Sheet Metal Client Hub: Project Charter

Project Title: Sheet Metal Client Hub
Date: 01 April 2025
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Course: PDSWD7 PDA in Software Development Level 7, Fife College, Semester 1, 2024/25

Project Overview

The Sheet Metal Client Hub is a Python-based desktop application designed to streamline manual quoting processes for UK sheet metal fabricators. Utilising a Tkinter graphical user interface (GUI) and a Waterfall Software Development Life Cycle (SDLC), the application automates cost calculations for sheet metal parts based on material thickness (1, 1.2, 1.5, 2.5, 3 mm), lay-flat dimensions (50-3000 mm length, 50-1500 mm width), number of bends (0-20), and cutting requirements. The system supports 10 real-world work centres (cutting, bending, welding, deburring, assembly, inspection, surface treatment, machining, forming, fastening) with zero default rates, ensuring flexibility. Additional features include secure user authentication, file storage for user credentials and rates, and compatibility with STEP file formats for future integration. The project aims to deliver a functional prototype by 2 June 2025, meeting SCQF Level 7 requirements for the PDSWD7 course.

Project Objectives

- Develop a user-friendly Tkinter GUI for inputting part specifications, calculating costs, and managing settings.
- Implement cost calculations across 10 work centres, supporting custom rates and zero default rates.
- Ensure secure user authentication with username and password storage in data/users.txt.
- Store global rates in data/rates_global.txt and user-specific rates in data/rates_<username>.txt (excluded from version control).
- Produce comprehensive documentation, including Project Proposal, Development Plan, Project Charter, Design Document, Test Plan, and Test Logs.
- Create Visual Paradigm diagrams (Gantt chart, wireframes, UML: use case, sequence, class, DFD, ERD) to support the Design Document.
- Complete the project within the timeline of 1 April to 2 June 2025, adhering to Waterfall SDLC principles.

Project Scope

In-Scope:

1) Tkinter-based GUI with screens for login, part input, cost output, and settings.
2) Cost calculation logic for 10 work centres based on material, thickness, dimensions, bends, and cutting.
3) File I/O for user credentials, global rates, and output results.
4) Unit tests for calculator and GUI functionality.
5) Documentation and diagrams as listed in objectives.
6) GitHub repository management with regular commits and collaborator access.

Out-of-Scope:

1) Advanced STEP file integration (planned for future phases).
2) Mobile or web-based interfaces.
3) Real-time collaboration features.

Stakeholders

- Developer: Laurie Moffat (student, responsible for design, development, and documentation).

- Assessor: Jacqueline Bijster (Fife College lecturer, evaluates project deliverables).
- Fife College: Provides academic framework and assessment criteria.
- End Users: UK sheet metal fabricators (hypothetical, for project context).

Deliverables

Source Code:

1) src/main.py: Application entry point.
2) src/gui.py: GUI logic for login, part input, output, and settings.
3) src/calculator.py: Cost calculation logic.
4) src/file_handler.py: File I/O for user data and rates.
5) src/tests/: Unit tests (test_calculator.py, test_gui.py).

Documentation:

1) Project Proposal.
2) Project Charter.
3) Development Plan.
4) Design Documents (to include wireframes, UML diagrams etc.)
5) Test Plan.
6) Test Logs.
7) Diagrams: Gantt chart, wireframes, UML diagrams.

GitHub Repository: https://github.com/LJMoffat81/Sheet-Metal-Client-Hub

Timeline

- Planning: 1 April – 10 April 2025.
- Design: 11 April – 25 April 2025.
- Development: 26 April – 20 May 2025.
- Testing: 21 May – 31 May 2025.
- Implementation: 1 June – 2 June 2025.

Resources

- Hardware: Windows PC with Git Bash and Python 3.9.
- Software: Microsoft Word, Visual Paradigm (diagrams), Python 3.9 with Tkinter, Git Bash, GitHub.
- Support: Grok (AI assistance for refining documents and code), Fife College resources, Jacqueline Bijster (guidance).

Risks and Mitigations

1. Risk: Scope creep due to additional feature requests.
   Mitigation: Adhere strictly to the defined scope and review changes with stakeholders.
2. Risk: Schedule delays from unforeseen technical challenges.
   Mitigation: Allocate contingency time in each phase and monitor progress weekly.
3. Risk: Resource constraints (e.g., limited access to software or hardware).
   Mitigation: Use free tools (e.g., Visual Paradigm Community Edition) and Fife College resources.
4. Risk: Inadequate testing leading to undetected defects.
   Mitigation: Develop a comprehensive Test Plan and allocate sufficient testing time.

Approval

This Project Charter formalizes the Sheet Metal Client Hub project, authorizing its development from 1 April to 2 June 2025. Approval is sought from Jacqueline Bijster to proceed with the outlined scope and deliverables.