**C868 – Software Capstone Project Summary**

**Task 2 – Section A**



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| **Capstone Proposal Project Name:** | The Massage Center – Scheduling Solution |
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# **Business Problem**

## The Customer

The customer, The Massage Center, is a well-established massage business celebrating its 10th anniversary. After graduating from massage therapy school, the owners, a group of 4 massage students, decided to open The Massage Center. They believe that healthy living starts from within, and their mission is to help their customers achieve their health goals one treatment at a time.

What began as a small practice, offering Swedish Massage out of their small office has grown to include six unique body treatments with 12 full-time practicing therapists. While the services offered have changed and the business has grown, the mission to provide relief of acute and chronic pain through a holistic and comprehensive approach has not.

## Business Case

Over the last ten years, The Massage Center has created a large client base, which outgrew their facility, leading them to renovate. While this has solved the center’s need for more treatment rooms, it has forced the owners to reevaluate their outdated paper filing system. In doing so, they also hope to make the company more ecofriendly.

The current scheduling system is inefficient and often results in cancelations going unnoticed or double-booked therapists. The new application would eliminate the need for physical scheduling books and provides a more efficient, secure, and scalable solution.

By transitioning information from physical to digital, the application will contain the data needed to produce the monthly appointments report. Providing an efficient and structured way to display the bar charts needed to make strategic advertising decisions. In addition to the monthly appointments report, the application will include a client appointment report enabling therapists to search for a client and view all associated appointment details.

## Fulfillment

The scheduling solution will fulfill all the requirements discussed by providing a password protected application that will act as an interface that can interact with the locally hosted database. It will facilitate the ability to view, create, modify, and delete clients and appointments, view therapist schedules, and view reports on appointments and clients, all within a user-friendly Graphical User Interface (GUI).

# **Existing Gaps**

The Massage Centers' current system relies primarily on physical scheduling books and client folders. Manual entry into google sheets is how they generate reports showing the monthly trends in treatment types. Due to the sensitive nature of the content within the client files, the current system does little to ensure that the information is visible to authorized employees only, and no backup system is in place. By transitioning from paper to electronic records, they will no longer need to manually enter data to generate reports.

# **SDLC Methodology**

The SDLC Methodology used in this project is Waterfall due to the straightforward and well-documented requirements set by the stakeholders. With the structured approach provided through the Waterfall methodology, the projects requirements, costs, risks, and timeline are all analyzed and approved before any design or development begins. By applying the linear pattern through each phase of the Waterfall methodology and finishing each phase before proceeding, the project can build upon the knowledge already gained in previous phases.

The first and most crucial phase is the Requirement Gathering and Planning phase. It is paramount to ask clear and precise questions during this phase to establish a comprehensible project scope. This phase is where the project timeline will be created and approved.

The Design phase builds on the previously approved requirements and begins establishing how the application will function to meet them. To better understand the user and to provide a better user experience, user scenarios created by the project manager in this phase will serve as a guide. An Entity Relationship Diagram (ERD) that visually represents the database architecture, low and high-fidelity wireframes, and a test plan are deliverables of this phase.

Once the Implementation phase has begun, development, according to the specifications established in the design phase, will begin. Programmers will perform some testing during development to verify the application performs as expected. Change requests must be submitted if any significant changes must be made that will affect the requirements or design. Once a fully functional stand-alone application has been developed, the testing phase can begin.

Testing will be completed by a Quality Assurance (QA) member to ensure that the produced application meets all requirements. The goal of the QA member is to intentionally find all discrepancies between the expected outcome of the unit tests and the actual outcome. All bugs are documented, assigned to a developer to rework, then retested to ensure that the bug no longer exists.

The last stage of the process is the Deployment and Maintenance phase. At the beginning of this phase, the application functions as it should, without known bugs or errors, and is ready for use by The Massage Center. Ongoing maintenance will include listening to user feedback, debugging, and creating updates and patches as needed. This phase of the SDLC can go on indefinitely for the application's lifetime.

# **Deliverables**

The Waterfall SDLC consists of 2 different types of deliverables. First, the project deliverables are documents the Project Manager will oversee and finalize before presenting them to stakeholders for final approval. Project deliverables provide structure to the project and establish acceptable standards that must be followed for the product to be considered complete. Second, the product deliverables are representatives of what the actual application will be.

## Project Deliverables

These consist of items that are part of the Project Manager’s realm of responsibilities.

* Project Schedule
  + The project manager will create the project schedule during the requirements and planning phase. Once approved, it immediately goes into effect and will be closely monitored to ensure the project stays on track and meets all milestones.
* User Scenarios
* User Scenarios help provide a better understanding of the task’s users will undertake and problems they may face, providing a better user experience.
* Test Plans
  + The test plan establishes how each function and requirement will be tested, and what conditions must be met to pass each test.
* Requirements Traceability Matrix (RTM)
* The RTM is produced to show the stakeholders how each requirement relates to specific tests, and the deliverables associated, in a clear and concise report.

## Product Deliverables

Product Deliverables represents what is produced to deliver to the customer.

* Wireframes
  + A low-fidelity layout that can easily be changed to meet the stakeholders’ needs as the design begins to be developed.
* Mockups/Layout
  + A high-fidelity layout that represents the way the application will look but does not provide any functionality.
* Prototype
* The final draft of the application layout provides some basic functionality and works as a blueprint for the development team to follow for the graphical user interface (GUI).

# **Implementation**

Due to the recent renovation of The Massage Center, the implementation of the scheduling solution will be straightforward, and won’t cause any loss of communication with customers. This is a new system so no outages will be experienced.

The project manager will oversee the implementation of the application and ensure that the process goes smoothly. It is their responsibility to meet with stakeholders to gather requirements and get cost, timeline, and layout approvals so the project can continue moving forward.

Once the application has been developed and tested, deployment will be coordinated with The Massage Center, and staff member training can begin when complete. Integration of the current manual system will start once deployment has finished and administrative staff trained. Validation is verified once deployment has concluded by confirming that the application functions as expected in the working environment.

# **Validation and Verification**

Through user scenarios, the project manager will verify the team’s understanding of the requirements, influencing the creation of unit tests and design features. While developing, the team will perform various tests as each new function gets integrated. Next, a quality assurance (QA) member will conduct unit tests, intentionally finding bugs and errors. Once all previous tests have passed, the project manager will oversee user acceptance testing performed by the stakeholders before the application will be considered validated. Finally, deployment will begin, with subsequent testing completed to verify that the application functions accurately in the production environment.

# **Environments and Costs**

## Programming Environment

The application and database will be hosted locally, so a sufficient environment will need to be provided by the client that meets the following requirements:

* Windows 10 or newer
* Java 17
* MySQL version 8

## Environment Costs

Environmental costs will initially be high to facilitate transitioning data from the physical filing system currently in use to digital storage. Setup will require an additional computer to be purchased that is capable of housing the server and database. Software licensing fees and antivirus fees may apply. Database maintenance will be minimal, with the environment being completely on-premises.

## Human Resource Requirements

Human resources will include the project manager, two designers, three software developers, and one quality assurance (QA) member.

The project manager is responsible for overseeing the entire project, from beginning to end, but the bulk of their time spent is communicating with stakeholders and team members at the beginning and end of the software development process. The total amount of time the project manager is estimated to work on the project is a total of 40 hours at $60 per hour, totaling $2400.

Both designers will work closely together as they produce the low- and high-level layouts according to the requirements approved by stakeholders. Due to the small number of layouts required, the design phase of the project is estimated to take a total of 15 hours to complete. With each designer making $60 per hour, the total cost for the design phase is $900.

The bulk of human resources for the project is expected to go toward the three software developers. The current rate for each developer is $70 an hour, with the implementation phase expected to take 60 hours and a total cost of $4200.

Testing will be conducted by a QA member, with an estimated 20 hours needed to complete all tests, and follow-up documentation, if required. QA members’ hourly rate is $50 an hour, with a total cost of $1000.

# **Project Timeline**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Phase | Milestone/Task | Deliverable | Description | Dates |
| Pre-development | Requirements gathering | Requirements | Project Manager will meet with the customer to gather requirements | 7/1/2023 – 7/15/2023 |
| Requirements and Planning | Requirements and Timeline Approval | Approved Requirements and Timeline | Project manager will get approval on the requirements and timeline | 7/1/2023 – 7/15/2023 |
| Design | User Scenario’s created | User Scenario’s | Project manager will create user scenario’s | 7/16/2023 – 7/22/2023 |
| Design | Low- and High-Level Layout’s created | Low- and High-Level Layout’s | Design team will create the low- and high-level layout’s | 7/16/2023 – 7/22/2023 |
| Design | Entity Relationship Diagram (ERD) created | Entity Relationship Diagram (ERD) | Development team will create an ERD | 7/16/2023 – 7/22/2023 |
| Design | Test Plan created | Test Plan | Project manager and development team will create a test plan | 7/16/2023 – 7/22/2023 |
| Design | Layout, ERD, and Test Plan Approval | Approved Layout, ERD, and Test Plan | Project manager will get approval on the layout, ERD, and test plan | 7/16/2023 – 7/22/2023 |
| Implementation | Application created | Fully functional application | Development team will create the application | 7/23/2023 – 7/29/2023 |
| Testing | Perform testing on completed application | Test Results | QA member will perform unit test’s | 7/30/2023 – 8/5/2023 |
| User Acceptance Testing (UAT) | Perform UAT | Approved Application | Project manager will oversee UAT conducted by stakeholders | 7/30/2023 – 8/5/2023 |
| Deployment | Deploy fully functional application | Application deployed and ready for use | Deploy application in production environment and perform final tests | 8/6/2023 – 8/12/2023 |
| Maintenance | Maintenance plan created | Maintenance Service Contract | Project manager will discuss the maintenance plan with stakeholders for final approval | 8/15/2023 - |