Group Project 2:

Inheritance, Polymorphism and data Structures

By

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**Abstract**

The purpose of this project is to work as a group to design a Design an application that allows a technician to issue a service ticket on equipment to be repaired. When the equipment is repaired, the system should issue a customer invoice. Students will be focusing on the learning objectives of encapsulation/abstraction, Inheritance, Polymorphism, Linked lists, stacks, queues or vectors and even an implementation of hash tables, Sorting, Data manipulation: Edit, add, delete, Menu driven application, File I/O. Moreover, students will demonstrate the understanding of how data is stored and retrieved from data structures and utilizing DevC++ projects.

**Introduction**

This assignment is a group Project with the following students in the group: Chelpal Newman, Chekinah Louise Wese Djeukou, Mareo Zaatra, and Joshua Minikon. This report will be based on the operation of a designing an application that allows a technician to issue a service ticket on equipment to be repaired. It will cover the group’s procedure which will include, design, errors, results, and analysis of our program. In addition, with a focus on the learning objectives of learning objectives of encapsulation/abstraction, Inheritance, Polymorphism, Linked lists, stacks, queues or vectors and even an implementation of hash tables, Sorting, Data manipulation: Edit, add, delete, Menu driven application, File I/O, while utilizing DevC++ projects. In addition, students will include various UML diagrams such as Class Diagram, Use Case Diagram, and Sequence Diagram, along with AGILE design approach procedures, and the Burndown Chart.

**Procedure/Methodology**

1. As a group we started the project off by creating the UML Diagrams for the project, starting with the Use Case, demonstrating the User’s interactions with the program, whether they be the Customer, the Banker, or the Administrator.

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1. After that, the UML Sequence Diagram was created, showing the process of the program as well as its features.
2. Following that, the UML Class Diagram was completed, which lays out the classes and functions in the program.
3. As a fresh program, we started this lab assignment as a DevC++ project, in order to organize and link our files together. From there, created the files “Customer.h, Customer.cpp, TechInvoiceSystem.cpp, (add the other files). The file “TechInvoiceSystem.cpp is the testing application which is the main program will execute the program.
4. First. we started with adding the function and variables in “Customer.h” file by adding “setName(), setID, setcarNumber, setcarModel”. Also, we added the get functions for the accessor.
5. In the implementation file we return the functions and set the strings.
6. Moreover, in the main file “TechInvoiceSystem.cpp” we created a menu that we display the choices for the customer. Once the menu was created, we started with the switch case by declaring the variables and the file name that we created.

**Results of the code working**

**Analysis**

**Conclusion**

**References**

Dale, N., Weems, C., & Richards, T. (2018). C++ Plus Data Structures (6th ed.). Burlington, MA: Jones & Bartlett Learning.