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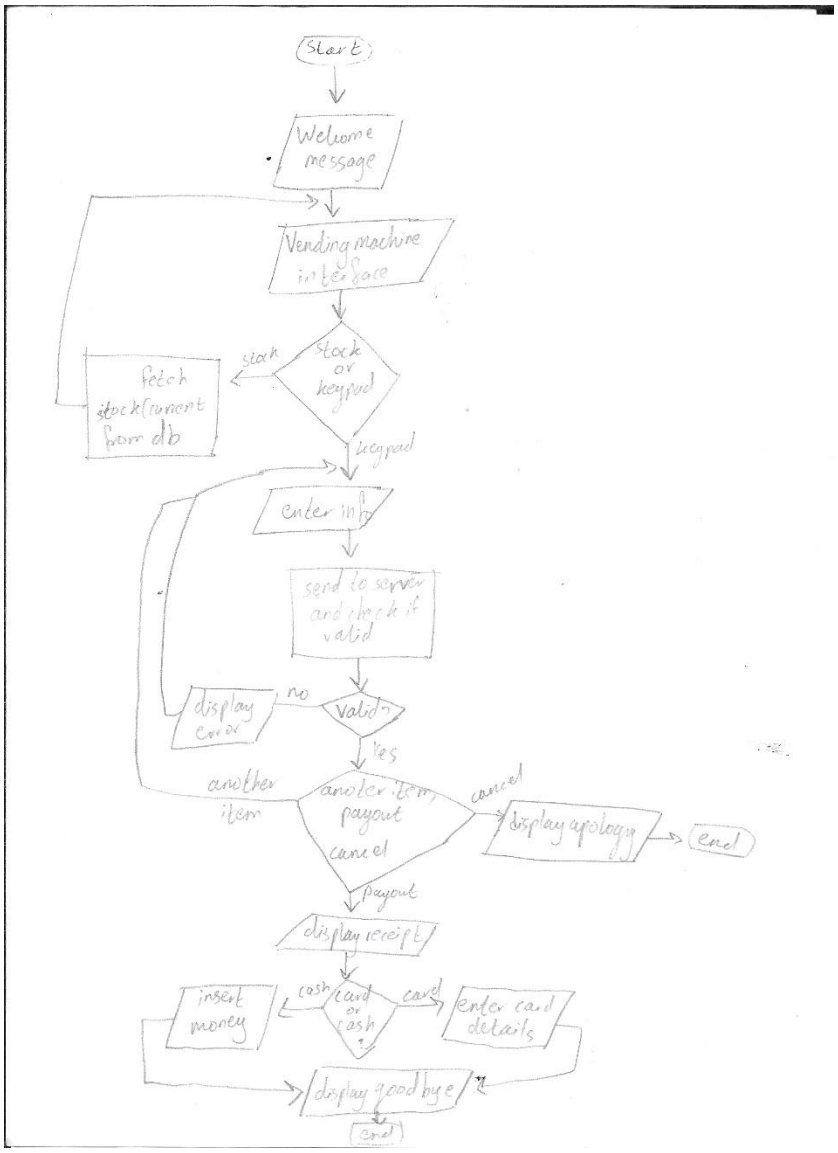
Introduction

A client and server system were used to create a vending machine in Python.

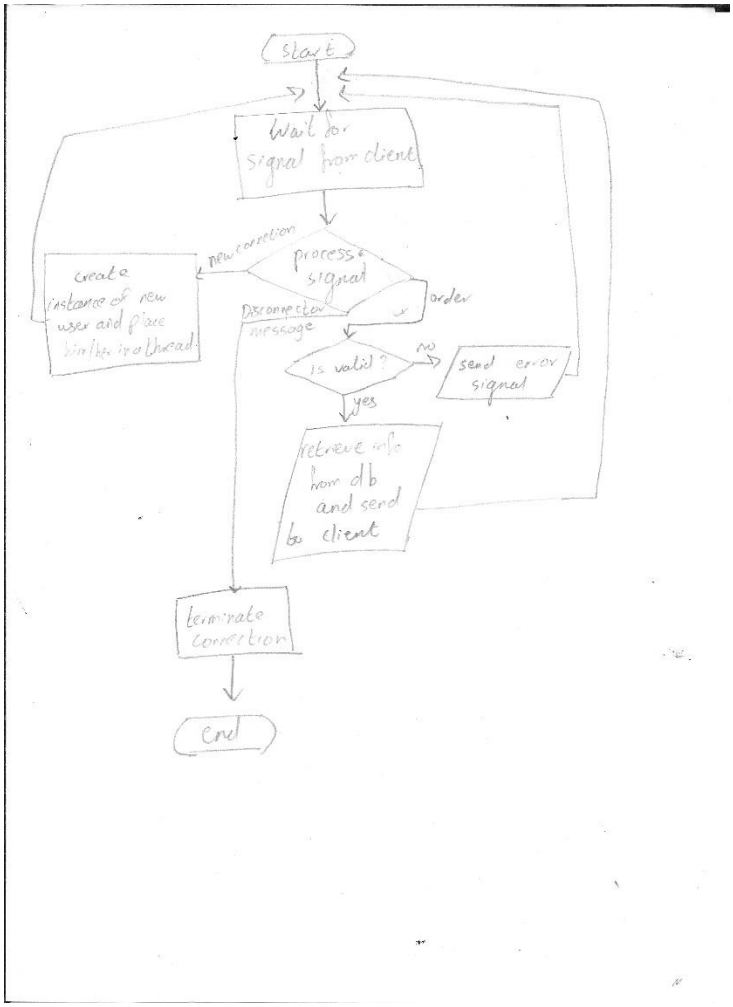
The vending machine is fully functional and is made up of a Graphical User Interface to allow for a user to intuitively interact with the system. Users can interact view stock or order multiple items at once.

This project was an attempt to emulate as accurately as possible a real vending machine.

Flow Charts



Client logic



Server logic

How to use

1. Run “myserver.py”
2. Run “myclient.py”
3. When using the keypad, the format is IDofItem#Quantity. i.e: 1#3 for 3 of item 1

Concepts used

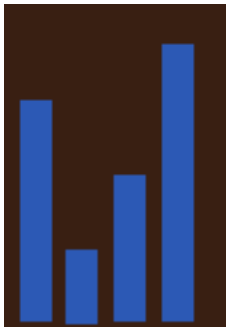
An attempt to implement most of what has been covered in CST1510 was made.

- Files
- Data structure (lists, dictionaries)
- Libraries (Matplotlib, pickle, socket, datetime)
- Classes
- Functions
- List comprehension
- Loops

<u>Additional technologies which have been used:</u>

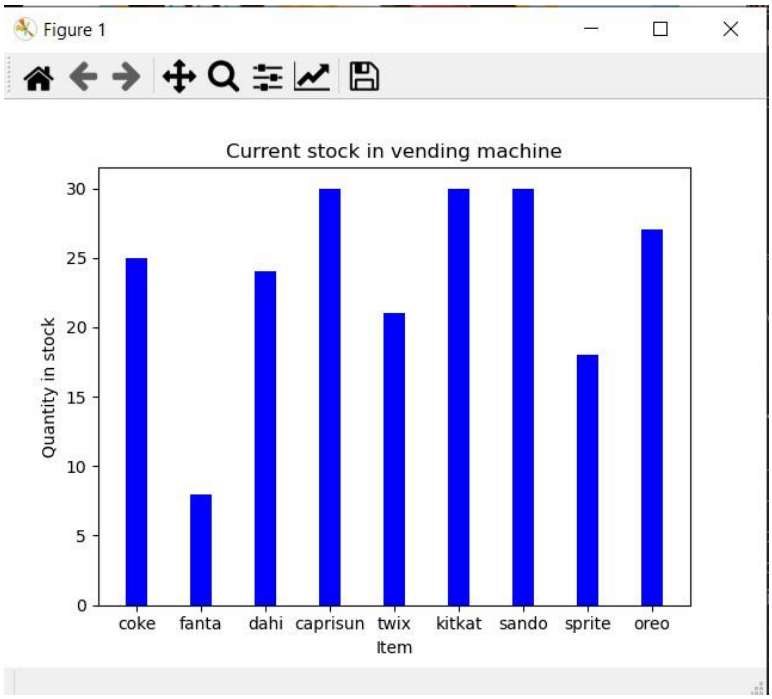
- MySQL database for stock using MySQL connector
- Threading module to allow multiple clients to connect to the server
- PyQT5 to create the GUI instead of Tkinter

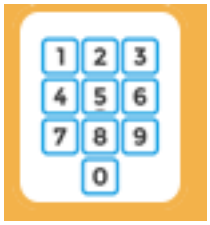
Features



Clicking on this icon will display the bar chart showing the current available quantity of each item.

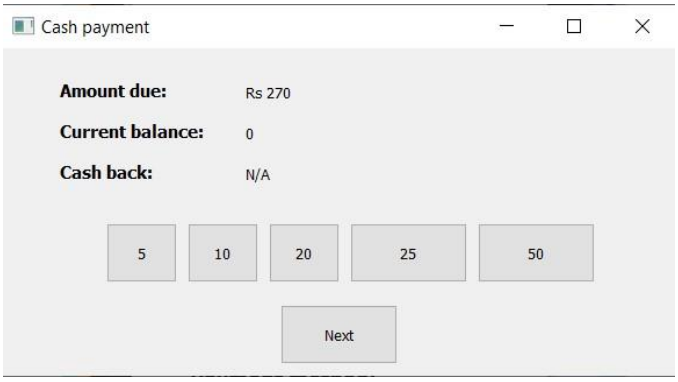
Bar chart displayed below



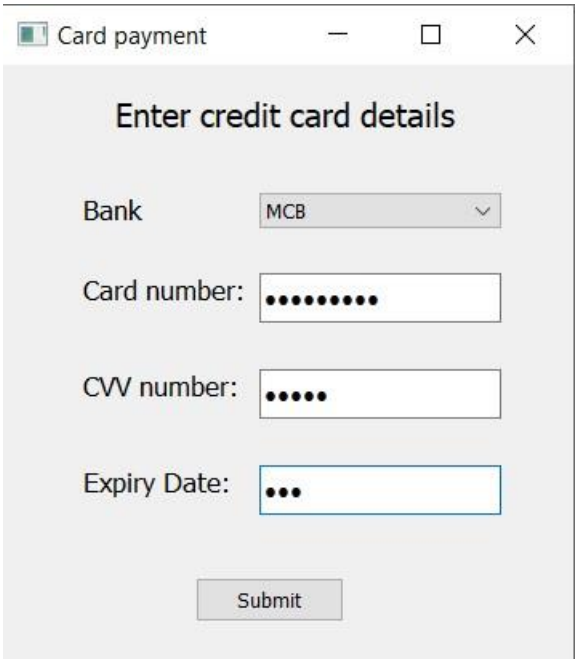


Clicking on this icon will open up the keypad, enabling the user to input his choice(s)

The display shows the name and associated id of each item available for the user to choose from

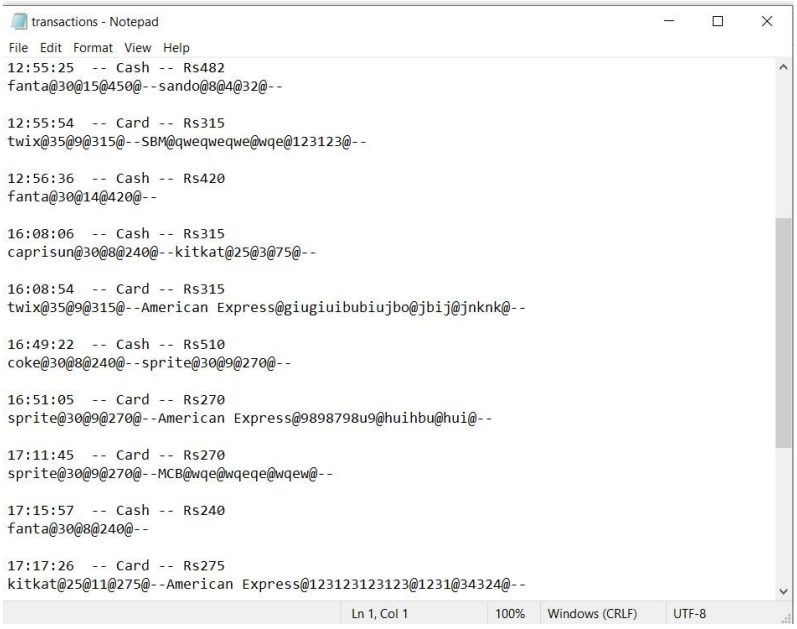


When choosing to pay via cash, each of the buttons will add the displayed amount to the tally.



Input your credentials

In order to restock the database, 5 '#' should be entered.



Each transaction is stored in the 'transactions.txt' file.

The method of payment as well as the user's credentials are stored.

Data is separated by @ for future retrievals

Challenges faced : Certain documentations of the technologies used were ambiguous or not concise therefore a lot of experimenting had to be done.

Improvements

Definite improvements concerning **UI**/UX can be made.

- More pleasing aesthetics/color scheme
- Better alignment of elements
- For the credit card payment, a button to reveal entered text could be implemented

A system to prevent race conditions (caused by multiple clients using the vending machine simultaneously) should be implemented.

An ‘Admin’ section to replace the items that are currently in the machine by others

References

1. *functools — Higher-order functions and operations on callable objects* (2021) Available at: https://docs.python.org/3/library/functools.html (Accessed: 16 March 2021).

2. *Qt for Python Tutorials* (2021) Available at: https://doc.qt.io/qtforpython/tutorials/index.html (Accessed: 14 March 2021).

3. *MySQL Connector/Python Developer Guide* (2021) Available at: https://dev.mysql.com/doc/connectors/en/connector-python.html (Accessed: 11 March 2021).