# IT Project Management

## Lab Assignment - 1


**Team 7 - AI-based Shopping Comparison system**

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## Project Planning and Scheduling

# TEAM NUMBER- 7
# CBS3012 – IT PROJECT MANAGEMENT
# LAB ASSIGNMENT – 1

## AI based Shopping Comparison system

**Aim:**
To create an AI based online shopping system.

**Objectives:**

1. To shop while in the comfort of your own home, without having to step out of the door.
2. To be able to easily save money and compare prices from website to website.
3. Online resellers tend to sell at a lower price due to less overhead expenses.
4. Customers can compare different prices of a same product through different sites over one site.
5. Customer can compare products based on their personal preferences like price, estimated delivery date, discount offered and much more.

**Abstract**:

Online shopping is the process whereby consumers directly buy goods, services etc. from a seller interactively in real-time without an intermediary service over the internet. Online shopping is the process of buying goods and services from merchants who sell on the Internet. Since the emergence of the World Wide Web, merchants have sought to sell their products to people who surf the Internet. Shoppers can visit web stores from the comfort of their homes and shop as they sit in front of the computer. Consumers buy a variety of items from online stores.

**Scope:**

This system can be implemented to any shop in the locality or to multinational branded shops having retail outlet chains. The system recommends a facility to accept the orders 24*7 and a home delivery system which can make customers happy. If shops are providing an online portal where their customers can enjoy easy shopping from anywhere, the shops won't be losing any more customers to the trending online shops such as flipkart or ebay. Since the application is available in the Smartphone it is easily accessible and always available. This is a comparison-based application where we can compare same products available on different website on a single website.

**Project Management tool to be used:**

Jira, being a versatile project management tool, can be effectively utilized in an AI-based shopping comparison project. Create a project roadmap in Jira, outlining the key milestones, deliverables, and timelines for the development and implementation of the AI-based shopping comparison system. Use Jira's issue tracking system to manage user stories and requirements. Break down the functionalities of the AI-based shopping comparison system into manageable tasks and user stories. If your development process follows Agile methodologies (e.g., Scrum), Jira provides Agile boards and workflows to manage sprints, backlogs, and prioritization of tasks. This allows for iterative development and continuous improvement. Assign tasks to team members within Jira and utilize its resource management features to monitor workload and allocate resources efficiently. This helps ensure that the development team is balanced and focused on the right priorities. Jira integrates with various development tools, including.
version control systems, continuous integration, and deployment tools. This ensures seamless collaboration between developers and project managers and helps maintain code quality and consistency. Use Jira's Confluence integration for documentation and knowledge sharing. Maintain project documentation, technical specifications, and user manuals within Confluence, which integrates seamlessly with Jira. It also provides reporting and analytics features that allow you to track project progress, monitor team performance, and identify potential bottlenecks. Utilize these insights for informed decision-making.

So in short here is what Jira as project management tool is useful for :

- Allows for agile project management using a Scrum or Kanban board
- Offers customizable workflows and fields for projects
- Allows for team collaboration, including mentions and notifications
- Offers a variety of reporting and analytics features
- Has integrations with other tools such as GitHub and Confluence

# Functional Requirements:

1. ***User Registration and Authentication:***
    - Users must be able to create accounts with a valid email or social media credentials, providing detailed personal information if necessary.
    - Implement multi-factor authentication for enhanced security.
    - Allow users to recover their accounts through a secure process.
2. ***Product Catalog:***
    - Display a comprehensive product catalog with high-quality images, detailed descriptions, and specifications.
    - Implement advanced search functionality, allowing users to filter products based on price range, brand, ratings, and other relevant criteria.
    - Enable sorting options based on popularity, price, and user reviews.
3. ***Shopping Cart:***
    - Allow users to add items to the shopping cart, view the cart contents, and easily manage quantities.
    - Implement an auto-save feature for shopping carts, enabling users to resume their shopping sessions seamlessly.
    - Display real-time updates on the total cost, including taxes and shipping fees.
4. ***Personalized Recommendations:***
    - Utilize machine learning algorithms to analyze user behavior, purchase history, and preferences.
    - Offer personalized product recommendations on the homepage and within specific product pages.
    - Allow users to manually customize their preferences for a more tailored experience.
5. ***Price Comparison:***
    - Integrate with external APIs to fetch real-time pricing information from various online retailers.

- Present a clear and concise comparison of prices for the same product across different platforms.
- Implement a notification system for users when a better deal is available.

6. ***Chatbot Assistance:***
    - Develop a conversational AI chatbot capable of understanding and responding to user inquiries in a natural language.
    - Provide assistance in product search, order placement, and issue resolution.
    - Integrate sentiment analysis to gauge user satisfaction and continually improve the chatbot's responses.
7. ***Order Management:***
    - Allow users to place orders, modify existing orders, and cancel orders within a specified time frame.
    - Provide real-time tracking information with live updates on the order's status.
    - Send email or SMS notifications for important order milestones.
8. ***Payment Gateway Integration:***
    - Integrate with widely used and trusted payment gateways, ensuring the security of financial transactions.
    - Support multiple payment methods such as credit/debit cards, digital wallets, and bank transfers.
    - Implement a seamless checkout process with an option for saved payment methods.
9. ***User Reviews and Ratings:***
    - Allow users to leave detailed reviews and ratings for products they have purchased.
    - Implement a moderation system to filter out inappropriate content.
    - Utilize AI for sentiment analysis to summarize and provide an overall sentiment score for each product.
10. ***Mobile Responsiveness:***
    - Design a responsive web application accessible across various screen sizes.

- Develop native mobile applications for iOS and Android platforms with consistent user experience.
- Ensure mobile apps include features such as push notifications and offline capabilities.

## Non-Functional Requirements:

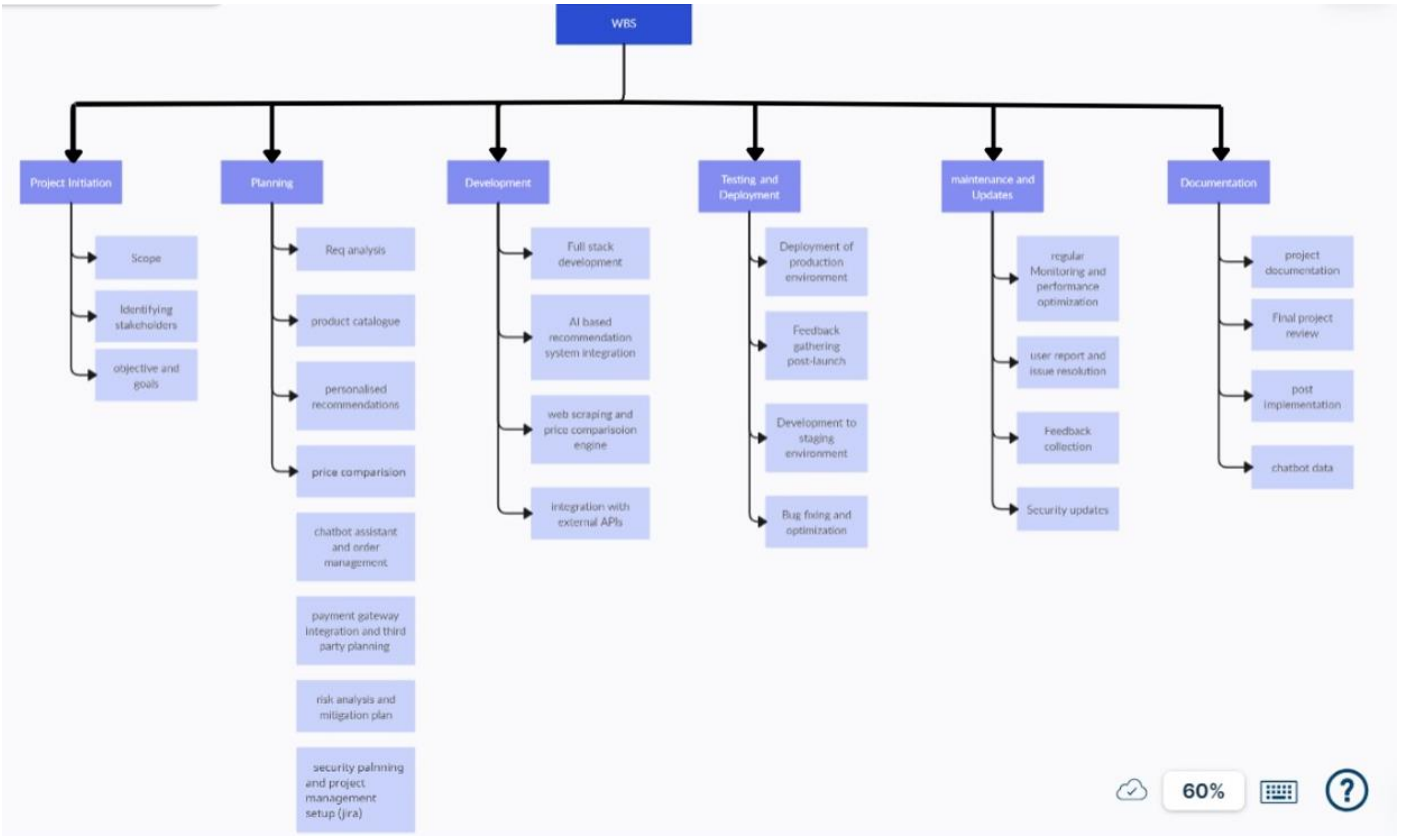
1. ***Security:***
    - Implement end-to-end encryption to protect user data during transmission and storage.
    - Regularly update security protocols to address emerging threats and vulnerabilities.
    - Conduct periodic security audits by third-party experts.
2. ***Scalability:***
    - Design the system architecture to handle an increasing number of users and products.
    - Implement load balancing and caching mechanisms to distribute traffic efficiently.
    - Monitor system performance and scale resources dynamically as needed.
3. ***Reliability:***
    - Aim for high system availability (99.9% uptime) through redundant server setups.
    - Implement automatic failover mechanisms to ensure continuous service in the event of server failures.
    - Regularly back up critical data to prevent loss in case of unexpected events.
4. ***Performance:***
    - Optimize web and mobile application performance for fast page loading and response times.
    - Conduct stress testing to ensure the system can handle peak user loads.
    - Optimize database queries and use caching strategies to enhance overall performance.
5. ***Usability:***

- Conduct user testing to ensure the interface is intuitive and easy to navigate.
- Implement accessibility features, such as screen reader compatibility and alternative text for images.
- Provide tooltips and help sections for users unfamiliar with certain features.

6. ***Data Privacy:***
    - Adhere to data protection regulations, including GDPR, by clearly outlining privacy policies and obtaining user consent.
    - Implement robust user data anonymization and deletion processes.
    - Educate users about data privacy and security measures through the platform.
7. ***Integration:***
    - Ensure compatibility with major web browsers (Chrome, Firefox, Safari) and operating systems.
    - Establish secure and reliable integration with third-party services, such as payment processors and shipping partners.
    - Implement API documentation for external developers interested in integrating with the system.
8. ***Maintainability:***
    - Develop modular and well-documented code to facilitate easy maintenance.
    - Establish a version control system for tracking changes and updates.
    - Provide an administrative dashboard for system administrators to monitor and manage the platform effectively.
9. ***Cost Efficiency:***
    - Optimize resource usage, including cloud infrastructure, to minimize operational costs.
    - Regularly review and optimize third-party service subscriptions.
    - Implement energy-efficient practices where applicable to reduce overall operational costs.
10. ***Customer Support:***

- Offer 24/7 customer support through various channels, including live chat, email, and a dedicated helpline.
- Implement a ticketing system to track and resolve customer issues efficiently.
- Continuously train customer support representatives on product knowledge and effective communication.

## WORK BREAKDOWN STRUCTURE



# Stakeholders

Stakeholders are individuals or groups who have an interest or are affected by the outcome of a project. In the case of the AI-Enhanced Shopping System, both direct and indirect stakeholders play crucial roles. Here is a breakdown of the direct and indirect stakeholders:

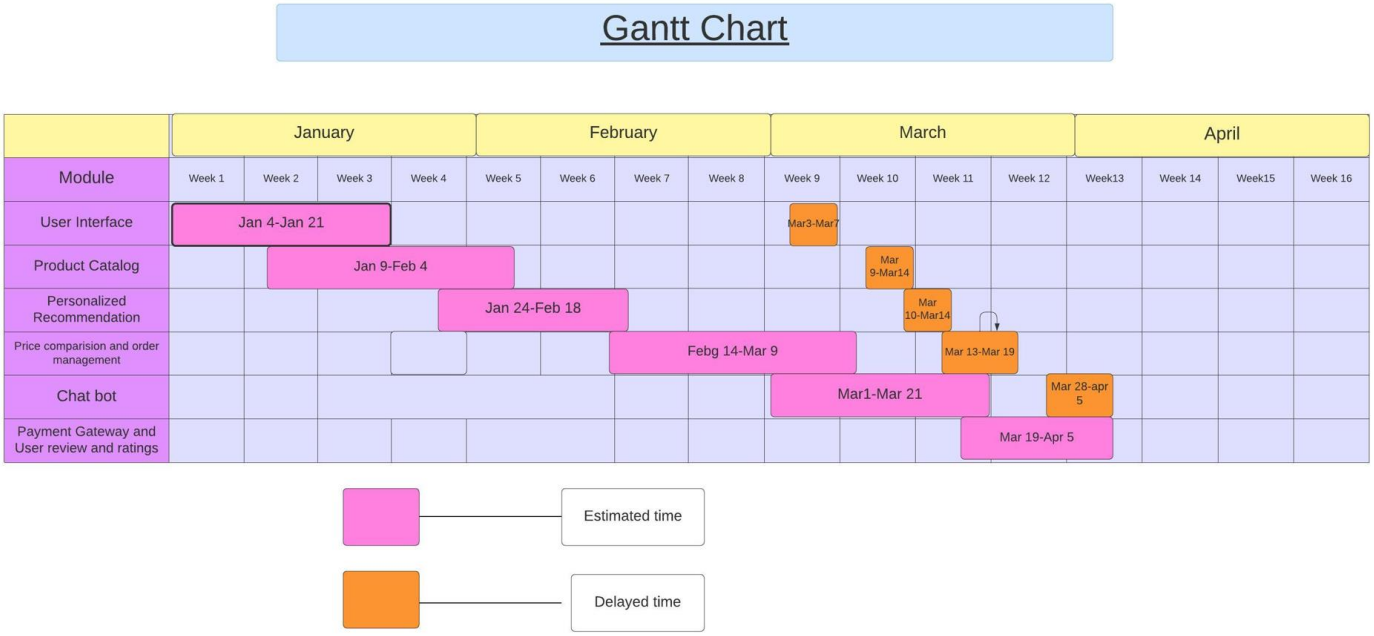
## Direct Stakeholders:

1. **Project Sponsor:**
    - *Description:* The individual or group funding and initiating the project.
    - *Role:* Approving project budgets, making key decisions, and ensuring project alignment with business goals.
2. **Project Manager:**
    - *Description:* The person responsible for planning, executing, and closing the project.
    - *Role:* Leading the project team, managing resources, and ensuring timely delivery.
3. **Development Team:**
    - *Description:* Developers, programmers, and engineers directly involved in building the AI-Enhanced Shopping System.
    - *Role:* Executing the technical aspects of the project, coding, testing, and deploying the system.
4. **UX/UI Designers:**
    - *Description:* Designers responsible for creating user-friendly interfaces and enhancing user experience.
    - *Role:* Designing the layout, visual elements, and overall user interface of the online shopping platform.
5. **Quality Assurance Team:**
    - *Description:* A team responsible for testing the system to ensure it meets quality standards.
    - *Role:* Conducting testing, identifying and reporting bugs, and ensuring the system's reliability.

# Indirect Stakeholders:

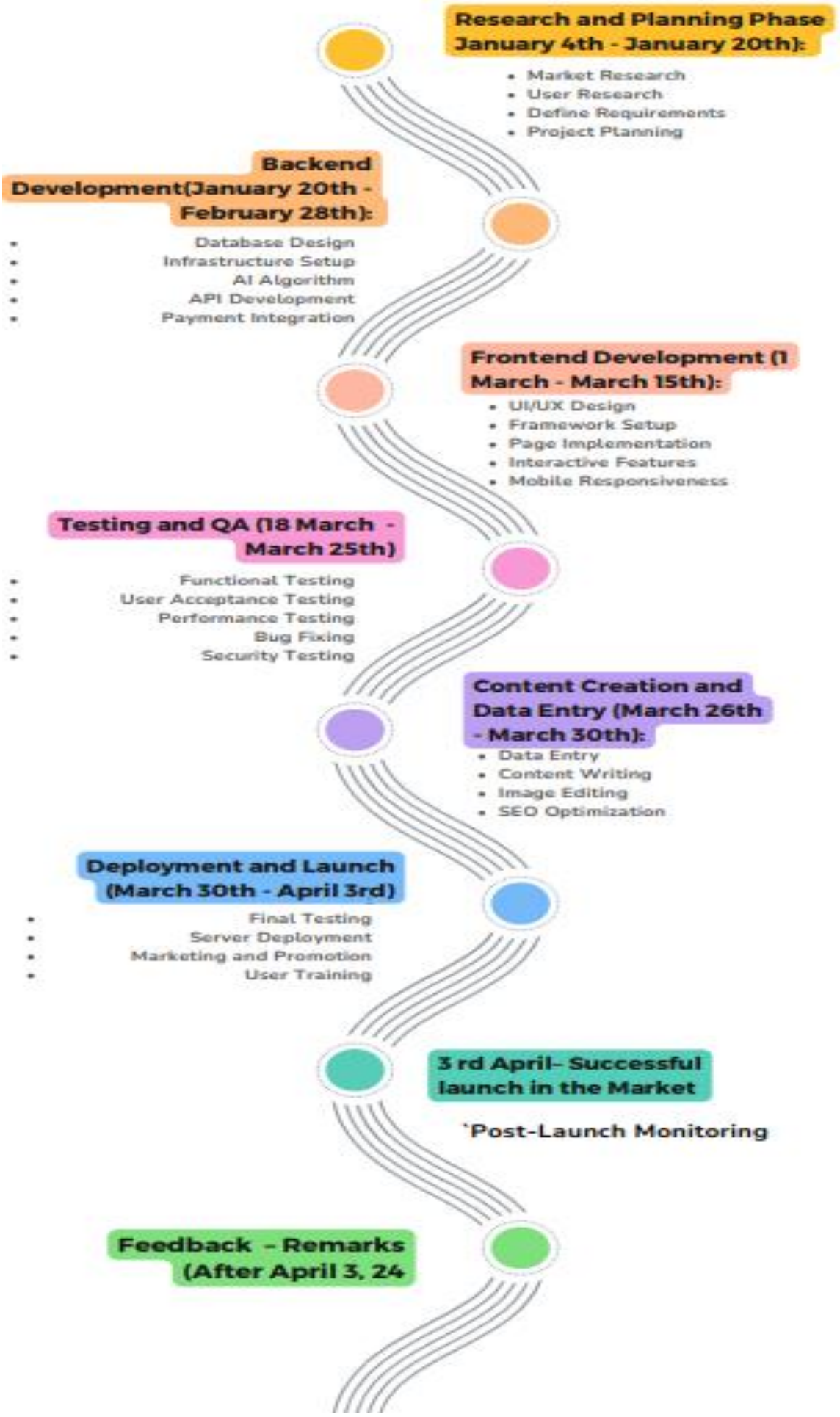
1. **Customers:**
    - *Description:* Individuals who will use the AI-Enhanced Shopping System for online purchases.
    - *Influence:* Their feedback and usage patterns can impact system improvements and features.
2. **Suppliers:**
    - *Description:* Entities providing goods or services to the online shops on the platform.
    - *Influence:* Changes in the platform may affect their sales and relationship with online shops.
3. **Competitors:**
    - *Description:* Other online shopping platforms offering similar services.
    - *Influence:* The success and features of the AI-Enhanced Shopping System impact market competition.
4. **Regulatory Bodies:**
    - *Description:* Government agencies overseeing e-commerce and data protection regulations.
    - *Influence:* Ensuring compliance with legal requirements is crucial for the project's success.
5. **Investors/Shareholders:**
    - *Description:* Individuals or entities with financial stakes in the organizations involved in the project.
    - *Influence:* Project success may impact the financial performance and reputation of the organizations.

## Gant t Chart:

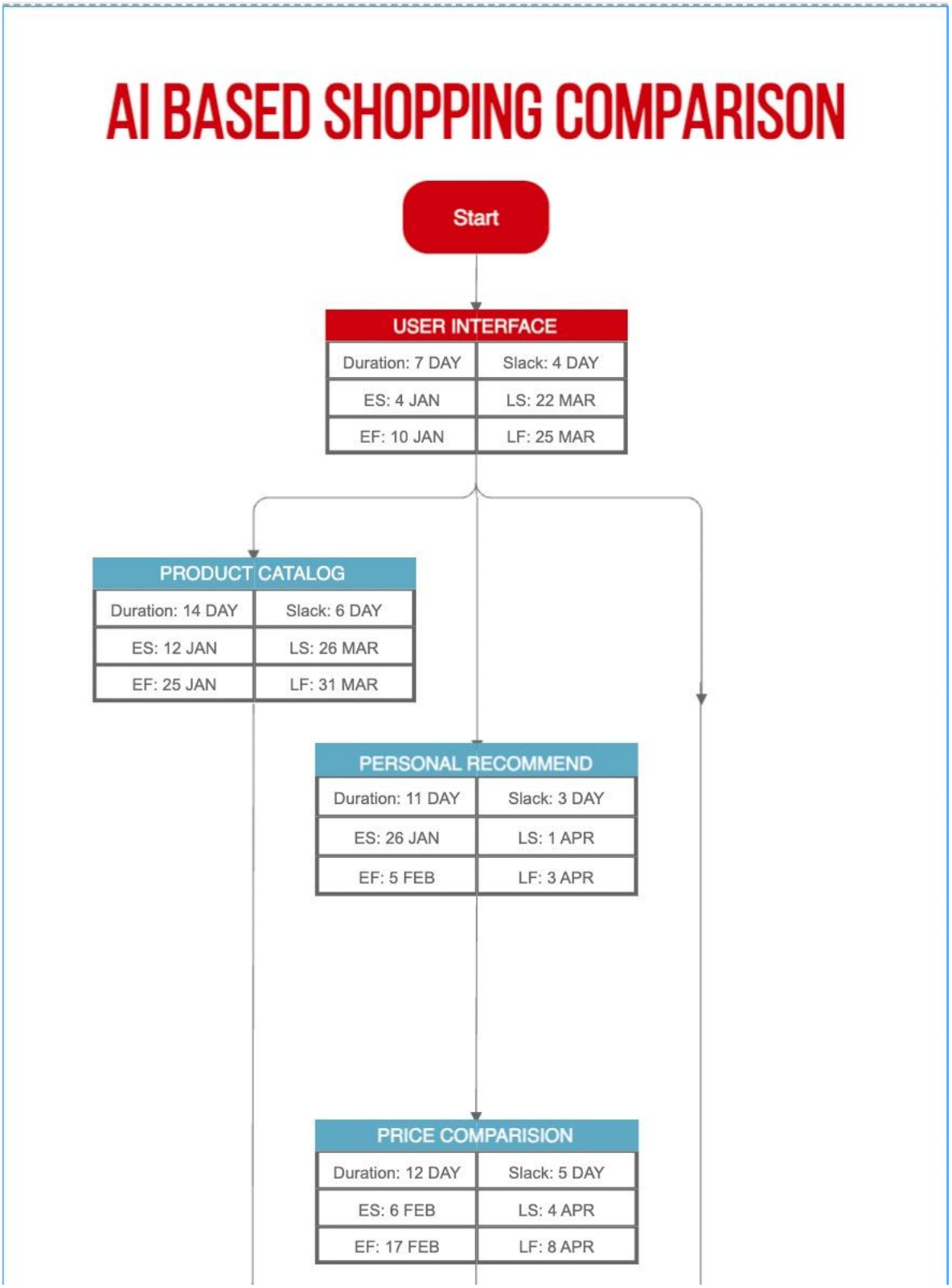


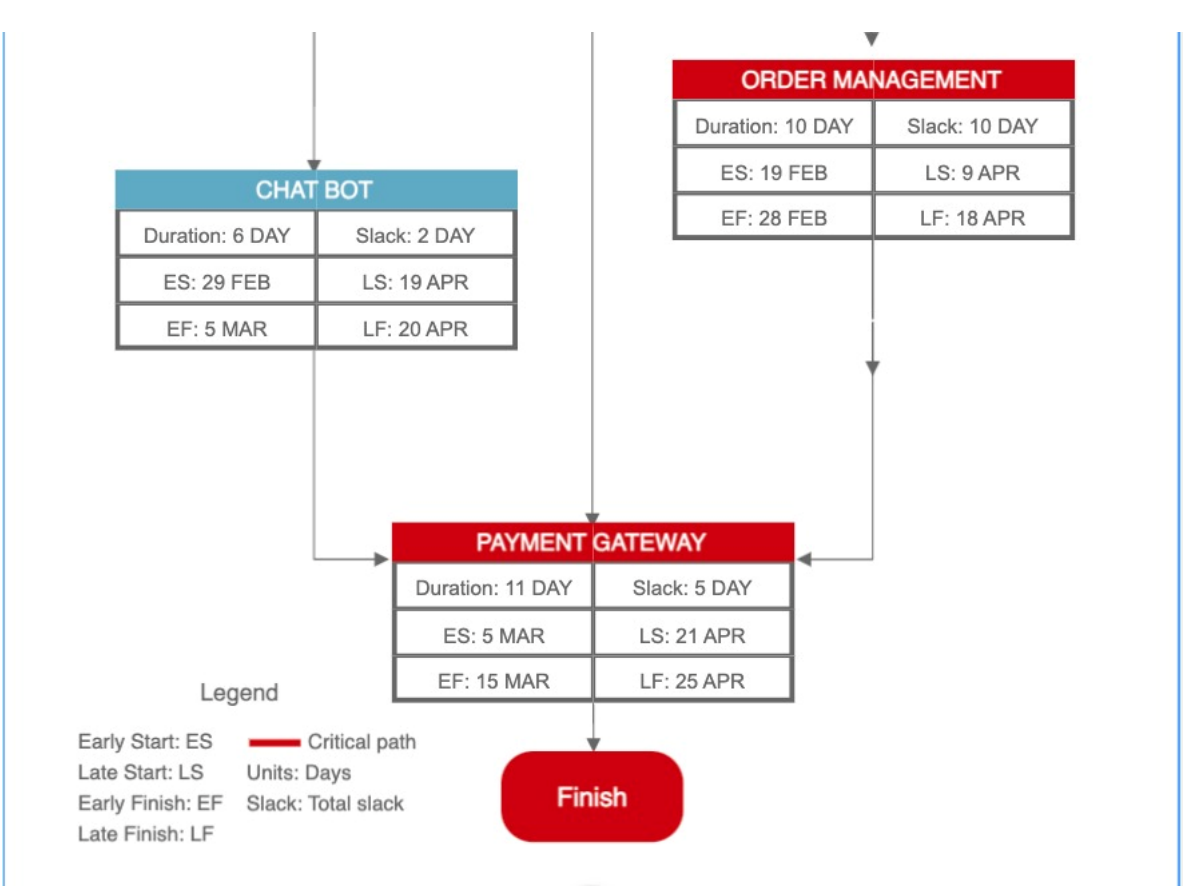

## Timeline Chart:

# Timeline Chart



## PERT Chart:


AI BASED SHOPPING COMPARISON
Start
USER INTERFACE
Duration: 7 DAY
Slack: 4 DAY
ES: 4 JAN
LS: 22 MAR
EF: 10 JAN
LF: 25 MAR
PRODUCT CATALOG
Duration: 14 DAY
Slack: 6 DAY
ES: 12 JAN
LS: 26 MAR
EF: 25 JAN
LF: 31 MAR
PERSONAL RECOMMEND
Duration: 11 DAY
Slack: 3 DAY
ES: 26 JAN
LS: 1 APR
EF: 5 FEB
LF: 3 APR
PRICE COMPARISION
Duration: 12 DAY
Slack: 5 DAY
ES: 6 FEB
LS: 4 APR
EF: 17 FEB
LF: 8 APR


ORDER MANAGEMENT
Duration: 10 DAY
Slack: 10 DAY
ES: 19 FEB
LS: 9 APR
EF: 28 FEB
LF: 18 APR
CHAT BOT
Duration: 6 DAY
Slack: 2 DAY
ES: 29 FEB
LS: 19 APR
EF: 5 MAR
LF: 20 APR
PAYMENT GATEWAY
Duration: 11 DAY
Slack: 5 DAY
ES: 5 MAR
LS: 21 APR
EF: 15 MAR
LF: 25 APR
Legend
Early Start: ES
Late Start: LS
Early Finish: EF
Late Finish: LF
Critical path
Units: Days
Slack: Total slack
Finish

# Project Cost Estimation
# Digital Assignment

Top-down estimation begins by providing a broad estimate for the entire project before breaking it down into smaller elements. However, it's crucial to recognize that the reliability of these estimates relies greatly on the data accessible and the depth of understanding during the initial project phases. For our five-month timeframe, we'll adopt a high-level strategy for budget estimation.

**Top-Down Budget Estimation for Developing an Online AI-Based Comparison System/Website:**

**Establish an Initial Project Budget:**

Begin by setting an initial budget for the development of the online AI-based comparison system. This can be determined through preliminary discussions, past project data, or expert insight. Let's assume the initial budget is .

**Divide the Budget into Development Stages:**

Segment the project into key stages, including concept formulation, AI integration, website development, data gathering, testing, and deployment.

**Allocate Budget to Each Stage:**

Distribute a proportion of the overall budget to each stage, considering its significance and anticipated resource demands. For instance:

- Concept Formulation: 5%
- AI Integration: 20%
- Website Development: 25%
- Data Gathering: 15%
- Testing: 20%
- Deployment: 15%

To allocate the total budget for building an AI-based ecommerce product comparison system from the ground up, we'll divide it into the specified categories:

**Labour Cost:**

- This includes the costs associated with hiring developers, designers, testers, and other personnel involved in the development process.

**Material Cost:**

- Material costs refer to expenses related to software licences, subscriptions, data acquisition, and any other tangible resources required for the project.

**Fixed Cost:**

- Fixed costs are expenses that remain constant regardless of the level of production or usage. This may include domain registration, hosting fees, and other essential infrastructure costs.

**Marketing Cost:**

- Marketing costs cover expenses for promoting the product, such as SEO, content marketing, social media advertising, and other promotional activities.

**Tech Stack Cost:**

- Tech stack costs encompass expenses related to software and technology used in the development process, including libraries, frameworks, cloud services, and any other tools required to build and deploy the system.

Let's assume the total budget for the project is ₹10,00,000. We can allocate it as follows:

Labour Cost: 40% of total budget

- ₹4,00,000

Material Cost: 15% of total budget

- ₹1,50,000

Fixed Cost: 20% of total budget

- ₹2,00,000

Marketing Cost: 20% of total budget

- ₹2,00,000

Tech Stack Cost: 5% of total budget

- ₹50,000

These allocations provide a balanced distribution of the budget across different categories, ensuring that sufficient resources are allocated to each aspect of the project, from labour to marketing to technology infrastructure. Adjustments can be made based on specific project requirements and priorities.

## Cost estimation diagram:

A cost estimation diagram provides a graphical depiction of the anticipated expenses related to a project or task. It usually categorises costs into different segments like labour, materials, equipment, overhead, and contingency. This visual representation assists stakeholders in comprehending how costs are allocated among various project components, facilitating budgeting, planning, and decision-making activities.

| AI based Shopping Comparison system | | | |
|---|---|---|---|
| PROJECT NAME : | AI based Shopping Comparison system | Labour Cost | ₹4,00,000 |
| PROJECT NUMBER | PRJ101ML | Material Cost | ₹1,50,000 |
| PROJECT MANAGER | Harshit Raj | Fixed Cost | ₹2,00,000 |
| PROJECT BACKGROUND | Comparison Website | Marekting Cost | ₹2,00,000 |
| | | Tech Stack Cost | ₹50,000 |
| | | Total: | ₹1000000 |

| Module | Estimated Hours | Hourly Rate (₹) | Labor Cost (₹) | Material Cost |
|---|---|---|---|---|
| Website Development | 200 | 800 | 160,000 | - |
| API for Data Fetching | 100 | 800 | 80,000 | - |
| Data Scraping | 150 | 800 | 120,000 | - |
| Payment Gateway Integration | 80 | 800 | 64,000 | - |
| AI Implementation | 250 | 800 | 200,000 | - |
| UI/UX Design | 100 | 800 | 80,000 | - |
| Quality Assurance and Testing | 120 | 800 | 96,000 | - |
| Deployment and Launch | 50 | 800 | 40,000 | - |
| Domain Registration | - | - | - | 500 |
| Hosting | - | - | - | 5,000 |
| Total Estimated Cost | - | - | 840,000 | 5,500 |

| Module | Labor Cost (₹) | Percentage of Total Labor Cost (%) | Budget Allocation (₹) |
|---|---|---|---|
| Website Development | 160,000 | 16.07% | 160,700 |
| API for Data Fetching | 80,000 | 8.04% | 80,400 |
| Data Scraping | 120,000 | 12.06% | 120,600 |
| Payment Gateway Integration | 64,000 | 6.42% | 64,300 |
| AI Implementation | 200,000 | 20.08% | 200,800 |
| UI/UX Design | 80,000 | 8.04% | 80,400 |
| Quality Assurance and Testing | 96,000 | 9.63% | 96,500 |
| Deployment and Launch | 40,000 | 4.02% | 40,200 |