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Round the Bend Marina Proposal

Tevin Apenteng (SYD466ZAA)

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Group 4

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# Introduction

## Ankit Thapar:

I am a backend developer for the team. I have always been passionate about working on projects and bringing ideas to the real world which can help better the lives of people. Before joining Seneca, I used to do iOS App development, primarily focusing on the Swift programming language. I have experience working with APIs and have developed messaging apps with the help of databases. My interest in coding made me pursue **Computer Programming and Analysis** advanced diploma at the Seneca college. As I moved forward with this diploma, I realized I enjoy backend development more than the frontend part. Even when I used to work in groups on a web development project, I always used to take the backend part and always asked my group members to do the designing part (HTML, CSS, etc.). I have never felt comfortable with designing the User Interface and have always been bad at it. I have always been into coding the functionality of the software like how the system will respond when the user performs a particular event. That has been my strength to work on how the system will respond, primarily the backend development. I think that's one of the talents that makes me fit well into the group. My other group members primarily focus on front-end development and designing the user interface. One of my team members, **Yuvraj,** is an excellent UI designer and has always been into content creation. My team always wanted a backend developer, and I was a perfect fit for them. Throughout the semester, I have enjoyed working with the team and it has been a great learning experience. I could never have imagined better team members than team. We as a team bring the complete skill set to complete any project and are confident of successfully completing all the functionalities the client wants in the application.

## Mingming Ma:

Hello, I'm Mingming Ma. My journey in tech began with a deep fascination for both front and back-end development, a duality that now defines my strengths. I'm particularly drawn to the art of class design, where I find a unique joy in structuring and organizing code for optimum functionality and efficiency. Before joining Seneca, I explored various aspects of software development, but it was the harmony of front and back-end processes that captivated me the most. My ability to work seamlessly across these two domains has allowed me to adopt a full-stack role within our group, a position I embrace with both passion and expertise. One of my most distinctive contributions to our team is my 'time mind' - an approach that emphasizes timely collaboration and efficiency. This mindset has become integral to our group's workflow, fostering a culture of cooperative and synchronized development. My skills in collaborative environments have not only enhanced our team's productivity but also enriched the quality of our projects. My talents lie in weaving together the technical intricacies of both front and back-end development, creating a cohesive and robust digital experience. This unique blend of skills and my collaborative spirit have been invaluable in our group's endeavors, ensuring that we can tackle any challenge with a well-rounded and comprehensive approach. As we progress through our studies and projects at Seneca, I am excited to continue contributing my full-stack capabilities and collaborative mindset, driving our team towards innovative solutions and success.

## Yuvraj Singh:

Greetings, I'm Yuvraj, currently in my fourth semester of the Computer Programming and Analysis (CPA) program, enrolled in the SYD 466 course this term. My role in our group project is primarily in the UX/UI domain, where I merge technical knowledge with creative design. My tenure as a junior web developer at the Ministry of Education was a deep dive into web development, equipping me with the skills to code, debug, and deploy sophisticated web applications. This role was instrumental in my grasp of user-centric design, particularly in educational technology, where I ensured our digital solutions were not just functional but also intuitive and accessible. This hands-on experience with backend processes now informs my holistic approach to crafting user interfaces. Parallel to this, I am currently working as a content creator/Editor for Seneca’s social media channels, where I embraced the digital landscape of creativity and user engagement. This role was a masterclass in digital storytelling and navigating social media intricacies, allowing me to fine-tune user interfaces that are as compelling visually as they are in narrative strength. It also sharpened my anticipatory skills for user trends and preferences, which is paramount in UX/UI design. These dual roles have helped me evolve my skill set, blending a technical foundation with a flair for creative expression. As I delve into our group project, I bring these integrated experiences to the fore, ensuring our designs are technically robust while also captivating our audience. In addition to my core academic pursuits, I engage in two intellectually enriching hobbies: astronomy, which involves meticulous observation and study of celestial bodies, fostering a detail-oriented and expansive perspective in my design thinking and Photography/cinematography, on the other hand, allow me to explore the intricacies of visual composition and storytelling through a lens.

## Krish Jani:

Hi, I'm Krish Jani, and I got into tech because I love making sure things work perfectly for people. I found my passion in Quality Assurance (QA) testing, where I focus on checking software to catch any issues before users find them. While others might love coding, I thrive on finding and fixing bugs, making sure everything runs smoothly. Before joining our team, I tried different parts of making software but found my place in QA. I'm really good at paying attention to small details and making sure our stuff works well for everyone. I believe in thinking like the people who will use our software, making sure it's easy and enjoyable for them. I work closely with other team members to improve our product, making it stronger and more reliable. My strength is understanding what users need and making sure our software meets those needs. I'm excited to keep using my QA skills to help our team create awesome, user-friendly solutions as we move forward.

# Problem

As a team, the problem we identified that the client is facing is of -

'***inefficient management and tracking of various systems, including management of clients, invoicing, payment processing, and service ticket creation***'

The problem that the client is facing is that they lack an efficient system to manage the clients that are registered to their marina which causes problems in invoicing, payment processing, service ticket creation (Marine workshop) and the other services they provide. In technical terms, they have a problem of data management which can be shared among the different segments of the marina like the Restaurant that the marina operates and the Marine workshop which help solve the issues related to the boats that the clients face. Because they are failing to manage the data and share the data, they are having problems in invoicing and the payment processing. This inefficient management of the systems can lead to the failure of the whole business as a Marina.

## Solution:

## The solution that we have identified is to

'***provide access to an efficient database management system, helping to track clients and transactions accurately, which will help automate and streamline the process of various systems, ensuring accuracy and efficiency***'

The idea is to create a database management system which can be shared among all the segments of the Marina like among the Boat slip staff members, the Restaurant management and the Marine Workshop management, which in turn, will solve the problems of invoicing, payment processing etc. For example, for restaurant management, the staff needs to have information about the clients whether they are one time or permanent. This is because one-time clients are charged at the time of the service whereas the permanent clients are charged monthly as part of their monthly invoices. So, the client needs some way to store the data about the clients and share the data among all components of their business. That's why a common database management system is needed to solve the issues of the client and run a successful marina.

# Solution details

As a group, we followed a holistic approach and focused on each segment of the problem that needs to be addressed for the successful operation of the Marina as a business. After analyzing each section of the problem, the work was divided among the team members and each team member identified different use cases or functionalities that should be implemented by the system that we will design for the success of the Marina business. Below we describe what functionalities each group member identified and at last, we summarize all the use cases in a table.

Ankit Thapar:

I focused on the **client management** segment of the solution. For the successful running of the Marina, a system is needed to keep track of the client data which can be shared among the different segments of the Marina like the Marine Workshop, Restaurant etc. The client data is required by every segment of the business and when it is updated at one end, it should be updated among every segment of the Marina. For that, a common data management system will be needed. In addition to that, I focused on the **management of the orders** part of the solution. The client needs a system to keep track of the orders from different suppliers. The Marine Workshop manager may want to order some supplies to fulfill the client orders and he may want to make orders to different suppliers. So, a system is needed to manage the orders made to the different suppliers. This is important because the Marine Workshop manager may want to review supplies that he ordered, check the total of the order etc. Both the **client management** and the **order management** system are necessary for the Marina business to run successfully.

Yuvraj Singh:

In addressing the operational needs of Round the Bend Marina (RBM), I developed two key use cases pivotal for enhancing customer service and streamlining marina operations. The first use case revolves around the creation of a service ticket for boat repairs. This functionality is critical as it provides RBM staff with a systematic approach to managing repair requests. When a customer reports an issue, the service staff can promptly log the details into the system, which then guides them through a structured process to ensure all necessary information is captured and an appropriate service ticket is generated. This process is not only efficient but also critical for ensuring that repairs are tracked, scheduled, and executed without omission, directly impacting customer satisfaction and service reliability. The second use case focuses on a customer-centric booking system that allows marina customers to not only book boats but also add bespoke services such as equipment rental and catering. This feature is crucial in providing a seamless and personalized booking experience. By integrating additional services into the booking process, customers can plan and customize their boating activities with ease, directly from an online platform. This system's importance lies in its capacity to offer convenience and instant confirmation to customers, thereby enhancing the overall customer experience and positioning RBM as a modern and customer-oriented marina. Both these use cases, the internal-focused service ticketing system and the external-facing boat booking system, are integral to the marina's ability to operate smoothly and maintain high customer service standards.

Mingming Ma:

I concentrated on two key aspects of the Marina's operational needs: summarizing outstanding transactions and recording financial transactions. Firstly, the focus was on the development of a system for the RBM Office Staff to effectively manage monthly invoicing for clients with permanent lease agreements. This system needs to seamlessly integrate with client tabs for both the restaurant and workshop segments. It's crucial that when a transaction is updated in one area, this change is reflected across all relevant segments of the Marina. This ensures consistent and accurate billing, enhancing client satisfaction and operational efficiency. Additionally, I directed my efforts towards implementing a robust solution for the Harbour Master to record financial transactions in the Marina Management System. This system is designed to handle a diverse range of transactions, including boat leases and various marina services. The key was to create an intuitive, user-friendly interface allowing the Harbour Master to log in and record transactions with all necessary details promptly. This process needed to be reliable and comprehensive, given the complexity and variety of services offered by the Marina. In summary, these two interconnected systems – one for client transaction and invoice management and the other for recording financial transactions – are pivotal for the seamless operation of the Marina. By ensuring these systems are efficient, user-friendly, and integrated, we can greatly enhance the overall management and operational effectiveness of the Marina.

Krish Jani:

I focused on Antoine's need to make donations and keep track of them as expenses to enhance operational efficiency. Antoine, a proactive participant, aimed to contribute to the Marina's success through philanthropy while ensuring transparent financial management. This use case, which I identified, involves creating a system feature that allows individuals like Antoine to log their donations and track them as expenses accurately. This functionality offers several advantages, including maintaining financial transparency, potentially enabling tax deductions, aiding in budget management, and providing valuable data for reporting and analysis purposes. Incorporating this use case into our system design ensures meticulous monitoring of donations, emphasizing accountability, and enabling the Marina to manage its finances adeptly.

In a nutshell, we can summarize everything in the Use Case table which is shown below.

| Name of use case | Actors | Brief Use Case Description | Triggering Event | Preconditions | Postconditions | Simple/  complex | Group Member |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Summarize Outstanding Transactions and Invoice Clients | RBM Office Staff | Monthly invoicing of clients with permanent lease agreements for their restaurant and workshop tabs. | Monthly billing cycle | There are clients with permanent lease agreements and outstanding transactions. | Clients are invoiced for their outstanding transactions, and records are updated. | Simple | Mingming Ma |
| Recording Financial Transactions in the Marina Management System | Harbor Master | Allows the Harbour Master to record financial transactions related to boat leases and marina services. | A transaction needs to be recorded for a lease or service | The Harbour Master is logged into the Marina Management System, system is ready to record new transactions | The transaction is recorded in the system with all necessary details. | Complex | Mingming Ma |
| Add a client looking for boat slip | Assistant Harbour Master | The use case enables the Assistant Harbour Master to add a client looking for a boat slip on a permanent or one-time basis. | A new client came who wanted a parking space for the boat. | The assistant harbormaster is logged in and has opened the menu to add the boat slip client. | The client is added to the system and is allotted the parking space. | Simple | Ankit Thapar |
| Place an order for the required supplies | Marine Workshop Manager | This use case enables the Marine Workshop manager to place an order for the supplies or items that are required to repair the client boats. | Some items or parts are missing that are required to repair the client boats. | The Marine Workshop manager is signed in and has opened the menu to place an order. | The order is placed. | Complex | Ankit Thapar |
| Payment processing & transaction management | Payment processor | Streamline credit card payment processing and transaction management to ensure secure, efficient, and compliant payment operations. | Initiation of payment transaction by a customer or merchant | Availability of secure payment gateway, customer authentication and payment card verification | Successful payment authorization or rejection & secure storage of transactions. | Simple | Krish Jani |
| Adding a project | Gerald | This use case allows Gerald to maintain Company’s Schedule and also add new Projects to it. | The company has recently acquired a new project | Gerald is logged in and the system displays the Schedule menu | A Project is added to the schedule for a customer and a message regarding the project is sent to the employees assigned | Complex | Krish Jani |
| Create Boat Repair Service Ticket | RBM Repair Service Staff | This use case enables the RBM service Staff to create a service ticket for any issues related to Boat repair or servicing. | Customer reports a boat repair request to RBM | RBM staff have access to the RBM computerized system. | A service ticket for boat repair is created in the system. | Simple | Yuvraj Singh |
| Booking a Boat with Additional Services | Marina Customer, Marina Staff, Online Booking System | Allows customers to book boats and add services such as equipment rental and catering through an online portal. | Customer initiates a boat rental with additional services. | Customers are registered with the marina and have access to the internet and booking platform. | Customer receives a confirmation of the booking and any additional services. | Complex | Yuvraj Singh |

# Budget

As we all are developers, it was difficult to calculate the budget that we will need to implement the project. But using different resources, contacting some project management professionals and according to our best understanding, we came up with a budget of around **$96,650**. excluding the fees of hosting. This is just an estimate because the actual budget can depend on various factors such as the number of clients etc. With the budget we also mentioned the estimated time that we will need. The budget is broken down into the following three phases.

**Phase I: Discovery, Requirements Planning & Site Definition**

* **Requirements Gathering and Analysis:**
* Conducting interviews with key stakeholders: 40 hours (about 1 and a half days)
* Analyzing existing processes and systems: 30 hours
* Documenting functional and technical requirements: 50 hours (about 2 days)
* Total: 120 hours (about 5 days)
* **System Design and Architecture:**
* Designing the database schema: 30 hours
* Creating wireframes and mockups: 40 hours (about 1 and a half days)
* Defining system architecture: 30 hours
* Total: 100 hours (about 4 days)
* **Project Management:**
* Project planning and coordination: 40 hours (about 1 and a half days)
* Risk assessment and mitigation planning: 20 hours
* Total: 60 hours (about 2 and a half days)
* **Site Definition:**
* Creating user personas and scenarios: 20 hours
* Defining user stories: 30 hours
* Creating a detailed project plan: 20 hours
* Total: 70 hours (about 3 days)

**Total time: 350 hours (about 2 weeks)**

**Estimated Budget for Phase I:** Assuming an average hourly rate of $75 for development and project management tasks, the estimated budget for Phase I would be approximately **$26,250**.

**Phase II: Site Development, Testing, and Deployment**

* **System Development:**
* Front-end and back-end development: 400 hours (about 2 and a half weeks)
* Integrating with existing systems (point of sale, accounting): 80 hours (about 3 and a half days)
* Implementing outstanding transactions and invoicing features: 120 hours (about 5 days)
* Adding client and boat slip management: 80 hours (about 3 and a half days)
* Implementing payment processing: 120 hours (about 5 days)
* Creating boat repair service ticket feature: 80 hours (about 3 and a half days)
* Total: 880 hours (about 1 month 6 days)
* **Quality Assurance and Testing:**
* Unit testing, integration testing, and user acceptance testing: 160 hours (about 6 and a half days)
* Bug fixing and refinement: 40 hours (about 1 and a half days)
* Total: 200 hours (about 1 week 1 and a half days)
* **Deployment:**
* Deploying the system to production: 40 hours (about 1 and a half days)
* Training staff on the new system: 40 hours (about 1 and a half days)
* Total: 80 hours (about 3 and a half days)

**Total Time: 880 hours (about 1 month 6 days)**

**Estimated Budget for Phase II:** Assuming the average hourly rate of $80, the estimated budget for Phase II would be approximately **$70,400**.

**Phase III: Hosting**

* **Infrastructure Setup:**
* Selecting and setting up hosting infrastructure: $5,000 (one-time cost)
* **Ongoing Hosting and Maintenance:**
* Monthly hosting fees: $500/month
* Ongoing maintenance and support: $2,000/month

**Estimated Budget for Phase III:**

* One-time Infrastructure Setup: $5,000
* Monthly Hosting and Maintenance (for 12 months): $2,500

The above is just a rough estimate according to our best understanding. The budget is within the limits of the amount allocated by the client, which is $100,000. It will take around 2 - 3 months to implement the functionalities or use cases suggested by our group to solve the problem.

# Key Personnel

To implement the above use cases or functionalities, I think we, as a team, have almost 90% of the skillset that is required. In some phases of the implementation, we will need to hire people with different skill sets. Below we list the team members and the segment of the application they will be responsible for implementing. To implement some segments of application, we will need to hire external people and will list the skillsets that are required.

**1. Project Management and Analysis:**

* **Project Manager (Hire):**
* Experience in software development project management.
* Strong communication and coordination skills.
* Ability to manage timelines and resources effectively.

Our team is composed of the developers and the UI designers. No one has much experience with project management. So, we will need to hire a project manager with the skillset that is listed above. This is an important project for our team and not taking any chances, we are looking forward to hiring an experienced project manager if our proposal gets accepted.

**2. System Design and Architecture:**

* **System Architect (Ankit Thapar):**
* Proficiency in designing scalable and efficient systems.
* Knowledge of database design.
* Ability to create a solid technical architecture.

I, Ankit, have a strong foundation in database design. As part of my program at Seneca, I have completed beginner level (DBS222) and the advanced level (DBS322) courses. In addition to that, I have hands-on experience working with these technologies. As part of these courses, I implemented different projects involving performing CRUD operations on the database. For example, I implemented an employee management system where I needed to create a C++ application which helps manage the employee data stored on the database. In addition to that, I have completed the SYD366 and SYD466 courses, which gives me a strong foundation in system design. I think I bring complete skills for being a System Architect.

* **UI/UX Designer (Yuvraj Singh):**
* Experience in creating user-friendly interfaces.
* Wireframing and prototyping skills.
* Design thinking and user-centric approach.

I, Yuvraj, have experience in developing User Interfaces. I have always been passionate about designing interactive user interfaces. I always want to create the best possible user experience. I believe that no matter how strong the backend is, how fast the application is, if it lacks a visually appealing interface, the application will never succeed. Going to the technical side, I have experience working with Sketch, Adobe XD, Figma etc. I have always been into content creation and for that reason I have been using these tools to create visually appealing user interfaces. Even professionally, after completing my course, I am looking forward to working as a UI/UX designer. I have completed some of the courses on Udemy related to the UI/UX design as it's not a part of my coursework. I think I have the complete skillset to develop the User Interface for the application.

**3. Software Development (Web Application Development):**

* **Full Stack Web Developer (Mingming Ma):**
* HTML, CSS, JavaScript
* Front-end framework/library (e.g., React, Angular, Vue.js)
* Server-side scripting language (e.g., Node.js, Python, Ruby)
* Web application framework (e.g., Express.js, Django, Flask)
* Database integration (e.g., MySQL, PostgreSQL, MongoDB)

I, Mingming, have experience in both the front-end and back-end development. I have completed both the beginner level (WEB222) to advanced level web development courses (WEB322 and WEB422). I have hands-on experience working with front-end technologies such as HTML, CSS, JavaScript etc. In addition to that, I have experience working with front-end frameworks such as React, Angular etc. Apart from that, I am an experienced back-end developer. I have experience working with server-side scripting languages such as Node.js, Python etc. I have been working with Web Application frameworks such as Express.js. As part of my coursework, I have worked on different projects involving developing the user interface, implementing the user authentication system, working with the APIs etc. I have been web development for almost 2 years. Since high school, I have been into web development and my passion for web development has just grown higher and higher with time. In addition to that, I have completed my co-op as a web developer in the Ontario School board. So, I have experience with how things are implemented professionally. I think I have the complete skillset to implement both the front-end and the back-end of the application.

**4. Quality Assurance and Testing:**

* **QA Analyst (Krish Jani):**
* Proficient in manual and automated testing.
* Experience in creating test cases and conducting thorough testing.
* Bug tracking and reporting skills.

I, Krish, have experience in software testing. I have always been into debugging code from the very beginning. As part of my coursework, I learnt about designing the test cases, edge cases and how to fully test the application before it is delivered to the client. I think quality assurance and testing is as important as designing the application. If an application with even a single bug is delivered to the client, it can lead to a huge loss for the company, both financially and even the reputation of the company can go down a lot. The application should be tested for all types of test cases so that when it is delivered to the client, it has no edge cases and bugs left. I have experience working with different quality assurance tools such as Selenium. I have also completed my co-op as an analyst and a tester. So, I have professional experience of testing applications. Being experienced professionally, I think I will be able to identify all the bugs and edge test cases and ensure that a bug free application is delivered to the client.

So, we as a team have all the skills to develop and test the application. The only additional member that we need is an experienced Project Manager who has several years' experience working with software development project management.

# Summary

We, as a team, adopted a holistic approach to solve the problem. We focused on all the segments of the business to come up with a complete solution. We analyzed the problem and identified all the use cases or the functionalities that need to be developed for the successful operation of the Marina business. We, as a team, have the complete skillset to develop the application and test the application so that it is delivered bug free to the client. The only external member that our team requires is a Project Manager for the project analysis. Our team has members who have good experience working with the technologies that are required to develop the application. In addition to working on the course projects, some of the members also have professional experience. One of the team members, Mingming ma has experience of working as a web developer professionally. One of the team members, Ankit, has been a Hackathon finalist and has experience working on projects and even on how to manage the project so that it can be completed within a specific time. Our team has the required skillset and also the required experience to complete the application. Apart from that, the budget that we estimated is within the amount allocated by the client. In a nutshell, we have analyzed all the functionalities that need to be developed and we also have the required skillset to develop those functionalities. That's why I think our group is the best fit to be given the contract to develop the application.