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SCENERIO

We're working on implementing a new software system for a company. One issue we're facing is ensuring effective communication and collaboration among team members, especially if they are geographically dispersed. To solve this, we can utilize project management tools like ASANA or Basecamp. These tools provide features such as task tracking, document sharing, and realtime communication, allowing team members to stay connected and work together seamlessly.

Additionally, we can apply agile project management methodologies, such as WBs and HRM, to enhance productivity and adapt to changing requirements. By leveraging these tools and techniques, we can successfully manage the IT project and deliver a high-quality software system.

COMPLEX COMPUTING PROBLEM:

One of the most difficult complicated computing challenges you'll face is optimizing the platform's performance and scalability. As millions of customers access Pakwheels.com at the same time from

various geographical places, quick streaming and smart resource allocation become crucial. You must create algorithms for load balancing, data caching, and distributed content delivery in order to distribute the workload evenly across servers, reduce latency, and assure the service's availability and reliability.

PAKWHEELS:

"PakWheels" is going to be a popular online automotive marketplace based in Pakistan. Here are some key details about PakWheels:

- **Platform Type:** PakWheels will operate as an online portal and mobile app, providing a digital marketplace for buying and selling vehicles.

- **Buy and Sell Vehicles:** Users can browse through a wide range of new and used cars, motorcycles, and other vehicles listed on PakWheels. The platform will facilitate the buying and selling process.

- **Vehicle Listings:** Detailed listings will include information such as make, model, year, condition, price, and contact details of the seller. Photos and additional specifications will also be included.

-User Reviews and Ratings: PakWheels will allow users to leave reviews and ratings for vehicles, helping others make informed decisions based on the experiences of previous buyers.

- **Automotive News and Reviews**: In addition to the marketplace, PakWheels will offer automotive news, reviews, and articles related to the Pakistani automotive industry.

- **Community Forums:** The platform features community forums where users can discuss various automotive topics, seek advice, and share their knowledge and experiences.

- **Vehicle Comparisons:** Users can compare different vehicles based on specifications, features, and prices, aiding them in making wellinformed decisions.

- **Mobile App:** PakWheels will have a mobile application, providing users with convenient access to the platform from their smartphones.

- **Dealer Listings**: Car dealerships will also list their inventory on PakWheels, expanding their reach to potential buyers.

- **Auto Parts and Accessories:** In addition to vehicles, PakWheels will include listings for auto parts and accessories, allowing users to find and purchase specific components.

- **Events and Car Shows:** PakWheels will organize and promote automotive events and car shows, fostering a sense of community among car enthusiasts.

PakWheels will become a go-to platform for individuals interested in buying, selling, or researching vehicles in the Pakistani automotive market.

PROJECT PHASES:

Initiation phase:

- Stakeholder Identification
- Resource Identification
- Project Approval

Planning Phase:

- Work Breakdown Structure (WBS)
- Budgeting
- Communication Plan
- Risk Management Plan
- Team Training and Development

Execution Phase:

- Client or Stakeholder Engagement
- Change Management
- Task Execution

Closure Phase:

- Final Deliverables
- Closure of Contracts
- Lessons Learned
- Post-Implementation Review

- Final Reporting

Initiation Phase

1. **STAKEHOLDER IDENTIFICATION:**

Identify all stakeholders involved in the Pakwheels project, including:

- Internal Stakeholders: Project team, developers, product managers, marketing team, and support staff.
- External Stakeholders: Car and bike dealers, individual sellers, buyers, advertisers, and industry experts.

2. **RESOURCE IDENTIFICATION:**

Determine the resources required for Pakwheels, such as:

- Human Resources: Developers, designers, project managers, marketing professionals, and support staff.
- Technical Resources: Servers, development tools, software licenses, and cloud services.
- Financial Resources: Budget allocation for development, marketing, and operations.

3. **PROJECT APPROVAL:**

Present the project plan to senior management and obtain approval.
Secure necessary funding and resources based on the project's scope and objectives.

Planning Phase

1. WORK BREAKDOWN STRUCTURE (WBS)

Break down the project into smaller, manageable tasks. Define milestones and deliverables for each phase. Assign tasks to team members based on their skills and expertise.

2. BUDGETING:

Create a detailed budget covering all aspects of the project. Allocate funds for development, marketing, operational expenses, and contingency plans.

3. COMMUNICATION PLAN

Develop a communication strategy to ensure effective information flow among stakeholders.
Schedule regular meetings, updates, and reports to keep everyone informed about the project's progress.

4. RISK MANAGEMENT PLAN:

Identify potential risks and challenges that could impact the project.
Develop mitigation strategies and contingency plans to address these risks.

5. TEAM TRAINING AND DEVELOPMENT:

Provide necessary training to team members to ensure they are equipped with the required skills and knowledge.
Conduct workshops on using project management tools, understanding project goals, and adhering to best practices.

Execution Phase

1. CLIENT AND STAKEHOLDER ENGAGEMENT:

Maintain regular communication with stakeholders to gather feedback and ensure their needs are being met. Involve stakeholders in key decision-making processes to ensure alignment with project goals.

2. CHANGE MANAGEMENT:

Implement a change management process to handle any changes in project scope, requirements, or resources. Ensure that all changes are documented, reviewed, and approved before implementation.

3. TASK EXECUTION:

Begin the development of the PakWheels platform based on the defined WBS.
Monitor progress and ensure that tasks are completed on time and within budget.
Conduct regular quality checks to ensure that the platform meets the required standards.

Closure Phase

1. FINAL DELIVERABLES:

Ensure that all project deliverables are completed and meet the agreed-upon specifications.
Conduct final testing and quality assurance to ensure the platform is ready for launch.

2. CLOSURE OF CONTRACTS:

Close all contracts with vendors, suppliers, and external partners.
Ensure all contractual obligations have been met and documented.

3. **LESSONS LEARNED:**

Conduct a retrospective analysis to identify what went well and what could be improved.
Document lessons learned to benefit future projects.

4. **POST-IMPLEMENTATION REVIEW:**

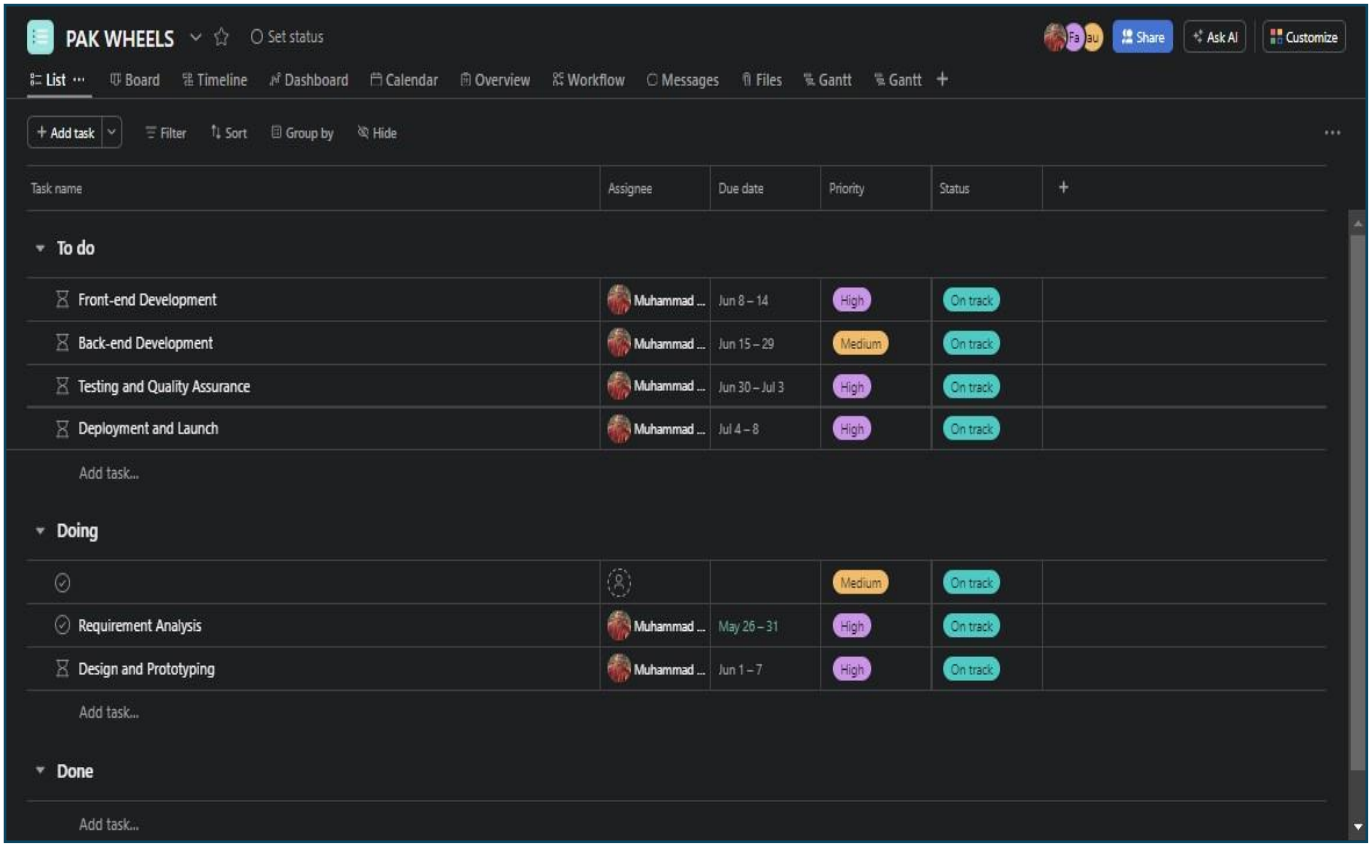
Evaluate the performance of the PakWheels platform postlaunch.
Gather feedback from users and stakeholders to identify any issues or areas for improvement.

5. **FINAL REPORTING**:

Prepare a comprehensive final report detailing the project's outcomes, budget performance, and overall success. Present the final report to senior management and stakeholders for review and approval

WBS:

- Requirement Analysis
- Design and Prototyping
- Front-end Development
- Back-end Development
- Testing and Quality Assurance
- Deployment and Launch



WBS Dictionary:

	Requirement Gathering	Design	Front-End	Back-end	Testing	Deployment
CONTEXT:	The Business Analyst will be responsible for gathering the requirements from the stakeholders and conducting an analysis on those requirements.	The UX/UI Designer will be responsible for the design in the PakWheels project.	The Frontend Developer will be responsible for creating the frontend of the PakWheels website, implementing user interfaces and interactions to ensure a seamless user experience.	The Backend Developer will be responsible for developing the backend of the PakWheels website, implementing serverside logic, databases, and ensuring smooth functionality of the platform.	The Quality Assurance (QA) Engineer will be responsible for testing the PakWheels website, ensuring that it meets quality standards and functions correctly across various devices and browsers.	The DevOps Engineer will be responsible for the deployment and launch of the PakWheels website, ensuring smooth deployment of code changes and maintaining the reliability and availability of the platform during the launch process.

Responsible Party:	Business Analyst (BA)	UX/UI Designer	Developer	Developer	Quality Assurance Engineer	DevOps
Time Limit:	5 Days	6 Days	6 Days	14 Days	3 Days	4 Days

	Resources:	access to stakeholders, tools for documentation	designers, design software ,access to design tools and resources	frontend developers proficient in languages such as HTML, CSS, and JavaScript, access to frontend frameworks and libraries	developers proficient in programming languages such as Python, Node.js, Java, or PHP, access to backend frameworks and databases	engineers proficient in testing methodologies and tools, access to testing environments, test automation tools & potentially access to testing devices or emulators for crossdevice and crossbrowser testing	engineers proficient in deployment methodologies and tools, access to deployment environments (e.g., staging and production servers)
	Cost Estimates:	10,000 Rs	20,000 Rs	30,000 Rs	50,000 Rs	20,000 Rs	34,000 Rs
	Quality Requirements:	The requirements must be brief, precise, and unambiguous.	A seamless user interface.	Implement responsive design for various devices, ensure crossbrowser compatibility, maintain UI/UX consistency, adhere to accessibility standards, optimize performance, follow coding best practices	Implement basic features and create backups in case of a crash.	Comprehensive coverage including unit testing, integration testing, regression testing, and user acceptance testing.	Select the proper integration software and offer details on how to utilise the website.

Risks & Constraints:	Incomplete requirements or limited stakeholder cooperation.	Design inconsistencies or time constraints.	Compatibility issues or tight deadlines.	Technical challenges or resource limitations.	Inadequate test coverage or time constraints.	Deployment failures or limited infrastructure.
Dependencies:	None	Requirment Gathering	Design	Requirments Gathered & Front-End	Front-end & Back-End	Testing
Acceptance Criteria:	Documentation	Mockups	Responsiveness	Functionality	Validation	Launch

SWOT ANALYSIS:

Strengths:

1. **Market Dominance:** PakWheels will be a leading and well-established online automotive marketplace in Pakistan.
2. **Extensive Listings:** The platform will offer a wide range of listings for new and used vehicles, providing a comprehensive selection for users.

3. **User Engagement:** Features such as reviews, ratings, and forums will contribute to a vibrant user community, fostering engagement.
4. **Mobile App:** The availability of a mobile app will enhance accessibility, allowing users to browse and interact on-the-go.

Weaknesses:

1. **Dependence on Internet Access:** The platform's effectiveness will rely heavily on internet access, which may limit outreach in areas with limited connectivity.
2. **Competition:** Intense competition is going to be online automotive marketplace space may pose challenges in maintaining market share.

Opportunities:

1. **E-commerce Growth:** The increasing trend of online transactions in Pakistan will present opportunities for PakWheels to capture a growing market.
2. **Diversification:** Exploring additional services such as financing options or partnerships with related industries can broaden the platform's appeal.
3. **Smart Technology Integration:** Integrating smart technologies and features, such as AI-driven recommendations or virtual showrooms, can enhance the user experience.

Threats:

1. **Regulatory Changes:** Shifts in government regulations related to the automotive industry will pose challenges for online marketplaces.
2. **Cyber security Risks**: The platform will face potential threats from cybersecurity issues, such as data breaches, which could impact user trust.

3. **Changing Consumer Preferences**: Will Shift in consumer preferences or the emergence of new trends may require continuous adaptation to stay relevant

HUMAN RESOURCE

1. **Recruitment and Selection:** Attracting, hiring, and onboarding employees to fill positions within the company.

2. **Training and Development**: Will provide employees with the necessary skills and knowledge to perform their roles effectively and supporting ongoing professional development.

3. **Performance Management**: Will Evaluate and manage employee performance, setting goals, and providing feedback.

4. **Compensation and Benefits**: Will Develop and manage salary structures, bonuses, and employee benefits packages.

5. **Employee Relations:** Handle workplace relationships, addressing conflicts, and fostering a positive work environment.

6. **Policy Development:** Create and implement HR policies that align with legal requirements and the organization's goals.

7. **Health and Safety:** Ensure a safe and healthy work environment for employees.

ENVIRONMENTAL FACTORS:

1. **Economic Conditions:** Economic fluctuations in Pakistan can impact consumer purchasing power and can influence buying decisions for vehicles listed on PakWheels.

2. **Regulatory Changes:** Can change in government regulations related to the automotive industry, online marketplaces, or ecommerce can affect PakWheels' operations and compliance requirements.

3. **Technology Trends:** Advancements in technology, especially in the automotive sector, can impact the

types of vehicles listed on PakWheels and the features users seek.

4. **Competitive Landscape:** The level of competition in the online automotive marketplace can influence PakWheels' market share, pricing strategies, and overall business strategy.

Consumer Behavior: Can shift preferences and behaviors of consumers in terms of online shopping, trust in digital platforms, and preferences for specific vehicle types can affect PakWheels' user base.

5. **Environmental Sustainability:** Can Increase awareness of environmental issues may influence consumer preferences towards more eco-friendly vehicles, impacting the types of listings on PakWheels.

6. **Global Economic Trends:** International economic conditions and trends can influence the import and export of vehicles, affecting PakWheels' marketplace dynamics.

ASANA SOFTWARE

- Asana is similar to other task and project management software which allow teams to organize, collaborate, plan, and execute tasks.
- It acts as a perfect companion to overcome chaos and meet deadlines.
- It is a web-based task management and collaboration tool which eliminates the email mess and brings all tasks together.

USES OF ASANA:

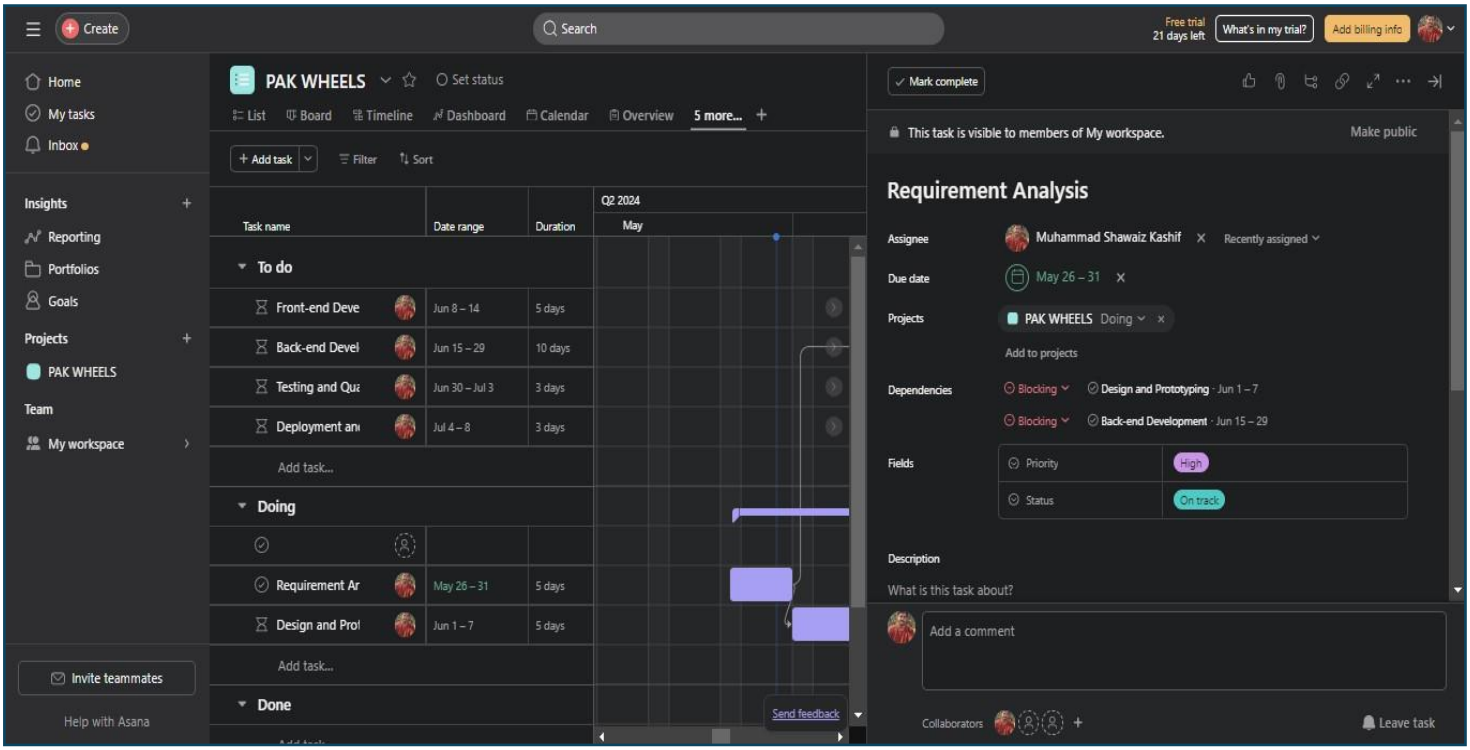
- **Project tracking:** Keep track of project progress, monitor task completion, and identify bottlenecks.
- **Collaboration:** Share files, communicate with your team, and have discussions within the platform.
- **Team coordination:** Assign responsibilities, set priorities, and ensure everyone is aligned.

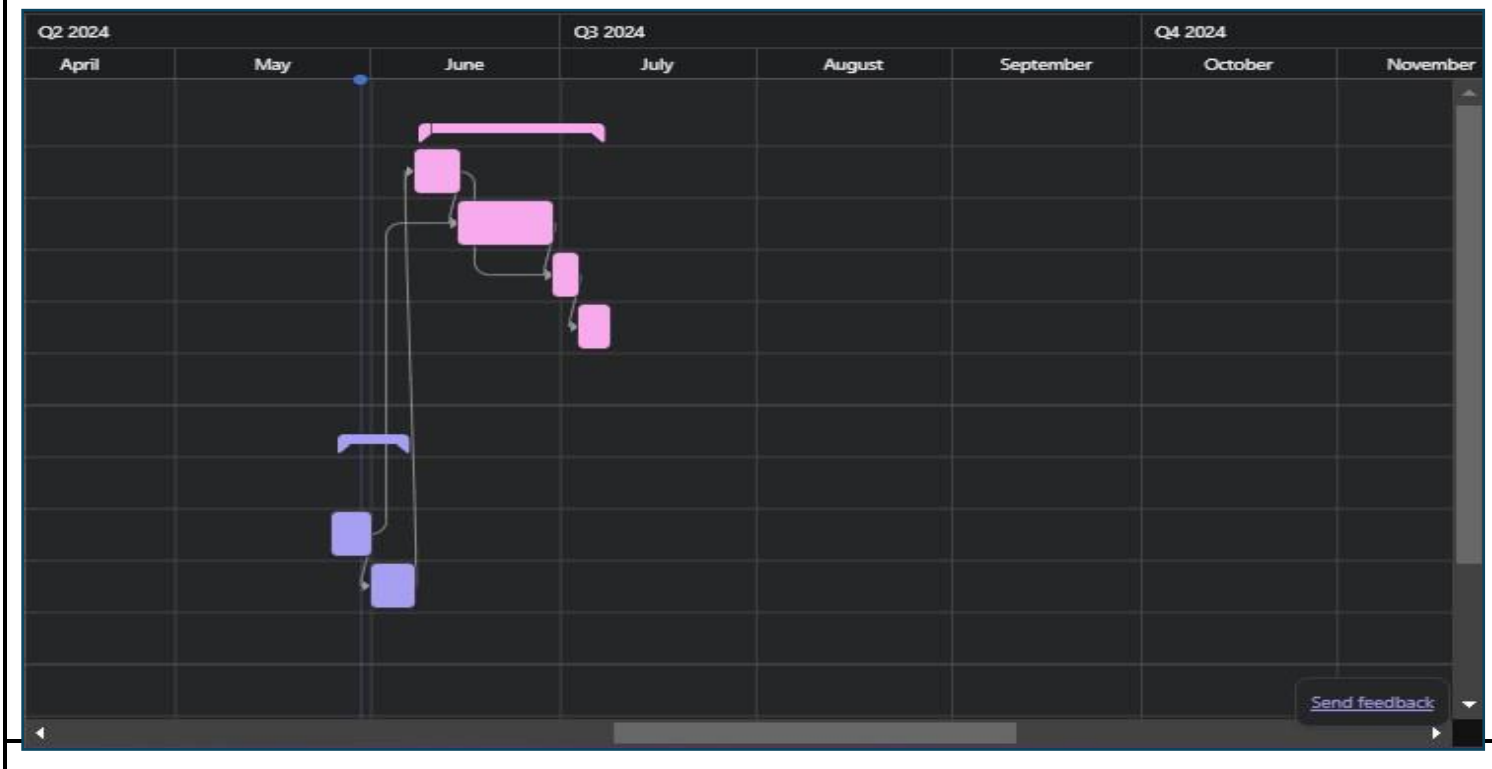
- **Deadline management:** Set due dates for tasks and receive reminders to stay on schedule.

- **Workflow visualization:** Use boards, lists, and timelines to visualize project workflows.

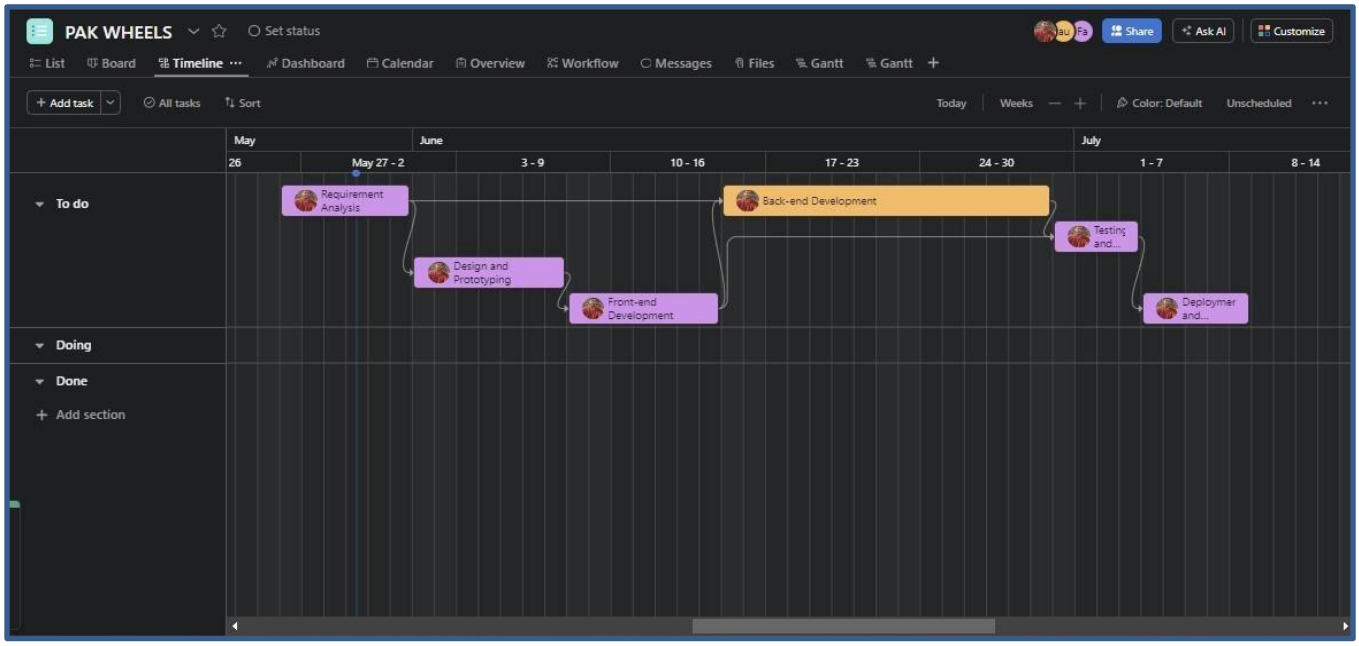
- **Integration with other tools:** Asana can integrate with other apps like Google Drive, Slack, and more.

GANTT CHART:


Create
Search
Free trial
21 days left
What's in my trial?
Add billing info
Home
My tasks
Inbox
Insights
Reporting
Portfolios
Goals
Projects
PAK WHEELS
Team
My workspace
Invite teammates
Help with Asana
PAK WHEELS
Set status
List
Board
Timeline
Dashboard
Calendar
Overview
5 more...
Add task
Filter
Sort
Task name
Date range
Duration
Q2 2024
May
To do
Front-end Deve
Jun 8 – 14
5 days
Back-end Devel
Jun 15 – 29
10 days
Testing and Qua
Jun 30 – Jul 3
3 days
Deployment an
Jul 4 – 8
3 days
Add task...
Doing
Requirement Ar
May 26 – 31
5 days
Design and Prot
Jun 1 – 7
5 days
Add task...
Done
Send feedback
Mark complete
This task is visible to members of My workspace.
Make public
Requirement Analysis
Assignee
Muhammad Shawaiz Kashif
Recently assigned
Due date
May 26 – 31
Projects
PAK WHEELS
Doing
Add to projects
Dependencies
Blocking
Design and Prototyping · Jun 1 – 7
Blocking
Back-end Development · Jun 15 – 29
Fields
Priority
High
Status
On track
Description
What is this task about?
Add a comment
Collaborators
Leave task


Q2 2024
Q3 2024
Q4 2024
April
May
June
July
August
September
October
November
Send feedback

PERT CHART:



CPM:

To create a Critical Path Method (CPM) diagram for the PakWheels project, we need to identify the tasks, their dependencies, and the estimated durations. Here's an outline of the tasks based on the provided Work Breakdown Structure (WBS):

1. Requirement Analysis
2. Design and Prototyping
3. Front-end Development
4. Back-end Development

5. Testing and Quality Assurance

6. Deployment and Launch

Task Dependencies

- **Requirement Analysis** must be completed before **Design and Prototyping** can begin.
- **Design and Prototyping** must be completed before both **Front-end Development** and **Back-end Development** can start.
- **Front-end Development** and **Back-end Development** can proceed in parallel but must be completed before **Testing and Quality Assurance**.
- **Testing and Quality Assurance** must be completed before **Deployment and Launch**.

Estimated Durations (in weeks)

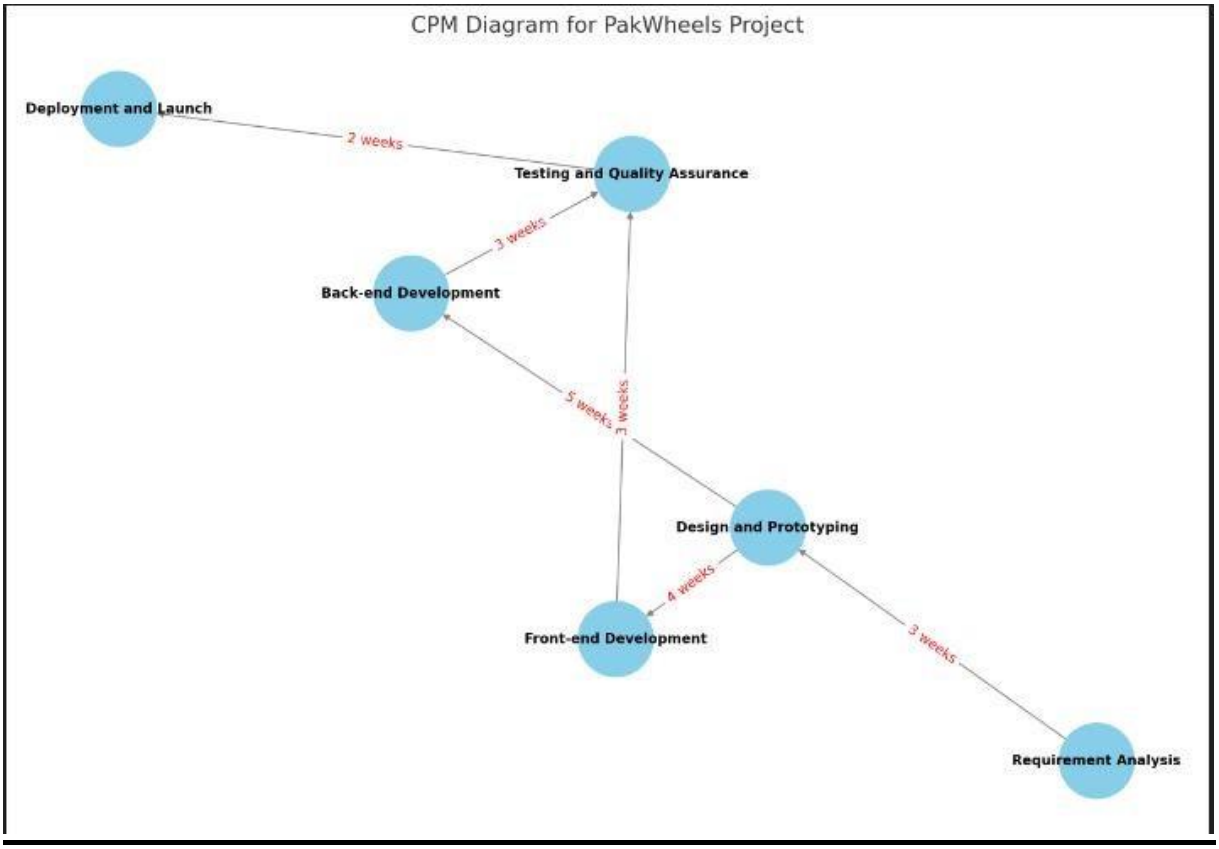
- Requirement Analysis: 2 weeks Design and Prototyping: 3 weeks. Front-end Development: 4 weeks
- Back-end Development: 5 weeks
- Testing and Quality Assurance: 3 weeks
- Deployment and Launch: 2 weeks

CPM Diagram Creation

1. **Requirement Analysis** (2 weeks)
2. **Design and Prototyping** (3 weeks)
3. **Front-end Development** (4 weeks)
4. **Back-end Development** (5 weeks)
5. **Testing and Quality Assurance** (3 weeks)
6. **Deployment and Launch** (2 weeks)

Dependencies:

- Task 1 → Task 2
- Task 2 → Task 3
- Task 2 → Task 4
- Task 3 → Task 5
- Task 4 → Task 5
- Task 5 → Task 6



Critical Path:

To find the critical path, we need to identify all possible paths from start to finish and calculate their total durations. The paths and their durations are as follows:

1. **Path 1:**
    - Requirement Analysis (2 weeks) ◦ Design and Prototyping (3 weeks) ◦ Front-end Development (4 weeks) ◦ Testing and Quality Assurance (3 weeks) ◦ Deployment and Launch (2 weeks) ◦ **Total: 2 + 3 + 4 + 3 + 2 = 14 weeks**
2. **Path 2:**
    - Requirement Analysis (2 weeks) ◦ Design and Prototyping (3 weeks) ◦ Back-end Development (5 weeks) ◦ Testing and Quality Assurance (3 weeks) ◦ Deployment and Launch (2 weeks) ◦ **Total: 2 + 3 + 5 + 3 + 2 = 15 weeks(critical path)**

This confirms that the minimum time to complete the Pak Wheels project is 15 weeks, assuming no delays and that all tasks on the critical path are completed as planned

Conclusion:

The PakWheels online automobile marketplace development project is well-planned, with a focus on good communication, cooperation, and agile project management approaches. The key phases include stakeholder and resource identification, thorough job breakdown, budgeting, and risk management. The execution phase assures stakeholder involvement and quality assurance, whereas the closure phase focuses on final deliverables and lessons learned. The platform will include detailed vehicle listings, user reviews, automotive news, and community forums, all powered by powerful algorithms for performance optimisation and scalability. Tools such as ASANA and organised project management procedures will help you complete and deploy a high-quality software system.