Proposal for Inventory Management   
Application

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##### Table of Contents

**Proposal Overview4**

Problem Summary5

IT Solution5

Implementation Plan5

**Review of Other Works7**

Relation of Artifacts to Project Development9

**Project Rationale10**

**Current Project Environment11**

**Methodology13**

Plan (includes auditing)13

Design14

Build14

Deploy14

**Project Goal, Objectives, and Deliverables14**

Goal, Objectives and Deliverables Table14

Description of Project Goal, Objectives, and Deliverables16

**Project Timeline with Milestones18**

**Outcome19**

**References21**

##### Proposal Overview

This section includes an overview of the *problem* which the solution needs to solve for Safely Home Security, the *purpose* of the proposed solution, and the *plan* to implement this project.

**Problem Summary**

Safely Home Security started as a small business selling only one kind of door lock. They have since grown into a company of twenty employees, selling a large variety of customized home security systems. They have a website on which customers fill out a form for information, but they must speak to a sales member to configure a customized security solution, and the sale is made over the phone. The company has a high-ranking trademark reputation for their personalized customer phone support. They are proud to have this interaction versus having the customers go through the difficult process of putting together a security solution and processing an order online.

However, as sales are increasing*, mistakes* in the***inventory*** count are occurring frequently, as employees make frequent data entry mistakes because of the rush in sales calls. As a result, Safely Home Security’s employees have been *accidently selling out of stock items* and having to apologize to customers for these mistakes. They are currently using a manual system of adjusting shared spreadsheets to keep track of inventory. The company has a *database*, that they update at the end of every day with the results from these spreadsheets. Safely Home Security has recently been receiving complaints and bad reviews, which could lead to the loss of customers.

**IT Solution**

The proposed solution to the problem of frequent *mistakes* being made in the *manual adjustment of inventory data* by Safely Home Security employees, is the use of a custom *inventory management system* which can connect to the existing database. An inventory management system desktop application can help employees keep track of inventory in *real time* so that the inventory data are automatically adjusted and up to date. Simple Modern Software will be more than happy to design and create the new Inventory Management System Desktop Application for Safely Home Security.

**Implementation Plan**

This section describes the implementation plan. It Provides details on the different phases, explains *how* the steps of the project will be carried out, and *why* they will be carried out in the chosen manner.

Firstly, Simple Modern Software will **plan** the project. Simple Modern Software will audit the current inventory system from the start to finish. This process starts at the customer’s phone call, proceeds to the employee editing the spreadsheet, and finishes when adjustments are made at the end of the day in the database.

The main purpose of this planning stage is to identify where the errors are taking place. Once a complete understanding is developed of precisely how and when these problems are occurring, Simply Modern Software can take notes and plan out how the desktop application can prevent these problems. Another purpose of this stage is to see what is already working well in the inventory process so that we can carry those same implementations as much as possible into the design of the application. This way the employees will find the application as familiar as possible.

Secondly, Simple Modern Software will **design** the project. Plans must be made that align structures and variables between the existing database and the new application. Diagrams, such as UML diagrams and similar charts will be created and arranged along with any planning notes during this stage. This will be done by first studying the database structure as it is now, and then mirroring that design by the inventory application. Also, during this stage, the user interface will be designed according to these charts and diagrams. This will be done by choosing features and an ascetical design that will make the interface easy for the employees to use. The application will also be designed to make it difficult for them to make data entry mistakes, by creating error messages, reminders, and notifications.

The purpose for the planning and aligning of variables and structures between the database and the application is for the inventory management application to connect seamlessly with the current database. If the two are aligned, then data manipulation becomes straightforward and easy. Error messages, reminders, and notifications will be created in order to help make the application easy to use and to prevent user mistakes.

Thirdly, Simple Modern Software will **build** the project.The application will be built according to the plans made in the design process. The Software will be created according to the charts and diagrams. These charts and diagrams will be meticulously followed in order to meet the design requirements.

Developers will need to use the charts and diagrams in order to know how to program the application. It is necessary that the design, structures, and code in the application align with the charts and diagrams put together during the planning phase, otherwise the application will not work the way it is supposed to. For example, certain data manipulation features will not work if certain variables are out of order.

Lastly, Simple Modern Software will **deploy** the project. They will install the application and verify proper connectivity to the database server for all employee computers. Once, proper connectivity is verified, employees will be allowed to start using it for a test period. The old spreadsheets will be removed from the system.

After installing the application on all user computers, it is important to test each installation to make sure it is working the way it should. Each employee should be able to use the application to manipulate inventory data without any problems. It is important to allow the employees to use the application for a testing period, in order to ensure the proper use of the application, and to make adjustments if any problems arise during this time. The old spreadsheets will be removed in order to prevent any confusion and to prevent the employees from regressing to the use of the spreadsheets. Also, all data on the spreadsheets will be out of date and no longer useful. This is because the new inventory management system automatically updates the database per individual manipulation rather than all at once like the old method.

**Review of Other Works**

This section presents a review of other works done by a third party that are relevant and directly relate to the proposed project. Four works have been chosen for this review which will present Safely Home Security with information to provide an understanding of how the proposed solution, the *inventory management system application* is the *best* solution for the company at this time. The four works summarized in this section are the titled: *Why Choose Customized Over Out-Of-The-Box Inventory Management; The Dangers of Using Excel for Inventory Management;* *10 Ways Inventory Management Software Increases Sales and Profit; and, Improve Your Inventory Management to Increase Sales.*

**Relation of Artifacts to Project Development**

The **first** work, titled *Why Choose Customized Over Out-Of-The-Box Inventory Management*, is an explanation by Clear Spider about the benefits and reasons for having an inventory management system customized to meet the needs of a business. Two of these reasons are: first, they provide *easy integrations,* which means that a customized system can mold to the needs of the business including any needed software integrations; second, a customized inventory system *suits your business,* which means customized software is easier to use, navigation is quicker for new users and training is less strenuous (Clear Spider, 2019).

Since a customized inventory management system is easy integrations is one of the benefits of a customized inventory management system, it will be easy to seamlessly connect the new desktop application to the existing inventory database server. It is beneficial to realize that a customized inventory management system *suits your business*, because the employees will find the new system easy to use. This is because it provides quick navigation so that they could very easily become used to using the new application, and there won’t be too much of a learning curve to slow down the sales process. The application will rather aid in the facilitation of the process rather than hinder it in any way.

The **second** work, titled *The Dangers of Using Excel for Inventory Management,* explains how using spreadsheets for inventory management is okay when a business is just starting out, but as it grows, the spreadsheet system can negatively impact a business if relied on too much in circumstances where other tools could work better. (Homby, 2015). The author, Homby, specifically explains how using spreadsheets can lead to information not being updated on time, skewed reporting in inventory management*, human error occurring when manually keeping track of stock items and updated information*, and the potential for lost data when sharing spreadsheets (2015).

This work is helpful because it offers information to help Simply Safe Security to understand the enormity of its current predicament and the danger that the company would be in, if it should remain as it is, without implementing an inventory management system. Using spreadsheets to track inventory was a great implementation for the company when it was still in its *beginning stages*, but now that the company has grown and is selling many more products to many more customers, the current spreadsheet inventory system has become more of a hindrance than a help to the company. The errors that Homby writes about, including *human error occurring when manually keeping track of stock items and updated information,* which is the main problem right now at Safely Home Security, will be eradicated by the implementation of the proposed solution.

The **third** work, *10 Ways Inventory Management Software Increases Sales and Profit,* offers explanations of the many benefits that implementing an inventory management application would come with. Some of these benefits highlight the goals of the proposed project. One main explanation is that it provides *real-time data access,* which means that inventory management software makes it a lot easier to keep an updated overview of stocking levels. (Intelligence Node, 2015).

Having real-time data access will enable Safely Home Security to sell items to customers that are in -stock and reduce customer complaints, as well as free up time spent on dealing with customer complaints so that employees can have more phone calls, and more happy customers throughout each day. This is the benefit that implementing the proposed solution will produce.

The **fourth** work, *Improve Your Inventory Management to Increase Sales,* highlights some major benefits that implementing the new inventory management application would provide. It states that by “using an automated inventory management system, your business will be more productive and efficient, earning you more sales and a greater profit margin” (Musaoglu, 2018).

The earning of more sales and a greater profit margin, on account of the implementing an inventory management system is good because it directly counterattacks the danger of losing customers. In other words, it would counterattack in a very beneficial way, recent bad reviews and complaints that Safely Home Security has been receiving, on account of errors in the current spreadsheet system.

**Project Rationale**

Since there have been several *increasing mistakes* in the***inventory*** count are occurring frequently, as employees make frequent data entry mistakes because of the rush in sales calls, Safely Home Security’s employees have been *accidently selling out of stock items* and having to apologize to customers for these mistakes. The use of the manual system of adjusting shared spreadsheets to keep track of inventory and updating the *database* at the end of every day with the results from these spreadsheets, is a system which worked well when the company was smaller and had fewer sales. However, now that the company has significantly grown, there is a greater demand for Safely Home Security’s products, and more sales are coming in at rapid speeds, the company will benefit largely from the use of a custom inventory management system. Recently been receiving complaints and bad reviews, which could lead to the loss of customers. However, the inventory management system could prevent this situation which could be threatening to reputation and growth of Safely Home Security Products.

The proposed solution to the problem of frequent *mistakes* being made in the *manual adjustment of inventory data* by Safely Home Security employees, is the use of an inventory management desktop application systemwhich can connect to the existing database. An inventory management system desktop application can help employees keep track of inventory in *real time* so that the inventory data are automatically adjusted and up to date.

What makes this project interesting and significant is that it provides a solution to the current problems without interfering with the companies ethical goals of personal one-to-one interaction with the customer and the employee, while the customer is assisted in putting together a customized home security solution to fit his or her particular needs. The employee can follow the same process without worrying about changing what already works well- the sales process. The mistakes, which were being made by the employee during this phone call process were simply because the manual process was difficult for the employee to keep up with, in the time allotted him or her, while other customers were waiting to be assisted. Now that the employee will have a simple and easy to use desktop application that could help him remember all the steps and warn him when data is entered incorrectly. He or she can enter necessary data in a faster and more efficient way. Thus, the sales process can remain the same and the inventory application solution will simply serve to facilitate the process rather than change it.

**Current Project Environment**

Safely Home Security has a high-ranking trademark reputation for their personalized customer phone support. They are proud to have this interaction versus having the customers go through the difficult process of putting together a security solution and processing an order online.

However, as sales are increasing mistakes in the inventory count are occurring frequently, as employees make frequent data entry mistakes because of the rush in sales calls. Safely Home Security’s employees have been accidently selling out of stock items and having to apologize to customers for these mistakes. They are currently using a manual system of adjusting shared spreadsheets to keep track of inventory. They have a database, that they update at the end of every day with the results from these spreadsheets. The company has recently been receiving complaints and bad reviews, which could lead to the loss of customers.

The overall environment in the office is filled with frustration among the employees as they answer one phone call after the other, without knowing whether it will be a prospective customer, or a customer calling with a complaint about a late shipment. During the rush and frustration, employees either completely forget to adjust inventory data on the spreadsheets or enter it in the wrong way.

The current environment sets the direction for the definition and implementation of the customized inventory management system. This is true in two ways. Firstly, employees are experiencing the effects of a failing system. At one point the spreadsheet system was very beneficial and it worked almost seamlessly, this is when the company was still in its beginning stages and had fewer products and fewer customers. The system which used to work is starting to fail because the business is growing. Positive changes are rapidly occurring for Safely Home Security, so the company is growing in every other area. It is only right that the inventory system should experience its season of growth as well. It would have to happen eventually and now is the perfect time. The implementation of the inventory management system will fit right into the growth of the company with immense benefits.

Employees are reaching the point where they are ready to accept a new and better way to keep track of data as they build customized security solutions for customers. They are ready to receive more positive reviews and have less angry customers calling in to complain. This is a perfect time to give the employees a well-deserved solution to their everyday frustration.

The Safely Home Security office already has a server to manage inventory, but it must have information manually entered it at the end of every day. This is another level where human error can come into play and data could be entered mistakenly. However, the inventory management system desktop application will automatically update the server after each data manipulation. The manual adjustment of data will no longer be needed.

Since, Safely Home Security employees are ready for and would greatly appreciate the facilitating use of a new inventory management application, and there is already a server to keep the inventory backed-up, up-to-date and secure, plus customers are beginning to complain about not receiving their orders on time because of the flawed spreadsheet system, *now is a perfect time* for Safely Home Security to *implement the proposed solution.*

**Methodology**

The intended methodology that the proposed project will closely follow is the SDLC methodology. SDLC stands for *Software Development Life Cycle* and is a process that produces software with the highest quality and lowest cost in the shortest time. SDLC presents a plan detailing the development, alteration, maintenance, and replacement of a software system. It includes distinct stages including, planning, design, building, testing, and deployment (Stackify, 2017). During the implementation of the *inventory management system desktop application*, the project will go through the following SDLC stages:

**Plan (includes auditing)**

Simple Modern Software will *audit* the current inventory system from the start to finish to identify where the errors are taking place. This process starts at the customer’s phone call, proceeds to the employee editing the spreadsheet, and finishes when adjustments are made at the end of the day in the database.

**Design**

Simple Modern Software will *design* the Inventory Management Application to connect with the current database, buy aligning structures and variables between the two, and making the interface easy for the employees to use, and difficult for them to make data entry mistakes.

**Build**

Simple Modern Software will *build* the Application based on the design plans and connect it to the existing database, debugging the code as needed.

**Deploy (includes testing)**

Simple Modern Software will *install* the application on all employee computers and allow them to start using it for a test period.

**Project Goal, Objectives, and Deliverables**

This section provides a detailed explanation of the goal and objectives for the proposed project and explains what the project will provide.

**Goal, Objectives and Deliverables Table**

In this section, a table is presented showing the overreaching primary goal encompassing the supportive objectives, which in turn are made up of deliverables. Following the table are descriptions of the Primary Goal, objectives, and deliverables.

|  |  |  |
| --- | --- | --- |
| Primary Goal | Supporting objectives | Deliverables enabling the project objectives |
| Solve the problem of frequent *mistakes* being made in the *manual* adjustment of *inventory data.* | 1. Audit current inventory system | 1.a. Inspect current system |
| 1.b. Audit phone call/sales procedure including use of spreadsheets |
| 2. Design the inventory application | 2.a. Design how the application will relate to the database, draw out diagrams and charts |
| 2.b. Design the user interface |
| 3. Build the application | 3.a. Use pre-planned material to build application using Java and FXML |
| 3.b. Connect the application to the database for the first time |
| 4. Install application on employee computers | 4.a. Install application on all employee computers and verify connectivity with the database, test and adjust |
| 4.b. Discard old spreadsheets which are now rendered useless |

**Description of Project Goal, Objectives, and Deliverables**

The **primary goal** of this project is to solve the problem of frequent *mistakes* being made in the *manual adjustment of inventory data* by Safely Home Security employees. To do this, Simple Modern Software will provide an inventory management desktop application system*,* which can connect to the existing database. An inventory management system desktop application can help employees keep track of inventory in *real time* so that the inventory data are automatically adjusted and up to date. The goal can be broken down into *four goals*, each with a precise measurement of success. The primary goal will be met with the successful completion of each objective referenced below:

**Objective 1**

Audit the current inventory system from the start to finish to identify where the errors are taking place. This process starts at the customer’s phone call, proceeds to the employee editing the spreadsheet and finishes when adjustments are made at the end of the day in the database.

*First Deliverable*

Inspect the current system spreadsheet-database relationship and clearly identify the problem of increasing mistakes in data entry and consider what improvements can be made by the new Inventory Management System.

*Second Deliverable*

Audit the current phone call procedure and consider how the new Inventory Management System can facilitate the data entry process during the phone call, so that they could enter information more accurately with little to no data entry mistakes.

**Objective 2**

Design the Inventory Management Application to connect with the current database, buy aligning structures and variables between the two, and making the interface easy for the employees to use, and difficult for them to make data entry mistakes.

*First Deliverable*

Design the application-database relationship and draw out necessary diagrams and charts to plan the application’s structures and variables. Audit the current inventory database and make sure that the application variables and structures are in line with those of the database.

*Second Deliverable*

Design the Graphical User Interface of the application so that it is easy for an employee to use while he or she is talking on the phone to the customer.

*Third Deliverable*

Design error messages, reminders, and notifications for the application to help guide the employees to correct data entry and prevent them from making hurried mistakes.

**Objective 3**

Build the Application based on the design plans and connect it to the existing database, debugging the code as needed.

*First Deliverable*

Build the Application. Use the material from the Objective 2 phase to program the inventory management system desktop application. This will be a Java application using FXML.

*Second Deliverable*

Connect the application to the database while thoroughly testing and debugging. Inventory in the database must be seamlessly and automatically updated and manipulated through the desktop application’s user interface

**Objective 4**

Install the application on all employee computers and verify connectivity to the database server for all user computers. Allow employees to start using it for a testing period.

*First Deliverable*

Install the application on all employee desktop computers and make sure each application is correctly connected to the database server. Allow them to use it for a testing period. Receive all feedback and make small adjustment if needed.

*Second Deliverable*

Removed and discard all inventory spreadsheets which will be rendered useless by this time.

**Project Timeline with Milestones**

|  |  |  |  |
| --- | --- | --- | --- |
| **Description of milestone/ deliverable** | **Duration (days)** | **Projected start date** | **Anticipated end date** |
|  |  |  |  |
|  |  |  |  |
| Inspect the current system | 7 days | November 4, 2019 | November 11, 2019 |
| Audit phone call/sales procedure including use of spreadsheets | 7 days | November 12, 2019 | November 19, 2019 |
| Design how the application will relate to the database, draw out diagrams and charts | 2 days | November 21, 2019 | November 23, 2019 |
| Design the user interface | 2 days | November 25, 2019 | November 28,2018 |
| Use pre-planned material to build application using Java and FXML | 30 days | December 2, 2019 | December 31, 2019 |
| Connect application to the database for the first time | 2 days | January 2, 2020 | January 4, 2020 |
| Install application on all employee computers and verify connectivity with the database, test and adjust | 30 days | January 6, 2020 | January 20, 2020 |
| Discard old spreadsheets | 3 days | January 21, 2020 | January 24, 2020 |

**Outcome**

Three basic metrics will help Safely Home Security to assess the project’s success and effectiveness, once it is complete. These are the *frequency of data entry mistakes*, the *selling of out-of-stock items*, and *customer satisfaction*. A decrease or increase in any of these within the expected percentage ranges will mean that the project was very successful and effective.

First, the **frequency in data entry mistakes** will be measured. This measurement will determine whether the employees are still making data entry mistakes while using the new inventory management system desktop application, and if so, how many? This will be measured at the end of every workweek for a period of six months. The expectation is that the frequency in data entry mistakes made by the employees will *dramatically decrease*. A decrease of 80-100% in the amount of data entry mistakes by employees will be considered successful.

Second, the **selling of out-of-stock items** will be measured. This measurement will determine whether the data in the inventory database is being updated properly and whether customers’ orders are late because they were mistakenly sold out-of-stock items. It is expected that inventory data manipulations will take place in *real-time* and is always up-to-date and accurate, so problems like this should be rare. The expectation is that the selling of out-of-stock itemswill *dramatically decrease*. This will be measured at the end of every month for a period of six months. A decrease of 90-100% in the accidental selling of out-of-stock itemswill be considered successful.

Third, **customer satisfaction** will be measured. This measurement will determine whether customers have generally satisfied experiences with the company since it has implemented its new inventory management system application. This will be measured on the last workday of every month for six months. It is expected that customers will have less complaints to offer and more satisfied reviews to leave for Safely Home Security. An increase of 10-20% in customer satisfaction will be considered successful.

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