**C868 – Software Capstone Project Summary**

**Task 2 – Section A**



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| **Capstone Proposal Project Name:** | SmartStock – Innovative Inventory System. |
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# **Business Problem**

## **The Customer**

The Client is a small manufacturing company called “Screws & Bolts” who are producers of a wide variety of products and their associated parts. The company first started operations in the 1980’s in the small town of New Braunfels, Texas and has been operating since. As a small business it operates mostly on orders receive within state but occasionally they handle orders from out of state. Currently there are 294 employee’s that handle the day-to-day business operations, but going forward the company has recently made plans to increase the scale of the business operations by opening more manufacturing locations in Nevada, Utah, and Oklahoma.

## **Business Case**

## With the opening of new locations comes a problem concerning entry of inventory data into a database and access to that data. Currently troubled with their outdated inventory system, which consists of manually using a spreadsheet program by taking data from a paper-based system. This system is unable to handle the current needs of the company with it push to a wider manufacturing network, thus prompting a new and innovative inventory system.

## **Fulfillment**

The new Inventory system hopes to solve the client problem by implementing a system that is able to store data quickly, make necessary adjustments if needed, and implement the proper security checks to prevent any unauthorized user from making and changes. It will consist of the ability to add parts and products, and have the ability of been able to assign parts to a product. The data entry form will consists multiple data fields such as the name, inventory(stock),the minimum and maximum of the inventory allowed, and for the parts form only, you will be able to specify whether the part is outsourced or in-house. Next, moving on to the security functionality, upon opening of the program users will be met with a screen that requires both a user name and password to proceed to next screen, the login screen will also have a “create user” link that will guide user to a screen to create a new user. Finally the system will track and log all actions taken with adding, editing, and deleting data with the user name and timestamp, from the moment the user first signs in.

# **Existing Gaps**

Currently the program using a non-persistent way of storing data, so an implementation of a database that keeps data even when program is not running is required, following that the user login needs to be added, and a report system that tracks changes within the program also needs to be added.

# **SDLC Methodology**

The methodology chosen for this project was the “Waterfall” method, which best suited the development needs of the project. The waterfall methodology consists of five different stages, Requirements, Design, Implementation, Verification/Testing, and Deployment & Maintenance.

The **Requirement** phase will consists, the gathering of data, usually by a project manager to understand the sponsor(client) requirements such as cost, assumptions, risks, timelines and etc. The phase usually produce documentation for reference purposes later and it very important for keeping track of how close the project is to the ideal presented by the sponsor.

Next we have the **Design** phase where we will come up with higher-level or logical design of what the project purpose is, it’s scale, how the different parts of the program operate and integrate together This will be our wire-frames or early level prototype and UML designs of our classes within the code.

With the design phase complete we move on to the **Implementation** phase of our design where we implement the design to code. This consists of using the UML diagram we created to structure our classes and construct the proper data flow, structuring the application design in reference to the wire-frame that was created in the requirement phase.

After implementing our design we move on to the **Verification/Testing phase** where, thru a series of tests, we can decided whether the design has met the requirements for release and has little to no errors contained within the code that might cause any problem of normal usuage.

Lastly, we have the **Deployment** and **Maintenance** phase, this is where the application will be considered a success for release, furthermore the client will have in place a team to further keep the application up and running and handling any error that are received from any user of the product.

# **Deliverables**

## **Project Deliverables**

* UML design
  + This design document holds information on how the classes will be designed and how the database will be set up.
* Low Fidelity Wire-frame
  + Most basic of wire-frames, that will provided a basis for the client to have a feel for the application data flow and graphical design.
* Milestone chart
  + Chart detailing certain checkpoint In the project design from start to completion of project.
* Requirements List
  + The client list of requirements of how the application will look and function, an important guideline for designing the application.
* Test plan
  + The series of test that the application will be put thru to met requirements and release standards.
* Maintenance Plan
  + This will be the guideline the client must follow to keep the system up and running properly, and procedures to take in case of issues that might occur.

## **Product Deliverables**

* A database capable of storing and edited data within.
* Security implementations that verifies changes that occur within the system by a user.
* A reporting function that create logs of actives that occur within the application.
* An application capable of adding products and their associated parts, whether they are in-housed or outsourced.
* Log-in and create user screen.

# **Implementation**

The implementation is plan to take place after company hours in order to not impede on regular business operations, this will be a necessary as the current system in place will have to be offline for a few hours until the new system can be properly initialized into the company framework. Once the new system in place data transfer operations will proceed from the old system to the new which is expected to be finished within a few week. So the old system will still be in place for use so that the business can still access the inventory data.

# **Validation and Verification**

The validation will be a series of test to see whether or not the product matches the client requirement, furthermore the test will also checks to see any critical operations bugs are still present within the application and to see that all functionally of the components worked as intended without any unattended side effects.

# **Environments and Costs**

## **Programming Environment**

The application will be developed using java and the GUI will be using javafx libraries to run. The database we intend to utilize for the back-end will be SQLite, the devices used will be HP desktops, running Windows 10 with code development taking place using the intellij IDE.

## **Environment Costs**

The application will use a cloud based service to host the database, which based on current pricing models will be about $140 monthly.

## **Human Resource Requirements**

The project will consist of 1 project manger, 1 designer, 2 software developer, and 2 QA specialist. The project manager salary will sit at the industry average standard of $48 per hour, the designer salary as well. The software developers salary comes out to be $68 per hour and the QA specialists at $38 per hour. The total amount of development will take around a month making the total hours for the project 160, which the project manager will have 160 hrs, the designer will have 40 hrs, the software developers will have 120 hrs, and the QA specialist will have 30 hrs.

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| --- | --- | --- |
| **Resource** | **Rate \* Time** | **Total** |
| Project Manager | $48 \* 160 | $7,680 |
| Designer | $48 \* 40 | $1,920 |
| Software Developers | $68 \* 240 | $16,320 |
| QA Specialist | $38 \* 60 | $2,280 |
| **TOTAL Human Resource Cost** |  | **$****28,200** |

# **Project Timeline**

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| --- | --- | --- | --- | --- |
| **Phase** | **Milestone/Task** | **Deliverable** | **Description** | **Dates** |
| **Requirements gathering** | Data gathering | Requirement list, cost chart, risks analyst | Gathers the data that will be used as an outline for the progress on the project. | 10/5/2024-10/8/2024 |
| **System Design** | UML design and low-fidelity wire-frame will be created | UML Design  Low-fidelity wire-frame | Create the UML design that showcases how the classes for the application will be structured and the wire-frame presenting as basis for the application design. | 10/9/2024-10/13/2024 |
| **System Design** | Database Creation | SQLite Database | A SQLite Database is designed to hold the values of the old inventory system. | 10/10/2024-10/12/2024 |
| **System Design** | Prototype is create  Test plans are made | Prototype  Test plans | A simple prototype for to gauge the functionally and overall design with the client, ad testing plans to meet requirements before release. | 10/10/2024-10/15/2024 |
| **Implementation** | Project development commences | Beta version of project | The project is coded with functionally and design is created, next the database query’s to and from the project are created. | 10/15/2024-10/22/2024 |
| **Testing Phase** | Database interactions tests | Functioning database to application interaction code. | Project test whether database properly interacts with project without producing any significant errors. | 10/22/2024-10/26/2024 |
| **Testing Phase** | Application Functionally tests | Functioning application code. | Test if the application function as intended to the clients requirements and possess no major errors. | 10/22/2024-10/26/2024 |
| **Deployment** | Application release | Final build of application | Application has met requirements and has been green lit for release on company servers. | 10/26/2024-10/30/2024 |
| **Maintenance** | Maintenance Plan is established. | Maintenance plan | Maintenance plan is created and the plan is used to maintained the application and the database by the client maintenance team. | 10/30/2024 |
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