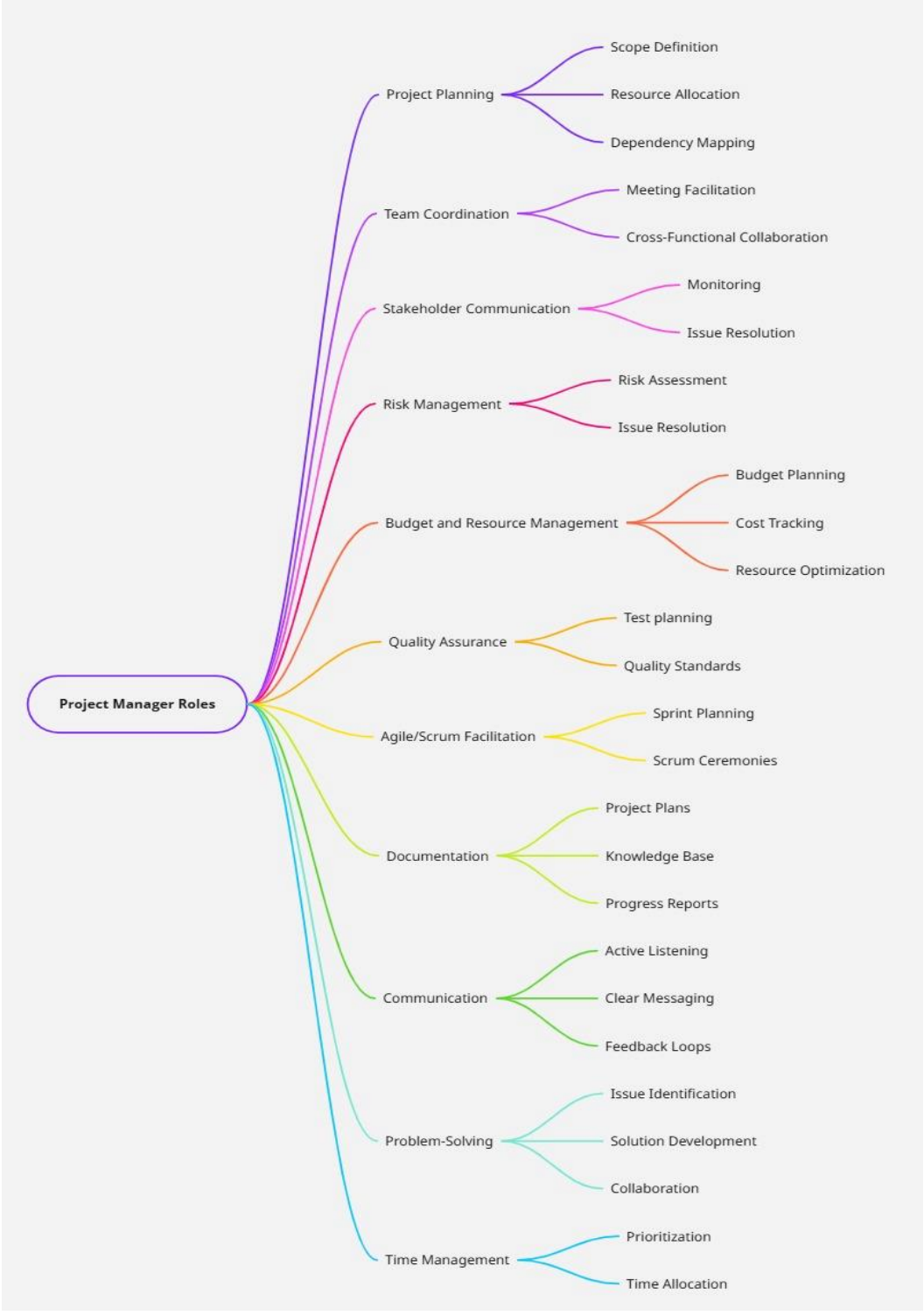
- Address issues like incorrect locale rendering.
- Use root cause analysis to resolve blockers.

Time Management:

- Prioritize tasks to meet project deadlines.
- Include buffers for localization testing delays.

Date: 10/06/2025

Image:



Date: 13/06/2025

Lab Practical #02:

Develop a system diagram illustrating the interaction between project components (e.g., team, resources, timeline).

Practical Assignment #02:

Project system diagram showcasing interrelated components. Use Google Drawings, LucidCharts, Microsoft Visio

Description:

System of courier management system

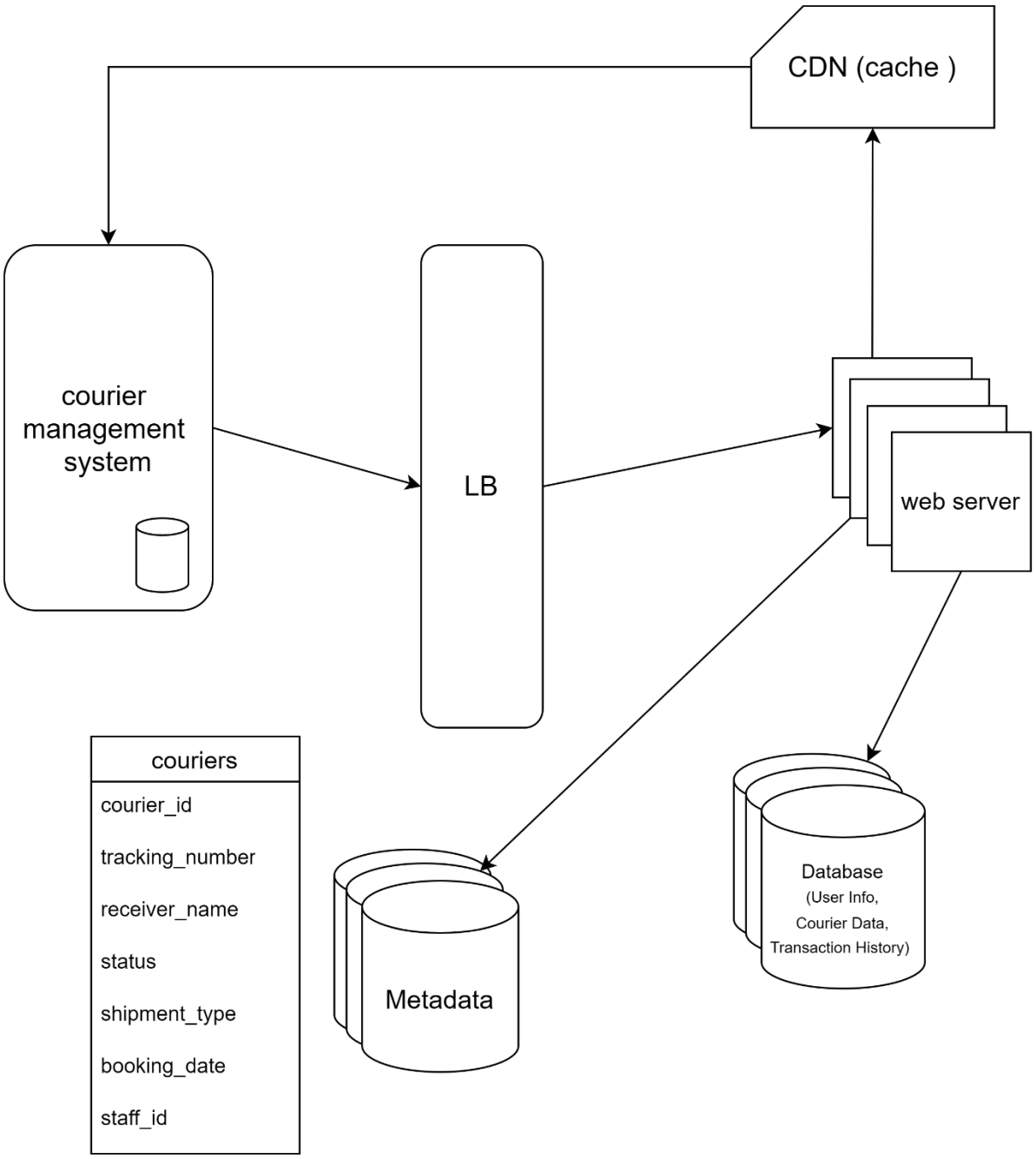
- **Users (Couriers, Customers, Admins):** 100 million
- **Daily Deliveries:** 50 million
- **Total Historical Deliveries:** 10 billion
- **Total Storage for Docs:** 50 TB → 150 TB)
- **Metadata Storage:** 10 TB (10B deliveries × 1KB)
- **User Data (Profiles):** 1 KB per user → 100 GB

Total Storage Estimate:

- **Documents/Images: 150 TB**
- **User Data: 100 GB**
- **Total: 150 TB**

Date: 13/06/2025

Image:



Date: 22/06/2025

Lab Practical #03:

Create a project charter for the hypothetical project.

Practical Assignment #03:

Review the project charter template. Fill in the template with information for a hypothetical project, including objectives, scope, stakeholders, and deliverables. Present the project charter to a peer group for feedback. Revise the project charter based on feedback received. Use Google Docs or Microsoft Word.

Description:

PROJECT CHARTER

Courier Management System:

PROJECT INFORMATION

Project Name: Courier Management System

Project Manager: Nikhil Rathod

Project Sponsor: Archana Kanzariya

Charter Date: June 20, 2025

Charter Version: 1.0.0.1

Project Code: CMS-2025

1. PROJECT OVERVIEW

1.1 Project Background

The current courier management system is done manually and is not efficient. This causes delays, lost packages, and unhappy customers. As online shopping is growing by 30% each year, there is a higher need for fast and reliable courier services. However, the current system does not have real-time tracking, automatic scheduling, or connection with online shopping websites, which leads to many problems in the daily operations.

2. PROJECT OBJECTIVES

2.1 Primary Objectives

1. **Automation**: Implement an automated scheduling and dispatching system.

2. **Tracking**: Develop real-time package tracking for customers and staff.
3. **Integration**: Integrate with major e-commerce platforms (e.g., Shopify, Amazon).
4. **Efficiency**: Reduce manual data entry by 80%.
5. **Customer** Satisfaction: Achieve a 90% customer satisfaction rate.

2.2 SMART Goals

1. **Specific**: Launch a cloud-based courier management system with real-time tracking and automation.
2. **Measurable**: Achieve 80% adoption by staff within 3 months of launch.
3. **Achievable**: Leverage existing IT infrastructure and vendor partnerships.
4. **Relevant**: Address inefficiencies in the current manual system.
5. **Time-bound**: Full implementation within 9 months.

2.3 Success Criteria

1. **50%** reduction in delivery delays.
2. **30%** reduction in operational costs.
3. **90%** customer satisfaction rate.
4. **80%** staff adoption within 3 months.

3. PROJECT SCOPE

3.1 In Scope

- Core Features:
  - Automated scheduling and dispatching.
  - Real-time package tracking (web and mobile).
  - Integration with e-commerce platforms.
  - Customer notifications (SMS/email).
  - Analytics and reporting dashboard.

- Technical Components:
  - Cloud-based infrastructure.
  - Mobile app for delivery personnel.

- Web portal for customers and admin.
- API for third-party integrations.

3.2 Out of Scope

- Development of hardware (e.g., GPS devices).
- International expansion.
- Same-day delivery guarantees.

3.3 Assumptions

- Staff will be trained to use the new system.
- E-commerce platforms will provide necessary API access.
- Existing IT infrastructure can support the new system.

3.4 Constraints

- Budget: $500,000 maximum.
- Timeline: 9 months for full implementation.
- Regulatory: Compliance with data protection laws (GDPR, CCPA).

4. STAKEHOLDERS

4.1 Primary Stakeholders

Name	Role	Responsibility	Influence	Communication
Rathod Nikhil	Project Manager	Project delivery	High	Daily
Archana Kanzariya	Product Sponsor	Feature definition	High	Daily
Ronak Thummar	Engineering Lead	Technical development	High	Daily
Harsh Bhatt	UX/UI Design Lead	User interface, experience design	Medium	Weekly

Date: 22/06/2025

4.2 Secondary Stakeholders

- Delivery personnel.
- Customer support team.
- IT support team.

5. PROJECT DELIVERABLES

5.1 Major Deliverables

- Phase 1 (Months 1-3): Requirements gathering, system design, and prototype.
- Phase 2 (Months 4-6): Core development (scheduling, tracking, integrations).
- Phase 3 (Months 7-8): Testing and staff training.
- Phase 4 (Month 9): Launch and post-launch support.

5.2 Success Metrics

- 50% reduction in delivery delays.
- 30% cost savings.
- 90% customer satisfaction.

6. PROJECT TIMELINE

6.1 High-Level Milestones

Milestone	Target Date
Project Kick-off	June 1, 2025
Prototype Completion	September 1, 2025
Core Development Done	December 1, 2025
Testing Complete	February 1, 2026
System Launch	March 1, 2026

Date: 22/06/2025

7. BUDGET AND RESOURCES

7.1 Budget Summary

Category	Amount	%
Dev & Engineering	$4M	40%
AI Infrastructure	$2M	20%
UX Design	$1M	10%
Cloud & infra	$1.5M	15%
PM & Admin	$0.5M	5%
Marketing & Rollout	$1M	10%
Total	**$10M**	100%

8. RISKS AND MITIGATION

8.1 High-Priority Risks

Risk	Impact	Probability	Mitigation
Regulatory non-compliance	High	Medium	Regular audits, compliance checks
Driver non-adoption	Medium	High	Incentives, training, mobile UI focus
Tech performance issues	High	Low	Scalable architecture, load testing

9. COMMUNICATION PLAN

Stakeholder	Frequency	Method	Content
Exec Team	Weekly	Email	Status, escalations

Dev Team	Daily	Stand-up	Task progress, blockers
Product Team	Weekly	Sync Call	Requirements, features
End Users (Drivers)	Monthly	App Surveys	Feedback, pain points

10. QUALITY ASSURANCE

- 90%-unit test coverage
- <0.1% crash rate
- 99.9% uptime
- User feedback score ≥ 4.2
- Penetration testing before launch

11. CHANGE MANAGEMENT

- All changes logged and impact-assessed
- Sponsor approval needed for scope/timeline shifts
- Changes rolled out in beta before production

12. APPROVAL AND AUTHORIZATION

12.1 Project Charter Approval

Name	Role	Signature	Date
Nikhil Rathod	Project Manager	_____	March 5, 2026
Archana Kanzariya	Project Sponsor	_____	March 5, 2026

12.2 Authority Matrix

Decision Type	Project Manager	Project Sponsor	Executive Team
Budget (<$500K)	Approve	Inform	Inform
Budget >$500K	Recommend	Approve	Consult

Date: 22/06/2025

Scope Changes	Recommend	Approve	Consult

13. REVISION HISTORY

Version	Date	Author	Changes
1.0	March 5, 2026	Nikhil Rathod	Initial charter creation

Date: 11/07/2025

Lab Practical #04:

Practice performing integrated change control to manage changes in a project.

Practical Assignment #04:

Review the integrated change control process. **Simulate** receiving a change request and **evaluate** its impact on the project. **Prepare** for a change control board meeting, presenting the change request and its impacts. **Conduct** the simulated CCB meeting and decide whether to approve or reject the change. **Document** the decision and update project plans accordingly. Use Jira/Asana, Google Docs, Slack, etc.

Description:

Project Title: Courier Management System

Integrated Change Control is the process of reviewing, approving, and managing changes to project deliverables, scope, or baselines. It ensures that all changes are evaluated for their impact on the project's **scope, schedule, cost, quality, resources, and risks**. A **Change Control Board (CCB)**—comprising project stakeholders—reviews and decides on change requests.

1:

Change Request: Automated Route Optimization			
Date of request	11-jul-2025	**Requested By**	Client
Overview of change: Implement automated route optimization for delivery personnel using AI-based algorithms to reduce delivery time and fuel costs.			
Reason for change: Current manual route planning is inefficient, leading to delays and increased fuel expenses. Continued high operational costs and customer dissatisfaction due to delayed deliveries			
Will change delay the program completion date?	Yes	Delay = 3 Weeks	
Explain: Additional time needed for AI model integration and testing			
Will change require additional resources?	Yes	Increase = 3 effort days	
Explain: Requires 1 AI specialist and 2 backend developers for 4 weeks.			

Date: 11/07/2025

Will change result in additional cost? (Discuss with program manager)	Yes	Increase = **$15,000**
Explain: Covers AI tool licensing, cloud computing, and developer costs.		

Date entered in change log	11th July 2025		
Date reviewed with stakeholders	15th July 2025	Approved?	Yes
Date decision communicated to requestor	16th July 2025		
Date program plan updated	18th July 2025		

2:

Change Request: Add Delivery Time Slot Selection for customers during checkout.			
Date of request	25-jul-2025	**Requested By**	Client
Overview of change: Implement automated route optimization for delivery personnel using AI-based algorithms to reduce delivery time and fuel costs.			
Reason for change: 60% of users requested flexible time slots.			
Will change delay the program completion date?		Yes	Delay = 2 Weeks
Explain: UI/backend adjustments + testing			
Will change require additional resources?		Yes	Increase = 5 effort days
Explain: 1 frontend + 1 backend developer.			
Will change result in additional cost?		Yes	Increase = **$8,000**
Explain: UI updates, database changes, and QA testing			

Date: 11/07/2025

Date entered in change log	26th July 2025		
Date reviewed with stakeholders	30th July 2025	Approved?	Yes
Date decision communicated to requestor	1st August 2025		
Date program plan updated	3rd August 2025		

Change Control Log

				Impact				Date	
#	Date	Requestor	Subject	*Scope*	*Cost*	*Time*	*Approved*	*Plan updated*	*Closed*
1	11-Jul-25	Client	Automated Route Optimization	AI integration	$15,000	3 weeks	Yes	18-Jul-25	18-Jul-25
2	25-Jul-25	Client	Add Delivery Time Slot Selection for customers during checkout.	Checkout UI update	$8,000	2 weeks	Yes	3-Aug-25	3-Aug-25

Date: 10/07/2025

Lab Practical #05:

Perform a financial analysis for a project to calculate NPV, ROI, and year in which pay back occurs for the given values.

Practical Assignment #05:

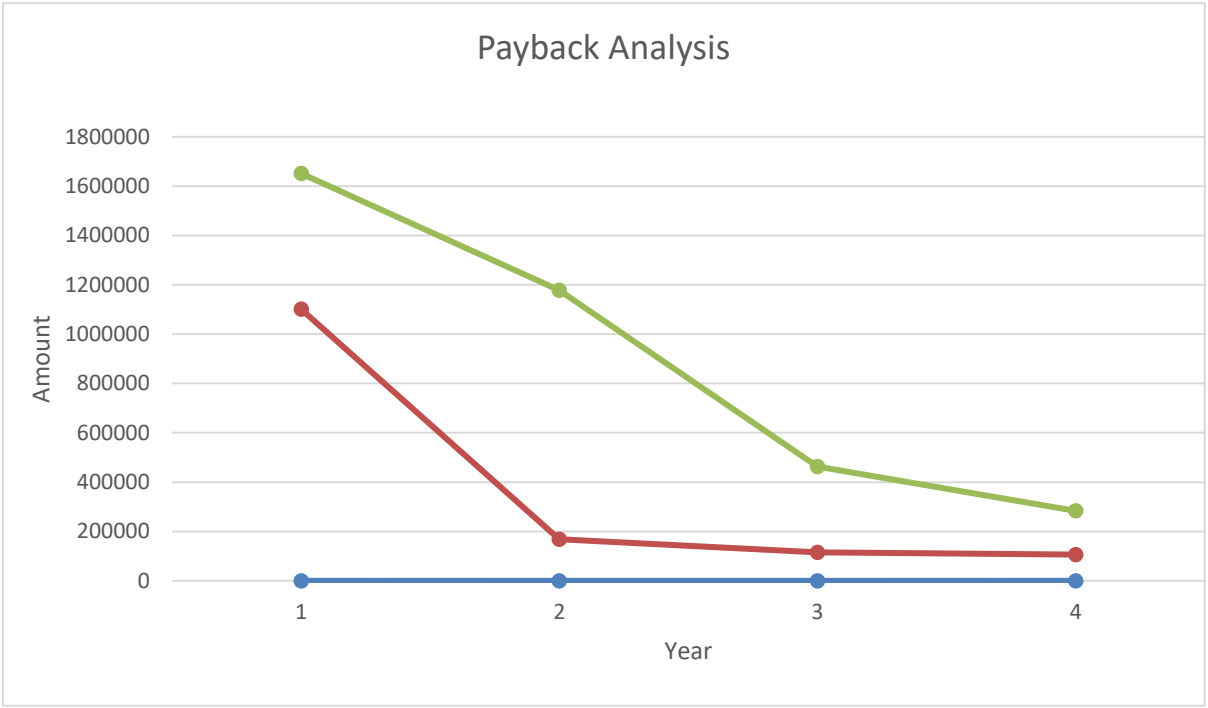
Perform a financial analysis for a project using the format provided in earlier example. Assume that the projected costs and benefits for this project are spread over four years a follow: **Estimated costs are ₹12,00,000 in Year 1 and ₹200,000 in year 2 and ₹1.5 lakh in Years 3,** and **4. Estimated benefits are ₹18,00,000 in Year 1 and ₹14,00,000 in Year 2, ₹6,00,000 in Year 3 and ₹4,00,000 in Year 4.** Use a **9 percent discount rate**, and round the discount factors to two decimal places. Create a spreadsheet or use the business case financials template on the companion website to calculate and clearly display the **NPV**, **ROI**, and **year** in which payback occurs. In addition, write a paragraph explaining whether you would recommend investing in this project, based on your financial analysis.

Description:

Rate = 9%						Total
Discount Rate	1	2	3	4		
cost	₹ 12,00,000.00	₹ 2,00,000.00	₹ 1,50,000.00	₹ 1,50,000.00		
Discount Factor	0.92	0.84	0.77	0.71		
Discount Cost (Discount factor * cost)	₹ 11,00,917.43	₹ 1,68,336.00	₹ 1,15,827.52	₹ 1,06,263.78		1491345
Benefit	₹ 18,00,000.00	₹ 14,00,000.00	₹ 6,00,000.00	₹ 4,00,000.00		
Discount Factor	0.92	0.84	0.77	0.71		
Discount Cost (Discount factor * Benefits)	₹ 16,51,376.15	₹ 11,78,351.99	₹ 4,63,310.09	₹ 2,83,370.01		3576408
Discount Benefits - Discount Costs =				₹ 20,85,063.50		1.39811
NPV/Discount Cost				1.398		

Date: 10/07/2025

Chart:



Conclusion:

Based on this financial analysis, the project demonstrates strong financial viability. With a payback period of under 1 years and a ROI over 139%, it recovers its cost quickly and delivers high returns. The positive NPV of 20.85 Lakhs further supports this. Therefore, it is financially sound to proceed with this investment

Date: 25/07/2025

Lab Practical #06:

Practice using a requirements management tool to document and categorize requirements.

Practical Assignment #06:

- **Create a Work Breakdown Structure (WBS):** Divide the project into smaller, more manageable components.
- **Implement it in Excel:** Utilize Gantt Chart as the project management software for tracking and managing the project.

Description:

Part 1: Work Breakdown Structure (WBS)

Goal: Break down your web application project into smaller, manageable tasks (hierarchical format: Level 1 →Level 2 → Level 3)

1. Project Initiation

- 1.1 Requirement Gathering (Client needs, user expectations)
- 1.2 Stakeholder Meetings (Logistics team, customers, admins)
- 1.3 Feasibility Study (Cost, timeline, technology)
- 1.4 Approval & Sign-off

2. UI/UX Design

- 2.1 User Research (Courier staff, customers, admins)
- 2.2 Wireframing
    - Dashboard (Admin/Courier)
    - Order Tracking
    - Customer Portal
    - Reporting
- 2.3 Prototype (Figma/Adobe XD)
- 2.4 User Feedback & Iteration

Date: 25/07/2025

- 2.5 Final UI Kit

3. Frontend Development (Web/Mobile App)

- 3.1 Project Setup (React/Flutter)
- 3.2 Authentication Module (Login, Roles: Admin/Courier/Customer)
- 3.3 Order Placement & Tracking
- 3.4 Dashboard (Real-time Updates)
- 3.5 Payment Integration
- 3.6 Notification System (SMS/Email)
- 3.7 UI Integration with APIs

4. Backend Development

- 4.1 Database Design
    - Users (Admin, Courier, Customer)
    - Orders (Parcels, Status, Location)
    - Payments
- 4.2 Authentication APIs
- 4.3 Order Management APIs (Create, Update, Track)
- 4.4 Location Tracking APIs (GPS/Map Integration)
- 4.5 Reporting APIs (Analytics, Delivery Times)
- 4.6 Testing & Optimization

5. Integration & Testing

- 5.1 API Integration (Frontend-Backend)
- 5.2 Unit Testing

Date: 25/07/2025

- 5.3 UI Testing (Cross-browser/device)
- 5.4 Bug Fixes
- 5.5 Beta Testing (Pilot with select users)

6. Deployment

- 6.1 Cloud Setup (AWS/Azure/Google Cloud)
- 6.2 CI/CD Pipeline (GitHub Actions/Jenkins)
- 6.3 Production Release
- 6.4 Post-launch Monitoring (Uptime, logs)

7. Maintenance & Support

- 7.1 Bug Reports
- 7.2 System Updates
- 7.3 Performance Monitoring
- 7.4 Feature Enhancements (e.g., AI Route Optimization)

Date: 25/07/2025

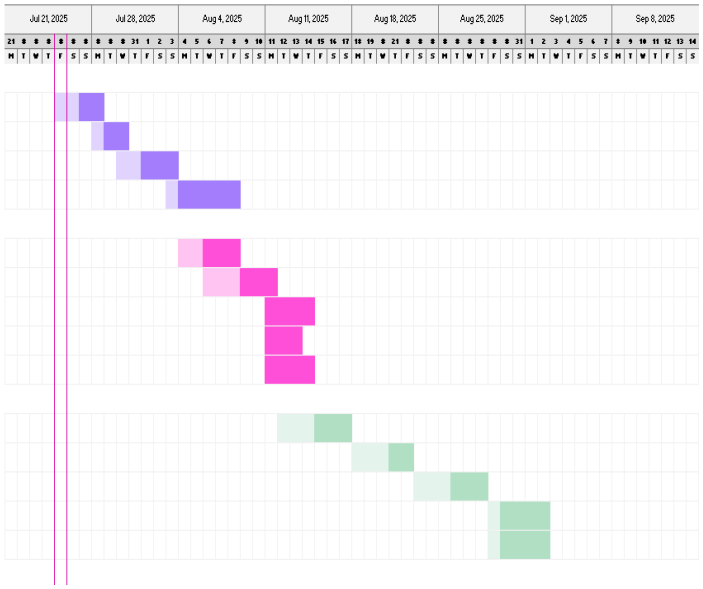
courier management system

VanArsdel, Ltd. Project lead

Project start: Fri, 7-25-2025

Display week: 1

TASK	ASSIGNED TO	PROGRESS	START	END
Project Initiation				
Requirement Gathering	Gokce Aslan	50%	7-25-25	7-28-25
Stakeholder Meetings	Hayden Cook	60%	7-28-25	7-30-25
Feasibility Study	Jens Martensson	50%	7-30-25	8-3-25
Approval & Sign-off	Nuria Acevedo	25%	8-3-25	8-8-25
UI/UX Design				
User Research	Gokce Aslan	50%	8-4-25	8-8-25
Wireframing	Hayden Cook	50%	8-6-25	8-11-25
Prototype	Jens Martensson		8-11-25	8-14-25
User Feedback & Iteration	Nuria Acevedo		8-11-25	8-13-25
Final UI Kit	Olivia Wilson		8-11-25	8-14-25
Frontend Development				
Project Setup	Gokce Aslan	50%	8-12-25	8-17-25
Authentication Module	Hayden Cook	60%	8-18-25	8-22-25
Order Placement & Tracking	Jens Martensson	50%	8-23-25	8-28-25
Dashboard	Nuria Acevedo	25%	8-29-25	9-2-25
Payment Integration	Olivia Wilson	25%	8-29-25	9-2-25
Notification System		30%	9-3-25	9-2-25



Date: 04/08/ 2025

Lab Practical #07:

Develop a scope validation checklist and ensure that project scope is properly defined and controlled.

Practical Assignment #07:

- Develop a scope validation checklist.
- Use change control procedures to manage scope changes.
- Monitor scope creep and report on scope performance.
- Use Google Sheets for checklists and monitoring.

Description:

1. Scope Validation Checklist

Task	Validation Criteria	Validated By	Status	Comments
Review project objectives	Ensure it aligns with parcel tracking, booking, delivery system	Project Manager	Complete	Initial goals confirmed
Confirm deliverables	Functional modules: Booking, Tracking, Admin Panel, Notifications	QA Lead	Incomplete	Admin Panel testing pending
Check stakeholder requirements	Match with logistics provider & user expectations	Business Analyst	Complete	All use cases covered
Validate acceptance criteria	Functional & Non-functional (performance, reliability)	Client/Customer	Complete	Meets basic acceptance tests
Final product approval	Client review and UAT signoff	Client/Customer	Incomplete	Pending final demo
Ensure regulatory compliance	GDPR, local delivery laws	Compliance Officer	Complete	Compliant with data handling
Verify quality standards	Response time < 3s, 99.9% uptime	QA Lead	Incomplete	Load testing scheduled

Date: 04/08/ 2025

2. Change Control Procedures for Managing Scope Changes

Change Request ID	Requested By	Description of Change	Impact on Scope	Timeline Impact	Budget Impact	Status	Reason	Date
CR-001	Logistics Team	Add QR scanning for packages	High	+3 Days	+₹3,000	Approved	Faster delivery check-ins	30/07/2025
CR-002	Marketing	Add SMS notification module	Medium	+2 Days	+₹2,500	Approved	Customer engagement	01/08/2025
CR-003	Admin	Role-based access control	Low	None	None	Rejected	Not priority for MVP	02/08/2025

3. Monitor Scope Creep

Feature/Task	Original Scope	Added Elements	Reason for Additions	Approval Status	Impact	Mitigation Plan
Booking Module	Manual entry	Auto-address suggestion	Stakeholder request	Approved	Medium	Limit to valid PIN codes
Tracking System	Location updates every 12 hrs	Real-time tracking	Customer demand	Not Approved	High	Delay for v2, cost review
Admin Dashboard	Basic stats	Downloadable reports	Internal request	Approved	Low	Integrate into phase 1.5

Date: 04/08/ 2025

4. Monitor Scope Performance

Deliverable	Planned Completion	Actual Completion	Variance (Days)	Comments
UI/UX Design	28/07/2025	30/07/2025	+2	Minor revisions added
Backend API	01/08/2025	01/08/2025	0	On-time
Courier Tracking Module	05/08/2025	Pending		Under development
Admin Panel	07/08/2025	Pending		Depends on access control changes

Date: 08/08 /2025

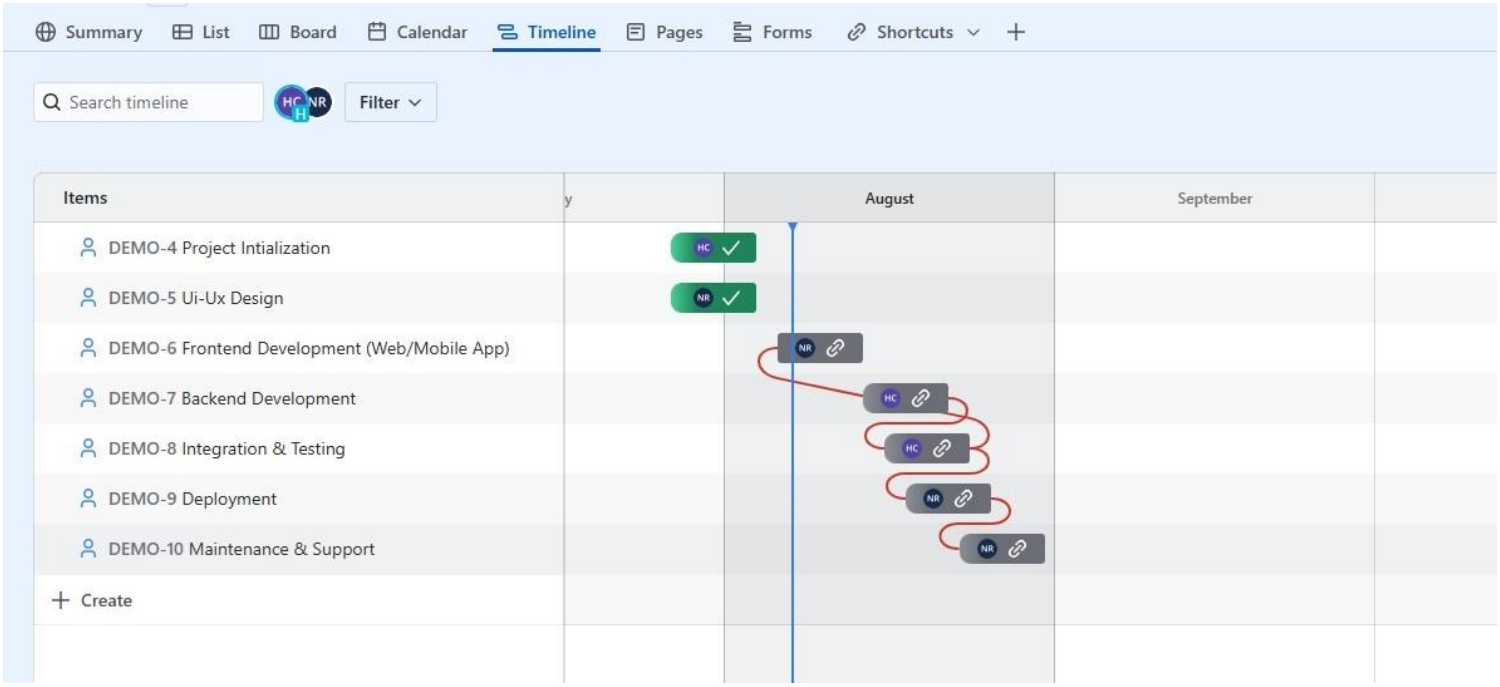
Lab Practical #08:
Create a project schedule using Jira – Software Management Tool.

Practical Assignment #08:

Enter tasks, durations, and dependencies into a Jira tool. Adjust the schedule to optimize project timelines. Review and refine the schedule.

Description:

In project management, dependencies describe the relationship between tasks and how they rely on each other to be completed. Some tasks cannot begin until others are finished, while some can run at the same time. There are four main types of dependencies: Finish-to-Start, Start-to-Start, Finish-to-Finish, and Start-to-Finish. Understanding these relationships helps project managers plan the order of work more effectively. Properly managing dependencies avoids delays and ensures a smooth workflow. It also helps in creating accurate timelines and improving overall project efficiency.



Date: 08/08 /2025

Projects

courier management system

Summary | List | Board | Calendar | Timeline | Pages | Forms | WBS Gantt-Chart | All work

Search list | Filter | Group

Status Category	Summary	Status	Assignee	Due date	Priority	Comments
DONE	Project Initiation	DONE	Nikhil Rathod	Aug 3, 2025	=	Add comment
IN PROGRESS	UI/UX Design	TO DO	Nikhil Rathod	Aug 10, 2025	^	Add comment
IN PROGRESS	Frontend Development (Web/Mobile App)	TO DO	Nikhil Rathod	Aug 15, 2025	^^	Add comment
IN PROGRESS	Backend Development	TO DO	Nikhil Rathod	Aug 30, 2025	^^	Add comment
IN PROGRESS	Integration & Testing	TO DO	Nikhil Rathod	Sep 4, 2025	=	Add comment
IN PROGRESS	Deployment	TO DO	Nikhil Rathod	Sep 12, 2025	^	Add comment
IN PROGRESS	Maintenance & Support	TO DO	Nikhil Rathod	Oct 13, 2025	v	Add comment

Create

Add epic / KAN-2

1

UI/UX Design

Description

Add a description...

Connected work items

Link similar work items *No results found.* Search again

blocks

KAN-3 Frontend Development (Web/Mobile App) TO DO

KAN-4 Backend Development TO DO

is blocked by | KAN-4

Create connected work item | Link | Cancel

To Do | Improve work item

Pinned fields

Click on the next to a field label to start pinning.

Details

Assignee	Nikhil Rathod
Priority	High
Parent	None
Due date	Aug 10, 2025
Labels	None
Team	None

Date: 21/08/2025

Lab Practical #09:

Develop a project schedule using PERT.

Practical Assignment #09:

Identify project milestones. Estimate optimistic, pessimistic, and most likely times for each task. Calculate the expected duration and develop a PERT analysis.

Description:

Step 1- Identity project Milestones and tasks

For a Courier Management System (CMS) project, the key milestones could include:

1. Requirement Gathering
2. System Design
3. Database & API Development
4. User & Branch Management Module
5. Order Booking & Label Generation
6. Shipment Tracking & GPS Integration
7. Route Optimization & Dispatch Module
8. Payment & Billing Module
9. Testing
10. Deployment & Training

Step 2: Estimate Optimistic, Pessimistic, and Most Likely Times

Task	Optimistic Time (O)	Most Likely Time (M)	Pessimistic Time (P)
1. Requirement Gathering	4 days	6 days	9 days
2. System Design	6 days	9 days	13 days
3. Database & API Development	7 days	11 days	16 days
4. User & Branch Management Module	5 days	8 days	12 days
5. Order Booking & Label Generation	4 days	7 days	10 days
6. Shipment Tracking & GPS Integration	7 days	12 days	18 days
7. Route Optimization & Dispatch Module	8 days	13 days	20 days
8. Payment & Billing Module	5 days	8 days	12 days
9. Testing	7 days	10 days	14 days

10. Deployment	3 days	5 days	7 days

Step 3: Calculate Expected Duration (TE)

Using the PERT formula: TE = (O + 4M + P)/6

1. **Requirement Gathering:** 6.17 days
2. **System Design:** 9.17 days
3. **Database & API Development:** 11.17 days
4. **User & Branch Management Module:** 8.17 days
5. **Order Booking & Label Generation:** 7.00 days
6. **Shipment Tracking & GPS Integration:** 12.17 days
7. **Route Optimization & Dispatch Module:** 13.33 days
8. **Payment & Billing Module:** 8.17 days
9. **Testing:** 10.17 days
10. **Deployment:** 5.00 days

Step 4: PERT Chart Data Structure

Task Name	Optimistic (O)	Most Likely (M)	Pessimistic (P)	Expected Duration (TE)
Requirement Gathering	4 days	6 days	9 days	6.17 days
System Design	6 days	9 days	13 days	9.17 days
Database & API Development	7 days	11 days	16 days	11.17 days
User & Branch Management Module	5 days	8 days	12 days	8.17 days
Order Booking & Label Generation	4 days	7 days	10 days	7.00 days
Shipment Tracking & GPS Integration	7 days	12 days	18 days	12.17 days
Route Optimization & Dispatch Module	8 days	13 days	20 days	13.33 days
Payment & Billing Module	5 days	8 days	12 days	8.17 days

Date: 21/08/2025

Testing	7 days	10 days	14 days	10.17 days
Deployment	3 days	5 days	7 days	5.00 days

Date: 28/08/2025

Lab Practical #10:

Develop a cost management plan for a simple IT project.

Practical Assignment #10:

Analyze a sample project description and identify potential cost drivers. Use the cost management template to estimate project costs for different categories. (e.g., labor, materials, travel). Discuss strategies for minimizing project costs while maintaining quality. Use Google Sheets/Google Docs.

Budget: Project Plant Pals Operations & Training

							TARGET BUDGET
							86900.00
	LABOR			MATERIALS		FIXED COST	BUDGET
MILESTONES & TASKS	EMPLOYEE	HOURS	RATE	UNITS	$/UNIT(S)		
Milestone 1: Project Initiation							
Task 1: Requirement Gathering (Client needs, user expectations)	HR Specialist	48		2	15000		30000.00
Task 2: Stakeholder Meetings (Logistics team, customers, admins)	HR Specialist	30		1500	2		3000.00
Task 3: Feasibility Study (Cost, timeline, technology)	Delivery Drivers	160	15.00				2400.00
Task 4: Approval & Sign-off	Delivery Drivers	53	15.00				
						Total	**35400.00**
Milestone 2: UI/UX Design							
Task 1: User Research (Courier staff, customers, admins)	HR	20				15000.00	15000.00
Task 2: Wireframing	Developers						
Task 3: Prototype (Figma/Adobe XD)	Developers						
						Total	**15000.00**
Milestone 3: Frontend Development (Web/Mobile App)							
Task 1 : Project Setup (React/Flutter)	HR Specialist	10	50.00				500.00
Task 2 : Authentication Module (Login, Roles: Admin/Courier/Customer)	Training Manager	80	25.00				2000.00
Task 3 : Order Placement & Tracking	Training Manager	80	25.00				2000.00
						Total	**4500.00**
Milestone 4: Backend Development							
Task 1 : Database Design	HR Specialist	80	50.00				4000.00
Task 2 : Authentication APIs	Training Manager	80	25.00				2000.00
Task 3 : Order Management APIs (Create, Update, Track)	Training Manager	80	25.00				2000.00
						Total	**8000.00**
Milestone 5: Integration & Testing							
Task 1 : API Integration (Frontend-Backend)	HR Specialist	80	50.00				4000.00
Task 2 : Unit Testing	Training Manager	80	25.00				2000.00
Task 3 : UI Testing (Cross-browser/device)	Training Manager	80	25.00				2000.00
						Total	**8000.00**
Milestone 6: Deployment							
Task 1 : Cloud Setup (AWS/Azure/Google Cloud)	HR Specialist	80	50.00				4000.00
Task 2 : CI/CD Pipeline (GitHub Actions/Jenkins)	Training Manager	80	25.00				2000.00
Task 3 : Production Release	Training Manager	80	25.00				2000.00
						Total	**8000.00**
Milestone 7: Maintenance & Support							
Task 1 : Bug Reports	HR Specialist	80	50.00				4000.00
Task 2 : System Updates	Training Manager	80	25.00				2000.00
Task 3 : Performance Monitoring	Training Manager	80	25.00				2000.00
						Total	**8000.00**
Reserve buffer							3100.00
TOTAL							**86900.00**

Date: 28/08/2025

- **Target Budget: ₹86,900**
- **Milestone-wise Breakdown:**

1. **Project Initiation**
   - Tasks: Requirement gathering, stakeholder meetings, feasibility study, approval & sign-off.
   - Roles: HR Specialists, Delivery Drivers.
   - Total Cost: ₹35,400
2. **UI/UX Design**
   - Tasks: User research, wireframing, prototype (Figma/Adobe XD).
   - Roles: HR, Developers.
   - Total Cost: ₹15,000
3. **Frontend Development (Web/Mobile App)**
   - Tasks: Project setup, authentication module, order placement & tracking.
   - Roles: HR Specialist, Training Manager.
   - Total Cost: ₹4,500
4. **Backend Development**
   - Tasks: Database design, authentication APIs, order management APIs.
   - Total Cost: ₹8,000
5. **Integration & Testing**
   - Tasks: API integration, unit testing, UI testing.
   - Total Cost: ₹8,000
6. **Deployment**
   - Tasks: Cloud setup, CI/CD pipeline, production release.
   - Total Cost: ₹8,000
7. **Maintenance & Support**
   - Tasks: Bug fixing, system updates, performance monitoring.
   - Total Cost: ₹8,000

- **Reserve Buffer: ₹3,100**
- **Final Total: ₹86,900**

Conclusion:

The budget plan for *Project Plant Pals Operations & Training* is well-structured, covering all phases of the project lifecycle from initiation to maintenance. The allocation of ₹86,900 ensures that resources are distributed effectively across milestones such as project initiation, design, development, testing, deployment, and support. Each milestone has been carefully costed with employee roles, hours, and rates, ensuring transparency in labor costs.

Additionally, the inclusion of a reserve buffer of ₹3,100 highlights proactive planning for unexpected expenses. This cost management plan balances project quality with financial efficiency, ensuring that the project can be executed successfully within the target budget while minimizing risks.

Date: 04/09/2025

Lab Practical #11:

Practice various techniques for cost estimation in IT projects.

Practical Assignment #11:

- Review different cost estimation techniques like expert judgment, analogy, parametric estimating, etc.
- Apply these techniques to a case study with missing cost information.
- Compare and contrast the estimated costs from different techniques and discuss their accuracy.
- Use Google Sheets.

Description:

Topic: Cost Estimation Techniques in IT Projects

Case Study: *Courier Management System*

Cost estimation is a critical step in IT project management to predict the effort, resources, and financials required for successful project execution. A Courier Management System involves complex components like real-time tracking, a customer portal, a rider application, and backend logistics management. Since complete cost data is often unavailable, estimation techniques help approximate the project costs.

Cost Estimation Techniques Overview

1. **Expert Judgment**

   This technique relies on the prior experience and knowledge of domain experts to arrive at a cost estimate.

   - **Pros:** Quick and practical when detailed data is lacking.
   - **Cons:** Highly subjective and can be prone to personal bias

2. **Analogous Estimating**

   This method uses historical data from past, similar projects to estimate the cost of a current project. For a courier system, one might look at the costs of developing systems for FedEx or Blue Dart.

   - **Pros:** Fast to implement and requires less detailed information.
   - **Cons:** Accuracy is heavily dependent on how similar the past project is to the new one.

3. **Parametric Estimating**

   This technique uses a statistical relationship between historical data and other variables to calculate a cost estimate. For a courier system, a parameter could be the cost per package handled or cost per delivery agent.

   - **Pros:** More accurate than other methods, scalable, and repeatable.
   - **Cons:** Requires a reliable set of statistical data to be effective.

Date: 04/09/2025

4. **Bottom-Up Estimating**

This method involves breaking down the project into smaller, more manageable work packages and then estimating the cost for each individual package. The total project cost is the sum of all package costs.

- **Pros:** Tends to be very accurate because of the detailed breakdown.
- **Cons:** Can be very time-consuming and requires a comprehensive Work Breakdown Structure (WBS).

5. **Three-Point Estimation (PERT)**

    - Uses Optimistic (O), Pessimistic (P), and Most Likely (M) values.
    - Formula: **(O + 4M + P) / 6**.
    - Pros: Reduces risk of under/overestimation.
    - Cons: Depends on availability of ranges.

Application to Spotify Case Study

Let's estimate the yearly project costs for a new Courier Management System assuming we have missing cost data

Cost Component	Description
Software Development	Customer Portal, Admin Dashboard
Hardware & Infrastructure	Cloud Servers, GPS Devices, Barcode Scanners
Third-Party Integrations	Mapping Services (Google Maps), SMS Gateways, Payment Portals
Support & Maintenance	Technical support, bug fixes, and system updates
Marketing & Promotion	Advertising, client and rider onboarding programs

A. Expert Judgment

- Expert A (Logistics Manager): ₹6.68 Crore
- Expert B (Lead Developer): ₹6.26 Crore
- Expert C (Financial Analyst): ₹7.10 Crore
- Estimated Average = ₹6.68 Crore

Date: 04/09/2025

B. Parametric Estimation

- Average operational and development cost per 1,000 packages processed per month = 42000
- Assumed volume = 250,000 packages per month.
- Formula: (Total Packages / 1,000) * Cost * 12
- Estimated = (250,000 / 1,000) * 42000 * 12 = ₹12.53 Crore

C. Bottom-Up Estimation

Work Package	**Estimated Cost (₹)**
Customer Portal Development	300
Admin Dashboard Development	400
Server Infrastructure	200
API Integrations	100
Support & Maintenance	150
Total	**1150**

Estimated = ₹9.60 Crore

D. Three-Point Estimation (PERT)

Work Package	**O (₹K)**	**M (₹K)**	**P (₹K)**	**PERT Estimation**
Customer Portal Dev	12	15	18	₹257.43
Admin Dashboard Dev	100	120	150	₹340.91
Server Infrastructure	25	30	40	₹167.00
API Integrations	8	10	12	₹87.68
Support & Maintenance	20	25	30	₹128.01
Total				**₹9.81 Crore**

Date: 04/09/2025

4. Comparison of Techniques

Technique	Estimated Cost (₹K)	Accuracy/Remarks
Expert Judgment	₹20,000	Too low, subjective
Parametric Estimation	₹1.8 Lakh	Scales with user base, closer to reality
Bottom-Up Estimation	₹2 Lakh	Most detailed, highly accurate
Three-Point Estimation	₹2.03 Lakh	Balances risks, very realistic

Conclusion

- Expert Judgment and Analogous Estimation are useful for generating quick, high-level estimates at the beginning of a project when data is scarce.
- Parametric Estimation becomes highly effective once reliable operational metrics, like package volume, are available.
- For the Courier Management System, the
- Bottom-Up and Three-Point (PERT) techniques provide the most reliable and realistic estimates, suggesting a yearly project cost of approximately ₹12.53 Crore to ₹12.78 Crore. These methods are preferred for detailed budgeting and planning because they are based on a comprehensive breakdown of the project scope and account for potential risks

Date: 09/09/2025

Lab Practical #12:

Develop a realistic budget for an IT project based on cost estimates.

Practical Assignment #12:

Review the cost estimates gathered from previous exercises. Allocate costs to different budget categories (e.g., personnel, equipment, software). Discuss strategies for contingency planning and managing budget variances. Use the budget template to create a comprehensive project budget. Use Google Sheets.

Description:

Cost Allocation and Budget Categorization

In this exercise, we'll allocate the estimated costs from the previous mobile app development case study into different budget categories and plan for contingencies and budget variances. Let's use data to illustrate the breakdown for an IT project.

Step 1: Cost Categories & Estimates:

Category	Estimated Cost (INR)	Notes
Personnel	₹99,60,000	5 team members (2 developers, 1 UI/UX designer, 1 QA engineer, 1 project manager) for 6–8 months
Equipment	₹6,64,000	Laptops, testing devices, barcode scanners for courier integration
Software & Tools	₹9,96,000	Development IDEs, project management tools, database license (if commercial), API costs (Google Maps, SMS gateway)
Infrastructure	₹12,45,000	Cloud hosting (AWS/Azure), databases, load balancers, storage for 1 year
Travel	₹3,32,000	Client/partner meetings, site visits to courier branches
Miscellaneous/Other	₹4,98,000	Legal, compliance, documentation, training, unforeseen expenses
Total (Before Contingency)	**₹1,36,95,000**	

Step 2: Contingency Planning:

- Assume 10% contingency (medium risk project).
- Contingency = 10% × ₹1,36,95,000 = ₹13,69,500

Total Project Budget = ₹1,50,64,500

Step 3: Managing Budget Variances:

1. Regular Monitoring – Track actual vs. estimated cost in Google Sheets; prepare variance reports.
2. Change Control – Scope changes (like live tracking or courier route optimization) must go through approval.
3. Risk Management – APIs (GPS, SMS, payment gateway) are high risk → keep buffer.

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4. Resource Optimization – Prefer open-source tools; use contract/part-time testers if needed.
5. Vendor Negotiation – Negotiate discounts for cloud hosting and SMS bulk usage.

Step 4: Final Budget Template:

Budget Category	Estimated Cost (INR)	Actual Cost	Variance	Notes
Personnel (Labor)	₹99,60,000	TBD	TBD	Salaries (dev, PM, QA, designer)
Equipment	₹6,64,000	TBD	TBD	Laptops, testing, scanners
Software & Tools	₹9,96,000	TBD	TBD	IDE, APIs, licenses
Infrastructure	₹12,45,000	TBD	TBD	Cloud hosting & DB
Travel	₹3,32,000	TBD	TBD	Meetings & branch visits
Miscellaneous	₹4,98,000	TBD	TBD	Legal, training, unforeseen
Total Estimate	**₹1,36,95,000**	**TBD**	**TBD**	-
Contingency (10%)	**₹13,69,500**	**N/A**	**N/A**	**Risk buffer**
Total Project Budget	**₹1,50,64,500**	**TBD**	**TBD**	-