**C868 – Software Capstone Project Summary**

**Task 2 – Section A**



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| **Capstone Proposal Project Name:** | PCB Component Planner |
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# **Business Problem**

**The Customer**

The customer is a growing PCB (Printed Circuit Board) assembly company and is responsible for taking orders for PCB’s that contain multiple components and component types such as SMD (Surface mounted device) and through-hole components. The PCB assembly company has a small full-time team, and its mission is to provide a simple and easy process for ordering PCB’s to be assembled.

## **Business Case**

For the PCB assembly company, simplifying the process for their customer orders is their primary goal. A program to enter and track the components for each PCB will greatly benefit the PCB assembly company by improving the speed and simplicity of their customer order process.

## **Fulfillment**

A standalone program will fulfill the needs of the PCB assembly company by simplifying and streamlining the PCB design entry into the computer system. The program will have a database that holds components and already designed PCB’s and list components they contain. The program will allow for components and PCB designs to be added, removed, and edited. The program will have the functionality to search each database and to run a report of the quantity of each component and a report for the total cost in a PCB design.

# **Existing Gaps**

The existing process requires the worker to look through a catalog sheet that has the component model numbers on it and to manually enter each component into an Excel file. The current process is slow and tedious, with a program that includes a list of the components and search functionality like the proposed program the workflow can be greatly improved.

# **SDLC Methodology**

The SDLC Methodology picked for this project will be the Waterfall methodology because the development of this program is well understood and like multiple previous projects. The first phase will be the requirements and analysis phase where we will capture the full product requirements list from the PCB assembly company. The second phase will be the Design phase where the requirements will be studied to decide the hardware requirements, system requirements, and define the programs architecture. The third phase will be Implementation where the program will be coded. The fourth step will be testing where the program will be tested for any defects. The fifth step will be deployment where the program will be deployed into the customer work environment.

# **Project Deliverables**

* Project requirements document
  + This document will contain all the requirements that the program must meet.
* Hardware and system requirements document
  + This document will outline the required hardware and systems needed for the program to function properly and meet the requirements found in the requirements document.
* UI Mockup
  + This will be the rough design of how the final UI will look.
* User manual
  + This will be the manual for the regular user of the program.
* User maintenance manual
  + This will be the manual for upkeep of the program by admin users.

# **Implementation**

The program implementation will be simple and will not cause any disruptions or outages. The employees will be trained how to use the new program before deployment in waves so there will be no disruptions for the business. Implementation will be coordinated by the Project Manager and PCB assembly company’s managers to schedule groups for training. Installation will be required on all computers that are used. The software will be installed after normal working hours, this will be coordinated by the software engineer and the PCB assembly company managers.

# **Verification and Validation**

The program will be tested by multiple use case scenarios such as adding new components, removing components, and adding components to PCB’s to make sure that all functionality is present and matches the original requirements document. There will be acceptance testing done by the PCB assembly company. Unit testing will be used to check that the programming is functioning and to find defects through the development cycle. The previously mentioned tests being successful tests will verify and validate the program.

# **Environments and Costs**

## **Programming Environment**

This program will be running in a windows environment. The database will be hosted on a Windows server that is hosted on site.

**Users computer**

* Windows 10

**Database**

* Windows Server
* Microsoft SQL Server

## **Environment Costs**

The environment costs for this program only include the upfront one-time development cost of the program which will be $5000. The PCB assembly company has chosen to host the database on an already existing inhouse server that is in their office so there is no additional costs.

## **Human Resource Requirements**

The human resource requirements for this project will primarily be the software development team. The software development team will take up approximately 70% of the time and money resources for this project, the management team will consume the remaining 30% of the resources.

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# **Project Timeline**

This is an overview of the project timeline. All dates are an approximation based on the information currently available.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Phase | Milestone/Task | Deliverable | Description | Dates |
| Pre-development | Requirements document generated,  Hardware and system requirements document generated | Project requirements document,  Hardware and system requirements document | In this step we will meet with the PCB assembly company  to discuss requirements | 3/14/2021 – 3/15/2021 |
| Design | Initial design | UI Mockup | In this step the UI Mockup will be created | 3/16/2021 – 3/18/2021 |
| Development | Code the program, set up and configure database | Working program, and functional database | In this step the program will be coded, and database set up and configured | 3/19/2021 –  3/21/2021 |
| Testing | Test the program | The application passes all usability tests, unit tests, and acceptance testing | In this step the program will be tested using unit tests, usability testing, and acceptance testing to make sure the program is functioning as expected. | 3/22/2021 –  3/22/2021 |
| Deployment | Program is deployed to the user environment | The working program is now deployed to the customers computers, User manual, User maintenance manual | The program will be installed on all required computers and all the related documentation will be transferred to the customer. | 3/23/2021 –  3/24/2021 |