



**Middlesex
University
London**

*Building a JavaFX Desktop Application
for a Business Inventory System and
building a backend content
management system using MySQL to
back up all the data.*

Project Proposal

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Project Description

My project is to build a JavaFX Desktop Application Software for a Business Inventory System and in addition to that implementing a backend application which will be a content management system to back up all the data using the MySQL Database. At the end there will be two JavaFX applications.

JavaFX Inventory System Application

The first application is an Inventory System where, the business can perform these following actions:

- In total there are going to be twelve forms in this application which are the following: Registration and login form, main menu form, products form, suppliers form, employees form, Warehouses form and my idea is the use four warehouses so each of those are going to have their own forms, profit and loss form and inside the profit and loss form there will be profit/loss viewing data on screen, and detailed reports with download option. Each form will have a button to navigate back and forward, and the main menu will have a logout button.
- Registration and login system for the owners, a separate registration and login system for the employees. The reason being, owners will have the full admin rights to access and edit everything inside the application which includes the following: add, archive, restore and delete the data for the stocks, suppliers, employees, warehouses, products located in which section of the four warehouses, and finally view the profit and loss data and reports, and print them out. Whereas a normal employee can only view all the data and search for the products which are available in the warehouses, but not edit or print it.
- In the products/stocks section the business owner can add the new products with the following information: product id, product name, and the supplier name, and search for products located in the warehouse. In addition to that they can also archive, delete and edit any of these fields as well.
- In the supplier's section the business owner can add a new supplier with their following information: supplier id, supplier company name, supplier type (what sort of products they sell e.g. Coca-Cola drinks), quantity of products they have given.
- In the employees form there will be a list of employees who are working in the company with their employee id, name, address and their monthly wages.
- In the warehouse form is where there will be four warehouse locations. Each warehouse will have sections A – D and shelf numbers 1 – 10. This is where they can keep of a record of where certain stock is located which is in the warehouse off site location. The way this is going to work is e.g. In the products/stocks form you would search for the product/stocks by their id as a result it will return the following: **Product Name: Glasses, Warehouse location: Essex, section C and shelf number 3.**
- Inside the profit and loss form is where the businesses profit and loss are going to be listed for the current business situation, and there will also be detailed reports, which are going to be created on daily basis, monthly and yearly. Those reports can be accessed through a

download report button which will download the PDF and there will also be an option to print report as well if the business wants a paper copy of it.

Java Backend Content Management System & Data Back-up Application

The second application is a CMS and data back-up system where, the business can perform these following actions:

- This will be used for managing the data (MySQL Database) e.g. Content Management System. Using this application, the business owner can click a button or search by the id (primary key) to view all the data on the command line interface and the GUI. This application will use JDBC connector to connect to the MySQL Database.
- This application is going to use Java Threads. There will be four threads, the first thread will create a text file which will pull all the data into the text file, and it will regularly backup every hour automatically. The other three threads work the completely the same way the only difference is they would automatically backup daily, monthly and yearly.
- As, soon as you run this application the threads will be active and will automatically start to create the text files and pull data from the SQL database into the text files. Those data text files will automatically be stored onto the FTP Server. The owners will have their own FTP account which will be secured using a username and password therefore, its only accessible to them. The owner's FTP account is going to be connected to the Java backend application.
- FTP Server can be accessed by the owner's PC which is going to be off site e.g. this can be accessed remotely from another location i.e. owner's home not the business location itself.

The problem I am addressing

According to my latest research about small business I have discovered that many small businesses are closing due to these following reasons: A poor business plan, bad management, unforeseen events, financial hurdles, and owners facing issues e.g. health issues. Therefore, the system that I am initially planning to develop has many plans which can keep the business safe even in tough situations.

How this project will result in a good business plan

An effective business plan is going to require these following things: customer needs, sales projection, and its market. This application will support the customer needs by viewing the profit and loss sales report to see which product is not being sold now therefore, they can scrape that and replace it with a new one. They can also use the reports to compare with their previous sales.

How this project will result in a good business management

Using this application, the business can manage their employees, suppliers, stock/products, and their warehouses. The owners will know what product is sold, available, unavailable and missing and in which warehouse section it is located in. They can check which employees is available and what they are hired for e.g. managing north warehouse location, and they can keep a track record of

which suppliers delivers which stocks and products, also keep record of their profit and loss data as well. Using this application, the business owner can manage their business very well.

How this project will result in a good plan for unforeseen events

The businesses data is going to be backed up hourly, daily, monthly and yearly therefore, in case of an unforeseen event for example the business location gets hit by a tornado, flood or gets set on fire then, the business will still have their most recent data available to them remotely from another location using the FTP Server. This way they can re-import that data back into their database and all their data will be recovered. This will prevent from data loss. This will keep the continuity of the business.

How this project will result in a good plan in financial hurdles

This is one of the problems, “owners of failing companies are less in tune with how much revenue is generated by sales of products or services. This disconnect leads to funding shortfalls that can quickly put a small business out of operation.” (By MELISSA HORTON Jun 8, 2020, Investopedia). Therefore, using this application the business can keep a track to sales and revenue they are making from time to time.

All these factors above which I have discussed can be considered as a disaster recovery plan for a small business which is going to help the continuity of the business if some disaster occurs.

Evaluation

My goal of this project is to make a software system for small businesses which will support them in two ways, one is that it will help them manage their business more effectively where they have everything organised, and secondly keep a continuity of their businesses during tough situations e.g. disasters (**helping them recover from disasters**).

The way I can evaluate this project is by handing out a small survey to the small business, which includes a few questions for example, what problems are they facing, what would they usually do if a disaster occurs e.g. fire, how they manage their data, and how they keep track of their sales. Using the results/answers from the survey I would compare that to my software system specification and requirements and see if it is meeting the needs or not also, I can use that to adjust some of my specifications and requirements.

Resources used in this project

Java

The reason why I chose to build my project is Java is because it is an object-oriented language where the code is reusable, and you can code more modular applications. Java is easy to use, compile and debug. Java is also platform-independent therefore you can easily move to another computer system. As, it is a project which is used by many businesses therefore this software needs to be running on many computers.

JavaFX

JavaFX is a GUI framework which is easier to use compared to other Java frameworks therefore, you can easily understand what the code is doing without getting confused. It supports many features like using CSS styling to make a good design e.g. UX design, it supports media objects, and the property bindings system is great.

MySQL

The reason why I decided to use MySQL is because it is the most secure database management system. Therefore, businesses will have their data secured. It has quite a high performance as well.

JDBC

JDBC is quite an easy way to connect to the Java programs it only requires a URL which makes it easier to maintain the program. Free to use, does not require complicated installation only a JAR file to the library therefore, when it's time to handover this application to the business then the JAR file will be included with the library therefore they won't require any extra installation.

FTP-Server

The reason why I chose to use the FTP-Server is because of the following reasons below:

- "Transfer data efficiently in bulk across a network"
- "Progress is not lost, even if the connection is timed out."
- "Send multiple file directories at the same time."
- "Move files around easily and in an organized fashion."
- "Configure once and your settings are saved."
- "Create multiple levels of access"

Especially the point **"Send multiple file directories at the same time."**, because when the data is being backup up this will send multiple files to the server. **"Configure once and your settings are saved."**, this also shows that it is not complicated to setup. Less complications are better for the businesses.

(By Victoria Shaw on August 19, 2016, SmartFile)

Planning Project

Milestones

Milestone 1 – Project Proposal

I have written a project proposal to show what my project is going to be about this also includes what resources I will be using; therefore, the reader can understand my project.

Milestone 2 – Literature Review, Background & Research

This is going to be used for showing the context of the project, and what research I did and how I did my research, and in addition to that show my findings of the research results and explain how were they successful.

Milestone 3 – Project Requirements & Specification

This is going to be used for explaining what the project software system is going to do, and how is this software system going to be expected to perform e.g. what it is supposed to do.

Milestone 4 – Project Analysis & Design

This is where the software system is going to be analysed and designed using the different design techniques which includes: UML Diagrams e.g. use case diagrams, or GUI mock-ups/wireframes.

Milestone 5 – Project Implementation

After doing all the planning and researching this is the stage where I will implement my software system using all the list of resources e.g. JavaFX which I have mentioned under the resources section.

Milestone 6 – Project Software Testing

Once, the project implementation has been completed then the software system is going to be testing using the different techniques which includes: Test Driven Development methodology, acceptance testing, unit testing and also using a test plan to measure the performance of the software system.

Milestone 7 – Project Evaluation & Demonstration

This is where the final implemented software system will be demonstrated to show how it works. In addition to that the software system will be evaluated to see which user requirements have been met and where further improvements are needed e.g. for version two of the software system.

Milestone 8 – Project Conclusion

To conclude the project, I will show the outcomes of the software system and what was learned from this project and how it can be improved in future e.g. what new features can be added to make the software system go to the next stage up in the business industry.

Gantt Chart

Project Gantt Chart

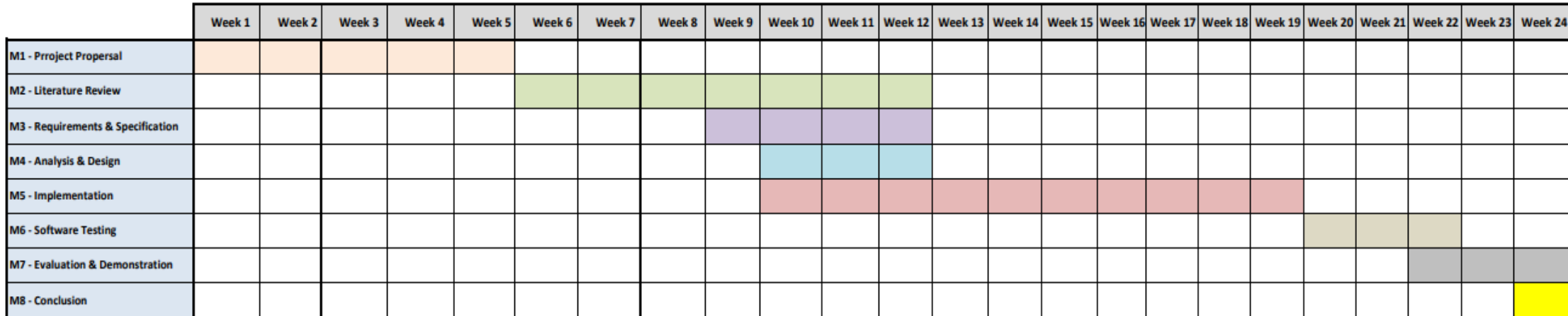


Figure 1 - Gantt Chart

Key
M1
M2
M3
M4
M5
M6
M7
M8

This Gantt Chart above is used for showing the time plan for the project such as when is a milestone expected to be completed e.g. which week its beings and by which week it is expected to end. You may see that the timescale for the milestones are overlapping with each other the reason being, more time is needed on certain milestones than others for example, the implementation of the project is going to take the most time.

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