

CS683: Software Project Management

Online Booking System for Home Cleaning Service

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1. Introduction

Customers seek efficiency and convenience in today's highly competitive world in all aspects of their lives, including booking house cleaning services. The time-consuming and outdated habit of calling a cleaning agency to make an appointment has been replaced. It has become essential for home cleaning service providers to adopt new technologies and deliver a more effective and user-friendly booking experience to fulfill the changing expectations of clients and to stay ahead in the competitive market.

Moreover, about 60% of the population in the US are working citizens, and they have busy schedules on weekdays and little time on weekends to spend with their families. Home services are something that adds an extra responsibility to the family. This is where an online booking system comes into play. An online booking system for a home cleaning service provides customers with an easy and convenient way to schedule their cleaning appointments from the comfort of their homes. The system will be designed with a user-friendly interface, allowing customers to easily select the services they require, choose a date and time for their appointment, and securely process payments online. The system will also include features such as confirmation and reminder emails, cleaner assignments, and customer feedback.

The main goal of this project is to provide customers with a seamless and efficient booking experience and to improve the overall efficiency and quality of the home cleaning service. The online booking system will automate the appointment booking process, freeing up valuable time for cleaning service providers to focus on other tasks. By implementing an online booking system, home cleaning service providers can not only stay ahead of the competition but also increase customer satisfaction and ultimately grow their business.

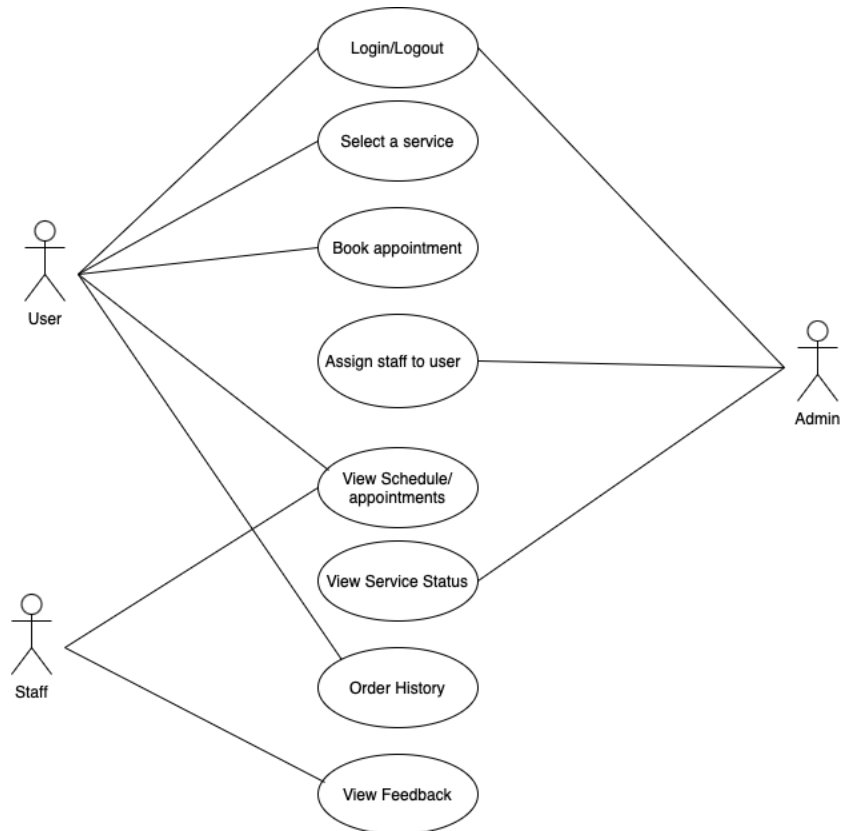
2. Project Overview Statement

PROJECT OVERVIEW STATEMENT	Project Name Online booking system for home cleaning service	Project No. 1	Project Manager Team Blue
Problem/Opportunity In the US, 60% of the population are working citizens with busy weekdays and limited weekend time with family. The rise in popularity of home services adds responsibility for time management, potentially straining already busy schedules and making it challenging for individuals to balance work, family, and home.			
Goal Enhance the customer's booking experience by making it smooth and efficient while also elevating the overall efficiency and excellence of the home cleaning service offered.			
Objectives <ol style="list-style-type: none"> 1. To provide customers with a user-friendly interface for scheduling cleaning appointments. 2. Ensure maximum receptivity and open rate. 3. Explore features that make the appointment reminder application ideal for cleaning services. 4. Improving quick and effective service booking for cleaning businesses and client 			
Success Criteria <ol style="list-style-type: none"> 1. Over 90% of client requests will be considered and approved by providers. 2. Reduces the time consuming will be above 90%. 3. Inaccuracy formation by providers when approving and denying services will be below 10% 			
Assumptions, Risks, Obstacles <ol style="list-style-type: none"> 1. Some clients unfamiliar with new service system and will need time to establish and utilize it. 2. Technical difficulties in integrating the online booking System with the payment gateway. 3. Too many clients trying to use the system at once can cause the system to crash or delay processing time. 			
Prepared By Team Blue	Date 02/08/2023	Approved By	Date

3. UML Diagrams

3.1. Use Case Diagram

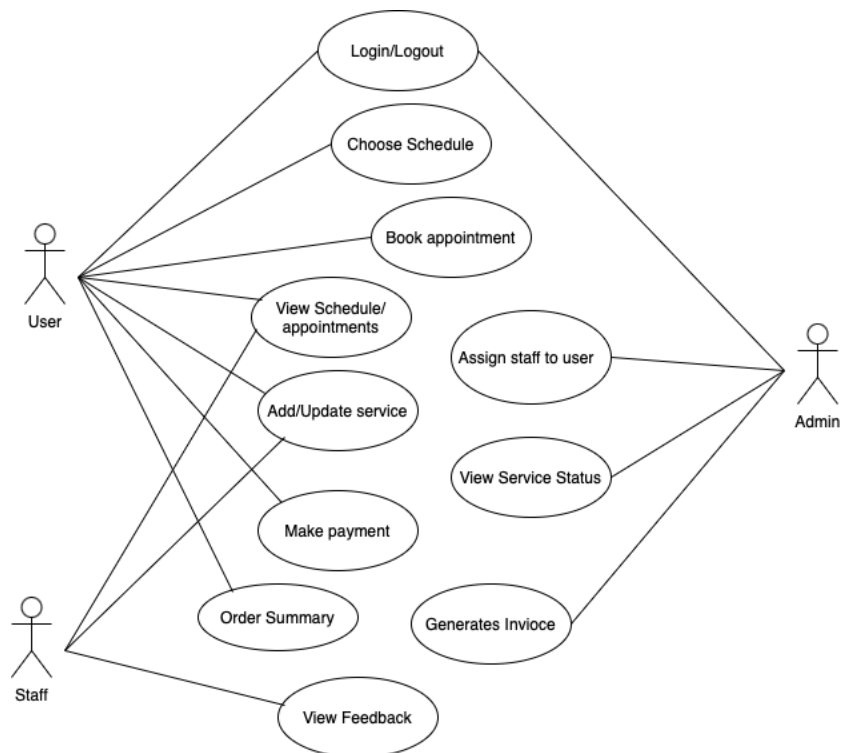
3.1.1. Booking a Service



3.1.2. Updating a Service

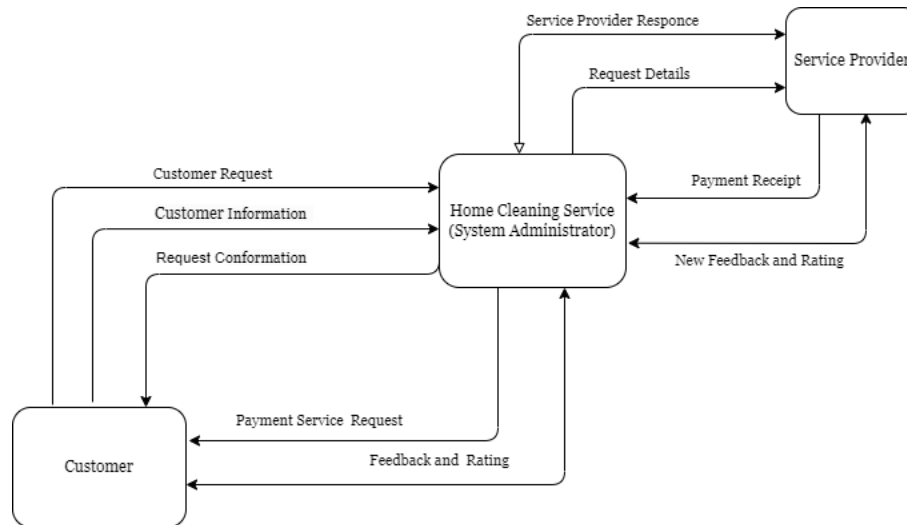


3.1.3. Generating Invoice

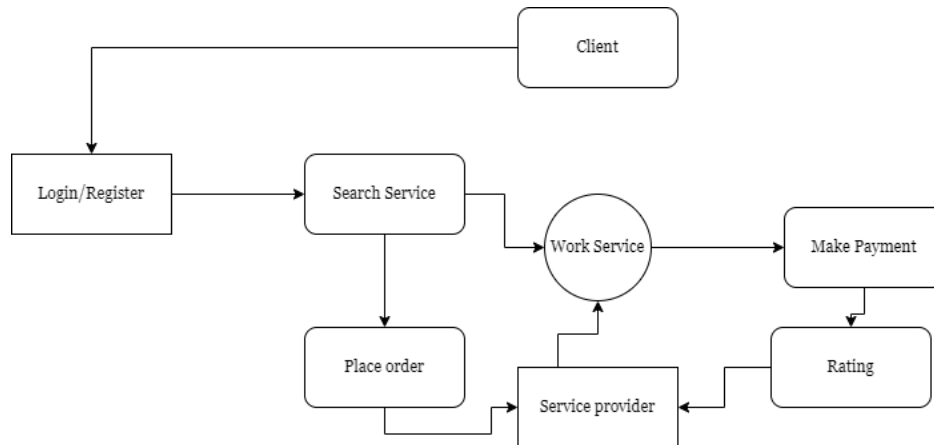


3.2. Data Flow Diagram

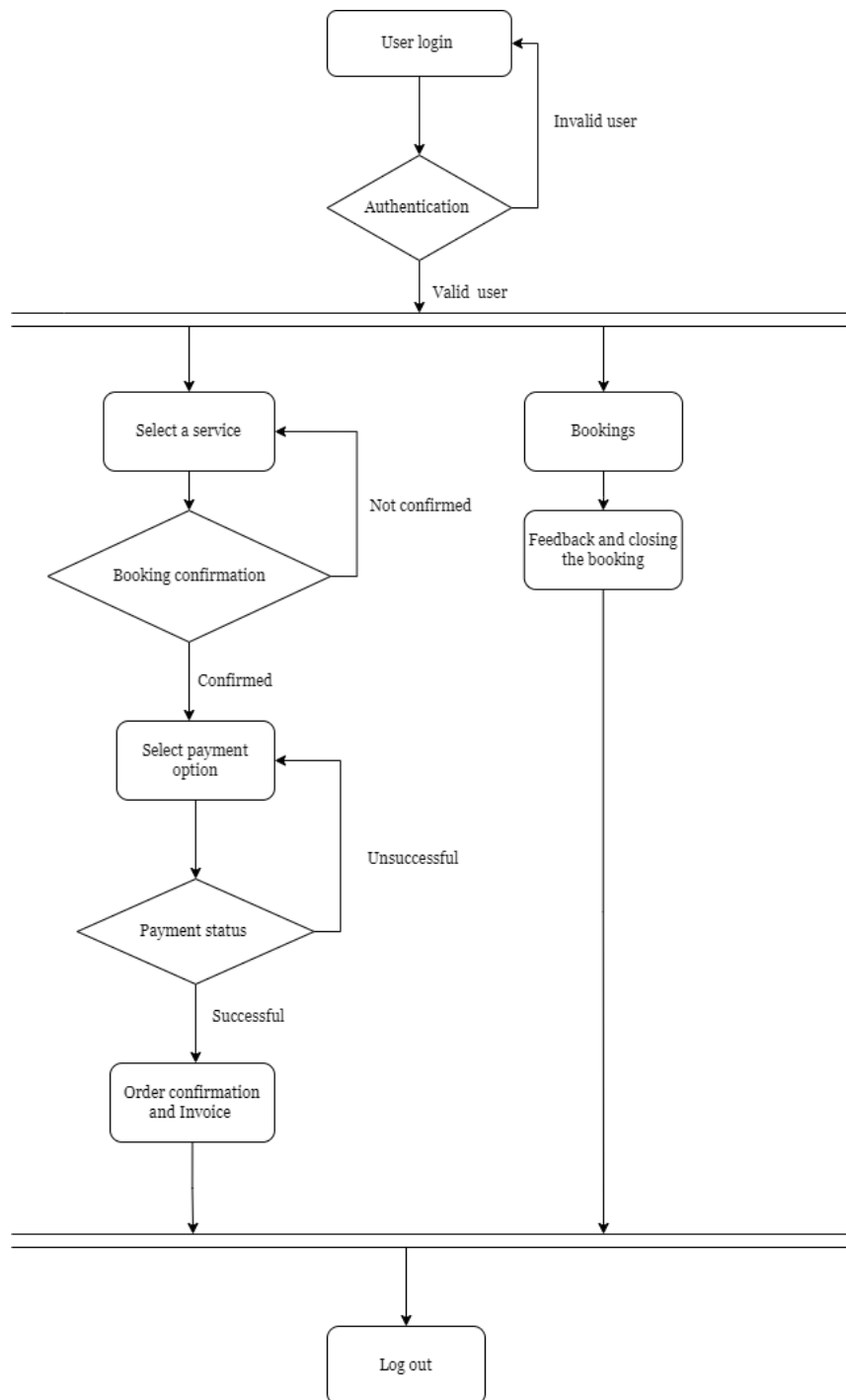
3.2.1. Data Flow (Level-o)



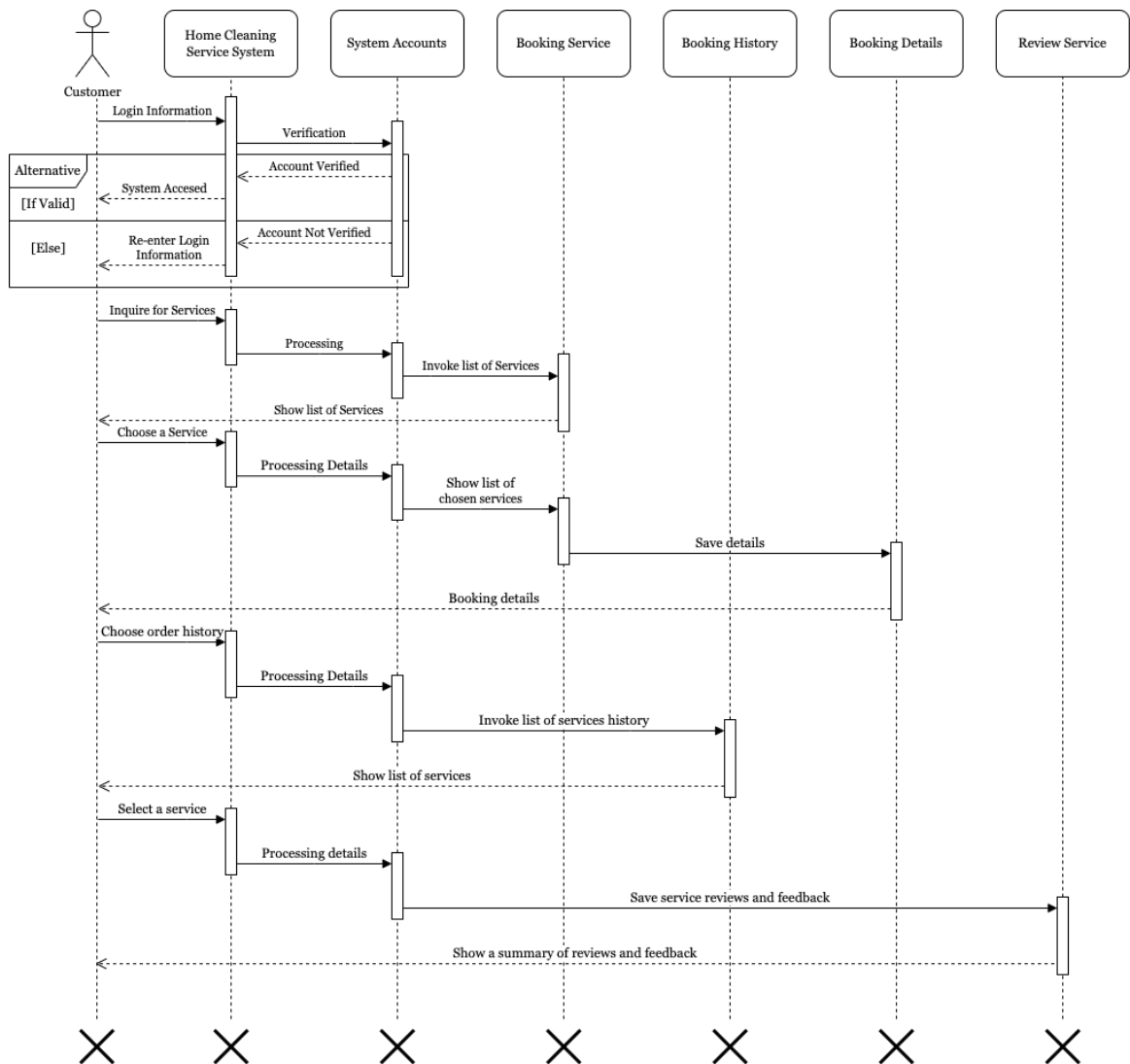
3.2.2. Data Flow (Level-1)



3.3. Activity Diagram



3.4. Sequence Diagram



4. Requirement Breakdown Structure

1. Authentication:
 - 1.1. Sign Up / Sign In
 - 1.1.1. Sign up using a username and password.
 - 1.1.2. Sign up using your phone number and OTP.
 - 1.1.3. Sign up using biometrics.
 - 1.2. Adding two-factor authentication.
 - 1.3. Putting an account on hold after multiple login attempts.
 - 1.4. Profile Details
 - 1.4.1. Enter profile details.
 - 1.5. Forgot Password
 - 1.5.1. Reset password using email or phone number.
2. Get Started:
 - 2.1. Details about the company.
 - 2.2. Details about the services provided by the company.
 - 2.3. Asking for permissions.
 - 2.3.1. Ask for notification permission.
 - 2.3.2. Ask for location permission.
3. Services:
 - 3.1. Show a list of individual services.
 - 3.1.1. View details of services.
 - 3.1.1.1. Show pictures of a service.
 - 3.1.1.2. Description of service.
 - 3.1.1.3. Price of a service.
 - 3.1.1.4. Feedback given by customers for a service.
 - 3.1.1.5. Excluded activities from a service.
 - 3.2. Show a list of combo packages for services.
 - 3.2.1. Show details of the combo package.
 - 3.2.1.1. Show individual services included in a package.
 - 3.2.1.2. Show the price difference between each.
 - 3.2.1.3. Show the price of a package.
 - 3.3. Show a list of discounted services.
 - 3.3.1. Show discount offered on a service.
 - 3.4. Show a list of your favorite services.
 - 3.4.1. Add or delete from your favorite services.
 - 3.5. Creating your customized packages.
 - 3.5.1. Choose services from a list.

- 3.5.2. Add a note for a package.
 - 3.5.3. Show the price of a package.
 - 3.5.4. Update your customized package.
- 4. Search:
 - 4.1. Search using the name of a service.
 - 4.2. Search using voice.
 - 4.3. Search using filters.
 - 4.4. Search using sorting.
- 5. Membership:
 - 5.1. Show a list of membership plans.
 - 5.1.1. Show a description of a membership.
 - 5.2. Upgrade/Cancel membership.
 - 5.3. Comparison between memberships.
- 6. Booking:
 - 6.1. Select a location.
 - 6.2. Add services to a cart.
 - 6.2.1. Select the date and time.
 - 6.3. View cart.
 - 6.3.1. Update your cart.
 - 6.4. Checkout.
 - 6.4.1. Select payment mode.
 - 6.4.2. Apply coupon.
 - 6.4.3. Add a tip for the cleaning agent.
 - 6.5. Booking summary.
 - 6.5.1. Download invoice.
- 7. Order:
 - 7.1. Order history.
 - 7.1.1. Check order details.
 - 7.1.2. Place the re-order for a service.
 - 7.2. Modify/Cancel order.
 - 7.2.1. Add or remove service.
- 8. Payment:
 - 8.1. Select payment method.
 - 8.1.1. Select an online payment.
 - 8.1.2. Pay by cash.
- 9. Feedback:

9.1. Ask for a review and rating for service.

9.1.1. Ask for service feedback.

9.1.2. Ask for employee feedback.

9.2. Ask for suggestions.

10. Reward points:

10.1. Claim your reward points after a successful order.

10.2. Redeem your reward points.

10.2.1. Redeem to pay for a service.

10.2.2. Redeem to buy a coupon.

10.3. View reward points.

10.4. Gift your reward points.

11. Account:

11.1. Add/Update Personal details.

11.2. Add/Update Payment details.

11.3. Encrypting payment details of the user

11.4. Edit notification preferences.

11.5. Change account password.

12. Notifications:

12.1. Sending order updates.

12.2. Sending offers and promotional emails.

13. Settings:

13.1. Contact us.

13.2. Our policy.

13.2.1. Privacy statement.

13.2.2. Terms and Conditions.

13.3. Refer a friend.

13.4. Follow us.

13.4.1. Follow us on Twitter/Instagram/YouTube.

13.5. About us.

13.6. FAQ.

13.6.1. FAQ related to services.

13.6.2. FAQ related to membership.

13.7. Logout.

5. Work Breakdown Structure

Task No.	Task Name	Task Description	Duration (Days)	Resource Type	No. of Resources
1.	Planning Scope Management	It is a technique that assists in making a list of all the project goals, tasks, deliverables, deadlines, and budgets as part of the planning process.	3	Client, Project Manager, Team Lead	1, 1, 4
2.	Creating Project Overview Statement	Defining Problem statement, Objective, Goals, Risks, and Assumption	3	Project Manager, Team Lead, Senior Management, Client	1, 4, 1, 1
3.	Market Research	Collecting data about competitors and similar existing projects	4	Business Analyst, Client	1, 1
4.	Collecting Requirements	Gathering information regarding features of the project.	2	Client, Requirement Engineer	1, 1
5.	Analyzing Requirements	Checking the usefulness of the requirements	1	Project Manager, Business Analyst, Client	1, 1, 1
6.	Creating Requirement Breakdown Structure	Breaking down high level function requirements into sub nodes	3	Requirement Engineer	3
7.	Validating Scope	Determining whether the data is relevant to the project and accurate	1	Project Manager, Team Lead, Sponsors, Client	1, 4, 3, 1
8.	Creating Request for Proposal	Creating a business document for qualified vendors	3	Client, Project Manager, Sponsor	1, 1, 3

9.	Finalizing Work Breakdown Structure	Confirming the divided work required to finish a project, service, or item into smaller, more manageable chunks.	1	Business Analyst	3
10.	Designing Project Diagrams	Creating UML diagrams	7	Solution Architects	2
11.	Deciding Software Architecture	Deciding project architecture to be used during implementation	5	Software Architect	1
12.	Assigning Human Resources	Assigning people to different teams	2	Resource Manager	1
13.	Deciding Design Specifications	Deciding design choices related to system structure and behavior	3	Project Manager, Design Team Lead	1, 1
14.	Designing Database Schema	Creating database structure for the project	7	Senior Developers	3
15.	Designing User Interface	Creating design layout for the project	3	UI Designers	5
16.	Designing User Experience	Creating wireframe of user interaction	3	UX Designers	3
17.	Designing Prototype	Creating basic model of the software.	3	Junior Developers	2
18.	Deciding Tech Stacks	Finalizing technical software to be used during implementation	2	Software Architect	2
19.	Planning Resources	Organizing initial resources required for the project	1	Resource Manager	1
20.	Planning Budget	Finalizing initial budget for the project	1	Client, Project Manager	1, 1
21.	Planning Schedule	Deciding initial timeline for the project	1	Product Manager	1
22.	Analyzing Risk	Document risk factor which might affect the project	2	Business Analyst	2

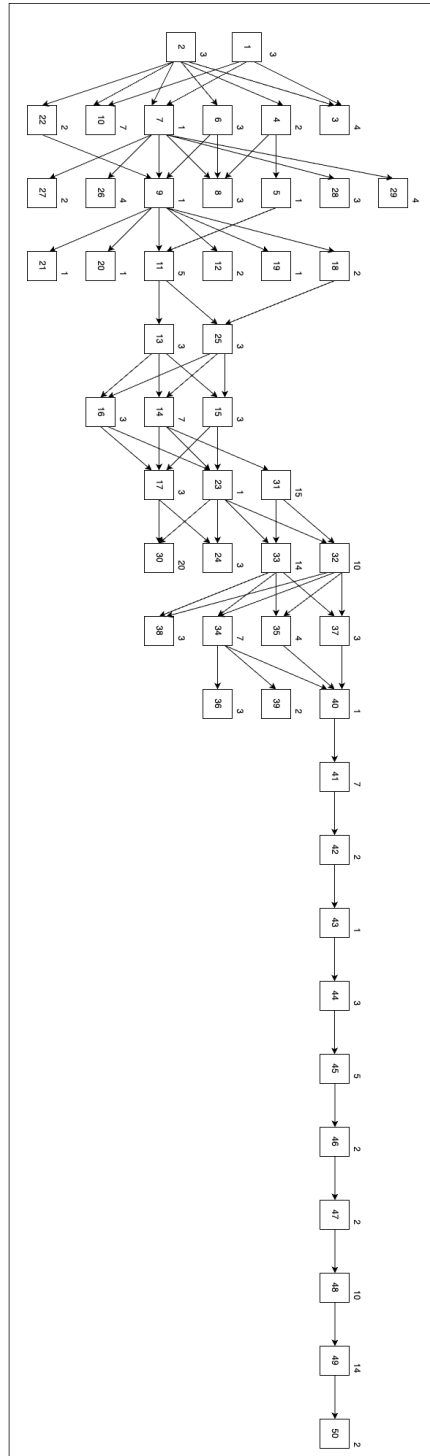
23.	Reviewing the Design	Reviewing wireframe and basic design layout of the project	1	Project Manager, Client	1, 1
24.	Requesting Plan and Design Approval	Getting approval for prototype designed for the project	3	Team Leads, Project Manager	2, 1
25.	Installing Software	Installing software going to be used during implementation	3	Junior Developers	2
26.	Buying Copyrights and License Certificates	To buy required license certificates and claiming copyrights regarding the project	4	Product Manager	1
27.	Creating Terms and Conditions	Documenting policies related to the project	2	Project Manager	1
28.	Deciding Subscription Plans	Finalizing pricing of the membership plan of the software	3	Client, Data Analyst	1, 1
29.	Deciding Security Rules	Defining and documenting security policies	4	Security Engineer	1
30.	Building User Interface	Developing front-end of the software	20	Junior Developer, Senior Developers Scrum Master	3,1, 1
31.	Building Database	Developing back-end of the software	15	Junior Developers, Scrum Master	3, 1
32.	Implementing Admin Modules	Developing features of the admin modules	10	Junior Developer, Senior Developers, Scrum Master	2,1, 1
33.	Implementing User Modules	Developing features of the user modules	14	Junior Developer, Senior	2, 1,1

				Developer Scrum Master	
34.	Integrating UI and Database	Connecting back end with front-end	7	Junior Developer, Senior Developer Scrum Master	1,1, 1
35.	Designing Unit Testing Module	Developing test suites	4	Testing Team Lead, Testers	1, 2
36.	Implementing System Integration Testing	Performing integration testing of back-end and front-end	3	Testing Team Lead, Testers	1, 2
37.	Testing Quality of Implementation Process	Assessment of the Implementation Process's Quality	3	Quality Analyst	1
38.	Building Test Cases	Creating various test cases for the features of the software	3	Testers	3
39.	Performance Testing	Evaluating performance of the software in different environment	2	Quality Analyst, Testers	1, 2
40.	Releasing Software for Alpha Testing	Creating Alpha release of the software and start Alpha testing	1	Senior Developer, Users	1, 50
41.	Resolving Bugs after Testing	Troubleshooting and fixing errors encountered during Alpha testing	7	Junior Developers	3
42.	Starting Beta Version Registrations	Opening Beta version registrations of the software for the users	2	Users	150
43.	Release Beta Version	Launching Beta version for the registered users	1	Senior Developer	1
44.	Analyzing Beta Version	Examining FAQs or feedback from the users of the beta versions	3	Business Analyst	1

	Feedback or FAQs				
45.	Getting Release Approval	Submitting documents for the release of the product	5	Project Manager, Client	1, 1
46.	Releasing the Product	Releasing product into the market after the approval	2	Senior Developer	1
47.	Signing the Handover Document	Reviewing and finalizing the first handover of the project with client	2	Project Manager, Client	1, 1
48.	Designing and Implementing Marketing Strategies	Creating marketing content and conducting customer outrage	10	Marketing Team	5
49.	Analyzing the Market Performance	Tracking the up-to-date market performance	14	Customer Success Team, Business Analyst	3, 1
50.	Closing the Project	Creating final report to handover to client and end the contract	2	Project Manager, Team Leads	1, 4

6. Project Network Diagram and Critical Path

6.1. Network Diagram



6.2. Critical Path

There are 2 critical paths with a cost of 105 days.

- a.** $1 \rightarrow 7 \rightarrow 9 \rightarrow 11 \rightarrow 25 \rightarrow 14 \rightarrow 31 \rightarrow 33 \rightarrow 34 \rightarrow 40 \rightarrow 41 \rightarrow 42 \rightarrow 43 \rightarrow 44 \rightarrow 45 \rightarrow 46 \rightarrow 47 \rightarrow 48 \rightarrow 49 \rightarrow 50.$

$$3 + 1 + 1 + 5 + 3 + 7 + 15 + 14 + 7 + 1 + 7 + 2 + 1 + 3 + 5 + 2 + 2 + 10 + 14 + 2 = 105 \text{ Days}$$

- b.** $1 \rightarrow 7 \rightarrow 9 \rightarrow 11 \rightarrow 13 \rightarrow 14 \rightarrow 31 \rightarrow 33 \rightarrow 34 \rightarrow 40 \rightarrow 41 \rightarrow 42 \rightarrow 43 \rightarrow 44 \rightarrow 45 \rightarrow 46 \rightarrow 47 \rightarrow 48 \rightarrow 49 \rightarrow 50.$

$$3 + 1 + 1 + 5 + 3 + 7 + 15 + 14 + 7 + 1 + 7 + 2 + 1 + 3 + 5 + 2 + 2 + 10 + 14 + 2 = 105 \text{ Days}$$

7. Risk Enumeration

Risk No.	Risk Name	Risk Description	Probability of risk event occurring
1.	Scope Creep Risks	Scope creep occurs when project scope changes are made without going through any control mechanisms, such as change requests.	0.2
2.	Performance Risks	Risks associated with achieving project performance goals, such as speed, capacity, and reliability, which could affect user adoption and experience.	0.3
3.	Technical Risks	Issues pertaining to the project's technical features, such as its architecture, design, programming languages, and coding standards.	0.1
4.	Technical Competency Risks	This refers to the risk that arises when the end user lacks the necessary technical knowledge and expertise to use the software.	0.05
5.	Financial Risks	Budget and cost management-related risks include underestimating project costs, unforeseen expenses, and cost overruns.	0.6
6.	Quality Risks	This includes the possibility of receiving low-quality deliverables with flaws or faults, which could cause customers to become dissatisfied and damage the image of your business.	0.2
7.	Schedule Risks	Risks associated with missing deadlines, postponing project milestones, and leaving tasks unfinished.	0.6
8.	Resource Risks	Risks associated with the availability and allocation of resources, such as	0.2

		human resources, equipment, tools, and materials.	
9.	Sustainability Risks	This involves the risk of the project's sustainability, such as the availability of resources or the project's impact on the environment.	0.05
10.	Legal Risks	Legal risk can be unanticipated and might result from following rules and regulations. These consist of contractual hazards, legal actions taken against the company or organization, and internal legal problems.	0.05
11.	Market Risks	This includes the chance that the market or client demand will change, which could influence how well the project turns out.	0.1
12.	Communication Risks	A project's communication risk is the possibility of miscommunications, mistakes, or misunderstandings that might cause delays, rework, or even project failure. Language difficulties, cultural disparities, technology restrictions, or unclear messages can all increase this risk.	0.4
13.	Vendor Risks	This refers to the risk of issues with third-party vendors, such as delays in delivery, poor quality work, or vendor bankruptcy.	0.1
14.	Requirements Risks	This involves the possibility of project requirements that are inaccurate or lacking, which could lead to project failure or rework.	0.05
15.	Stakeholder Risks	Risks associated with conflicting interests, managing stakeholder expectations, and low stakeholder engagement.	0.5
16.	Testing Risks	This concerns the possibility of insufficient or ineffective testing,	0.2

		which could lead to undetected flaws or faults that could affect the project's functioning and quality.	
17.	Technological Risks	Risks associated with utilizing new, insufficiently tested technologies and methods that could lead to failure and unexpected results.	0.1
18.	Maintenance Risks	To keep the software operating correctly after it has been deployed, it may need upkeep and updates. Software maintenance issues can lead to performance problems, security flaws, and a decline in customer confidence.	0.1
19.	User Engagement Risks	This risk arises when a product is put on the market, but consumers are unwilling to adapt or there is hostility among consumers.	0.35
20.	Training Risks	This is a risk of project team members having insufficient knowledge or training, which can result in poor deliveries, delays, or rework.	0.1

8. Cost Estimation

Project Cost Estimation

Total time required for the project = 105 days

The project has 2 iterations:

1. 1st iteration = 75 days
2. 2nd iteration = 30 days

The project has problems at the end of the 1st iteration, which is after 55 days.

Development of the project goes on for 3½ months, and in-house cost per day = \$200.

Revenues start after ½ month of completion.

1. 4th month revenue = \$600 per day
2. 5th month revenue = \$800 per day
3. 6th month revenue = \$1000 per day
4. 7th month revenue = \$1400 per day
5. 8th month revenue = \$1800 per day
6. 9th month revenue = \$1600 per day

Consultant company cost per day = \$230

Interest rate = 10% per month (on cost and revenue)

There are 3 alternatives to solve the problem:

1. Continue as it is:
Success: 2 months delay
Failure: another 1-month delay
2. Reshuffle Resources:
Success: 1-month delay
Failure: another 1-month delay
3. Hire Consultants:
Success: ½ month delay
Failure: another ½ month's delay

A. Initial cost estimation if nothing had gone wrong.

B. Cost estimation after using each alternative to solve the problem.

A. Initial Estimation:

Net Cash Flow (NCF):

1st month: $30 * 200 = -\$6,000$ 2nd month: $30 * 200 = -\$6,000$ 3rd month: $30 * 200 = -\$6,000$ 4th month: $15 * 200 = -\$3,000$ $15 * 0 = \$0$ 5th month: $30 * 800 = \$24,000$ 6th month: $30 * 1000 = \$30,000$ 7th month: $30 * 1400 = \$42,000$ 8th month: $30 * 1800 = \$54,000$ 9th month: $30 * 1600 = \$48,000$

Net Present Value (NPV):

$$NPV = \sum_{t=0}^n \frac{Net\ Cash\ Flow}{(1+i)^t}$$

$$\begin{aligned}
 NPV &= \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^0} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^1} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^2} \right) + \left(-\frac{3000}{\left(1+\frac{10}{100}\right)^3} \right) + \left(\frac{24000}{\left(1+\frac{10}{100}\right)^4} \right) + \\
 &\left(\frac{30000}{\left(1+\frac{10}{100}\right)^5} \right) + \left(\frac{42000}{\left(1+\frac{10}{100}\right)^6} \right) + \left(\frac{54000}{\left(1+\frac{10}{100}\right)^7} \right) + \left(\frac{48000}{\left(1+\frac{10}{100}\right)^8} \right) \\
 &= \$90,163.5927
 \end{aligned}$$

B. Cost estimation after using each alternative:**1. Continue as it is:****Success (Delay = 2 months):**1st month: $30 * 200 = -\$6,000$ 2nd month: $30 * 200 = -\$6,000$ 3rd month: $30 * 200 = -\$6,000$ 4th month: $30 * 200 = -\$6,000$ 5th month: $30 * 200 = -\$6,000$ 6th month: $15 * 200 = -\$3,000$ $15 * 0$ 7th month: $30 * 1400 = \$42,000$ 8th month: $30 * 1800 = \$54,000$ 9th month: $30 * 1600 = \$48,000$

$$\begin{aligned}
 NPV &= \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^0} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^1} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^2} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^3} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^4} \right) + \\
 &\left(-\frac{3000}{\left(1+\frac{10}{100}\right)^5} \right) + \left(\frac{42000}{\left(1+\frac{10}{100}\right)^6} \right) + \left(\frac{54000}{\left(1+\frac{10}{100}\right)^7} \right) + \left(\frac{48000}{\left(1+\frac{10}{100}\right)^8} \right) \\
 &= \mathbf{\$30,163.9653}
 \end{aligned}$$

Failure (Delay = another 1 month):

1st month: 30 * 200 = -\$6,000
 2nd month: 30 * 200 = -\$6,000
 3rd month: 30 * 200 = -\$6,000
 4th month: 30 * 200 = -\$6,000
 5th month: 30 * 200 = -\$6,000
 6th month: 30 * 200 = -\$6,000
 7th month: 15 * 200 = -\$3,000
 15 * 0
 8th month: 30 * 1800 = \$54,000
 9th month: 30 * 1600 = \$48,000

$$\begin{aligned}
 NPV &= \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^0} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^1} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^2} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^3} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^4} \right) + \\
 &\left(-\frac{6000}{\left(1+\frac{10}{100}\right)^5} \right) + \left(-\frac{3000}{\left(1+\frac{10}{100}\right)^6} \right) + \left(\frac{54000}{\left(1+\frac{10}{100}\right)^7} \right) + \left(\frac{48000}{\left(1+\frac{10}{100}\right)^8} \right) \\
 &= \mathbf{\$19,664.7502}
 \end{aligned}$$

2. Reshuffle Resources:

Success (Delay = 1 month):

1st month: 30 * 200 = -\$6,000
 2nd month: 30 * 200 = -\$6,000
 3rd month: 30 * 200 = -\$6,000
 4th month: 30 * 200 = -\$6,000
 5th month: 15 * 200 = -\$3,000
 15 * 0
 6th month: 30 * 1000 = \$30,000
 7th month: 30 * 1400 = \$42,000
 8th month: 30 * 1800 = \$54,000
 9th month: 30 * 1600 = \$48,000

$$\begin{aligned}
 NPV &= \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^0} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^1} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^2} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^3} \right) + \left(-\frac{3000}{\left(1+\frac{10}{100}\right)^4} \right) + \\
 &\left(\frac{30000}{\left(1+\frac{10}{100}\right)^5} \right) + \left(\frac{42000}{\left(1+\frac{10}{100}\right)^6} \right) + \left(\frac{54000}{\left(1+\frac{10}{100}\right)^7} \right) + \left(\frac{48000}{\left(1+\frac{10}{100}\right)^8} \right) \\
 &= \mathbf{\$69,468.2850}
 \end{aligned}$$

Failure (Delay = another 1 month)

1st month: 30 * 200 = -\$6,000

2nd month: 30 * 200 = -\$6,000

3rd month: 30 * 200 = -\$6,000

4th month: 30 * 200 = -\$6,000

5th month: 30 * 200 = -\$6,000

6th month: 15 * 200 = -\$3,000

15 * 0

7th month: 30 * 1400 = \$42,000

8th month: 30 * 1800 = \$54,000

9th month: 30 * 1600 = \$48,000

$$\begin{aligned}
 NPV &= \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^0} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^1} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^2} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^3} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^4} \right) + \\
 &\left(-\frac{3000}{\left(1+\frac{10}{100}\right)^5} \right) + \left(\frac{42000}{\left(1+\frac{10}{100}\right)^6} \right) + \left(\frac{54000}{\left(1+\frac{10}{100}\right)^7} \right) + \left(\frac{48000}{\left(1+\frac{10}{100}\right)^8} \right) \\
 &= \mathbf{\$46,928.8410}
 \end{aligned}$$

3. Hire Consultants:

Success (Delay = 1/2 month delay):

1st month: 30 * 200 = -\$6,000

2nd month: 30 * 200 = -\$6,000

3rd month: 15 * 200 = -\$9,450

15 * (200 + 230)

4th month: 30 * (200 + 230) = -\$12,900

5th month: 15 * 0 = \$12,000

15 * 800

6th month: 30 * 1000 = \$30,000

7th month: 30 * 1400 = \$42,000

8th month: 30 * 1800 = \$54,000

9th month: 30 * 1600 = \$48,000

$$\begin{aligned}
 NPV = & \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^0} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^1} \right) + \left(-\frac{9450}{\left(1+\frac{10}{100}\right)^2} \right) + \left(-\frac{12900}{\left(1+\frac{10}{100}\right)^3} \right) + \left(\frac{12000}{\left(1+\frac{10}{100}\right)^4} \right) + \\
 & \left(\frac{30000}{\left(1+\frac{10}{100}\right)^5} \right) + \left(\frac{42000}{\left(1+\frac{10}{100}\right)^6} \right) + \left(\frac{54000}{\left(1+\frac{10}{100}\right)^7} \right) + \left(\frac{48000}{\left(1+\frac{10}{100}\right)^8} \right) \\
 = & \mathbf{\$71,678.1751}
 \end{aligned}$$

Failure (Delay = another ½ month delay):

1st month: 30 * 200 = -\$6,000

2nd month: 30 * 200 = -\$6,000

3rd month: 15 * 200 = -\$9,450

15 * (200 + 230)

4th month: 30 * (200 + 230) = -\$12,900

5th month: 15 * (200 + 230) = -\$6,450

15 * 0

6th month: 30 * 1000 = \$30,000

7th month: 30 * 1400 = \$42,000

8th month: 30 * 1800 = \$54,000

9th month: 30 * 1600 = \$48,000

$$\begin{aligned}
 NPV = & \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^0} \right) + \left(-\frac{6000}{\left(1+\frac{10}{100}\right)^1} \right) + \left(-\frac{9450}{\left(1+\frac{10}{100}\right)^2} \right) + \left(-\frac{12900}{\left(1+\frac{10}{100}\right)^3} \right) + \left(-\frac{6450}{\left(1+\frac{10}{100}\right)^4} \right) + \\
 & \left(\frac{30000}{\left(1+\frac{10}{100}\right)^5} \right) + \left(\frac{42000}{\left(1+\frac{10}{100}\right)^6} \right) + \left(\frac{54000}{\left(1+\frac{10}{100}\right)^7} \right) + \left(\frac{48000}{\left(1+\frac{10}{100}\right)^8} \right) \\
 = & \mathbf{\$59,076.5768}
 \end{aligned}$$





Solution:

Since, "Hire Consultant" has the highest Net Present Value compared to the other alternatives, we will move on with the "Hire Consultant" scenario.

9. JIRA Implementation

 Add epic /  HC-2

Introduction

 Attach  Add a child issue  Link issue 







Description

Add a description...

Child issues

Order by  ... 

100% Done

	HC-9	Introduction - Problem Statement and Solution		DONE 
	HC-10	Introduction - How are you going to do it?		DONE 

Activity





Show:  All  Comments  History




Newest first 



Pro tip: press  to comment

  1   ...

 Done  Done  Actions 

Details 	
Assignee	 mjs282
Labels	None
Reporter	 Prof. Kamlesh Naik

Created April 5, 2023 at 7:03 PM

Updated 16 hours ago

Resolved April 5, 2023 at 7:20 PM

 Configure

 Add epic /  HC-3

Project Overview Statement

 Attach  Add a child issue  Link issue 







Description

Add a description...

Child issues

Order by  ... 

100% Done


	HC-11	POS - Problem Statement, Goals, Objectives		DONE 
	HC-12	POS - Success Criteria, Assumptions/Risk/Obstacles.		DONE 

Activity


Show:  All  Comments  History




Newest first 



Pro tip: press  to comment

  1   ...

 Done  Done  Actions 

Details 	
Assignee	 mjs282
Labels	None
Reporter	 Prof. Kamlesh Naik

Created April 5, 2023 at 7:04 PM





Updated 16 hours ago

Resolved April 5, 2023 at 7:20 PM

 Configure

 Add epic /  HC-4

UML Diagrams

 Attach  Add a child issue  Link issue 













Description

Add a description...

Child issues

Order by  ... 

100% Done

 HC-13	Use Case Diagram	 DONE 
 HC-14	Activity Diagram	 DONE 
 HC-15	Data Flow Diagram	 DONE 
 HC-16	Sequence Diagram	 DONE 

Activity

Show:  All  Comments 

Newest first 







Add a comment...

Pro tip: press  to comment

 Add epic /  HC-5

Requirement Breakdown Structure

 Attach  Add a child issue  Link issue 













Description

Add a description...

Child issues

Order by  ... 

100% Done

 HC-17	25 Requirements	 DONE 
 HC-18	25 Requirements	 DONE 
 HC-19	25 Requirements	 DONE 
 HC-20	25 Requirements	 DONE 

Activity

Show:  All  Comments 

Newest first 



Add a comment...

Pro tip: press  to comment


  1   ...

Done 


 Done

 Actions 

Details

Assignee  mjs282

Labels None

Reporter  Prof. Kamlesh Naik

Created April 5, 2023 at 7:04 PM

Updated April 5, 2023 at 7:21 PM

Resolved April 5, 2023 at 7:21 PM

 Configure


  1   ...

Done 


 Done

 Actions 

Details

Assignee  mjs282

Labels None

Reporter  Prof. Kamlesh Naik

Created April 5, 2023 at 7:04 PM

Updated April 5, 2023 at 7:21 PM

Resolved April 5, 2023 at 7:21 PM

 Configure

Add epic / HC-6

Work Breakdown Structure

Attach Add a child issue Link issue

Description

Add a description...

Child issues

Order by

100% Done

HC-21	12 Requirements	DONE
HC-22	12 Requirements	DONE
HC-23	13 Requirements	DONE
HC-24	13 Requirements	DONE

Activity

Show: All Comments History

Newest first

Pro tip: press to comment

Add epic / HC-7

Network Diagram

Attach Add a child issue Link issue

Description

Add a description...

Child issues

Order by

100% Done

HC-25	Team Efforts	DONE
HC-26	Team Efforts	DONE
HC-27	Team Efforts	DONE
HC-28	Team Efforts	DONE

Activity

Show: All Comments History

Newest first

Pro tip: press to comment

1

Done

Done

Actions

Details

Assignee mjs282

Labels None

Reporter Prof. Kamlesh Naik

Created April 5, 2023 at 7:04 PM

Updated April 5, 2023 at 7:21 PM

Resolved April 5, 2023 at 7:21 PM

Configure

1

Done

Done

Actions

Details

Assignee mjs282

Labels None

Reporter Prof. Kamlesh Naik

Created April 5, 2023 at 7:04 PM





Updated April 11, 2023 at 6:35 PM

Resolved April 11, 2023 at 6:35 PM

Configure

 Add epic /  HC-8

Critical Path

 Attach  Add a child issue  Link issue 













Description

Add a description...

Child issues

Order by   

100% Done

 HC-29	Write 1 critical Path	 DONE 
 HC-30	Write 1 critical Path	 DONE 
 HC-31	Write 1 critical Path	 DONE 
 HC-32	Write 1 critical Path	 DONE 

Activity

Show:   

Newest first 







Add a comment...

Pro tip: press  to comment

 Add epic /  HC-33

Enumerate Project Risk

 Attach  Add a child issue  Link issue 













Description

Add a description...

Child issues

Order by   

100% Done

 HC-35	Write 5 Risks	 DONE 
 HC-36	Write 5 Risks	 DONE 
 HC-37	Write 5 Risks	 DONE 
 HC-38	Write 5 Risks	 DONE 

Activity

Show:   

Newest first 



Add a comment...

Pro tip: press  to comment



  1   

Done 

 Done

 Actions 

Details

Assignee	 mjs282
Labels	None
Reporter	 Prof. Kamlesh Naik

Created April 5, 2023 at 7:05 PM

Updated April 11, 2023 at 6:35 PM

Resolved April 11, 2023 at 6:35 PM

 Configure



  1   

Done 

 Done

 Actions 

Details



Assignee	 mjs282
Labels	None
Reporter	 Prof. Kamlesh Naik

Created April 5, 2023 at 7:21 PM

Updated 16 hours ago

Resolved April 15, 2023 at 12:06 AM

 Configure

 Add epic /  HC-39

Cost Estimation

 Attach  Add a child issue  Link issue 













Description

Add a description...

Child issues

Order by  ... 

 100% Done

 HC-40	Team Efforts	 DONE 
 HC-42	Team Efforts	 DONE 
 HC-43	Team Efforts	 DONE 
 HC-44	Team Efforts	 DONE 

Activity

Show:   

Newest first 



Pro tip: press  to comment


  1   ...

Done 


 Done

 Actions 

Details

Assignee  mjs282

Labels None

Reporter  Prof. Kamlesh Naik

Created 1 minute ago

Updated 1 minute ago

Resolved 1 minute ago

 Configure