Fast Food Shop

Introduction

This project implements an online food purchase system from the restaurant. The system includes features such as registration, menu sorting, password hashing, and route finding between two locations.

Data items

This project uses two data files:

Discount.txt: contains a list of valid discount codes written in binary form.

Menu.txt: Contains a list of dishes with prices and waiting time for preparation. Each line of this file contains the information of a food as follows:

name, price, time to be ready

Spinach Salad - $7 - 4m

Margherita Pizza - $11 - 22m

Possible operations

1. Registration and login

The program first asks the user to sign up and then log in. The user's password is stored in a hashed form.

2. Show menu and order food

After entering, the food menu from the Menu.txt file will be shown to the user. The user can sort the menu by price (pyramid sorting) and order food. (The user can choose several dishes).

3. Use the discount code and choose to send by courier

After ordering food, the user can enter a discount code. If the discount code is valid, 10% discount will be deducted from the final amount. User can also choose to send by courier.

4. Show the courier route

After choosing to send by courier, the user enters the destination and the program shows the route of the courier to the destination.

Further Details

1. Password hashing

A method has been developed to hash the password by multiplying the position (index) of each character in its ASCII code and then subtracting that value. Example:

User password: AB25

hash = 65*1 - 1

hash = hash + 66*2 - 2

hash = hash + 50*3 - 3

hash = hash + 53*4 - 4

hash = 549

2. Sort by food price

Heap sort algorithm is used to sort the menu based on price.

3. Valid discount codes

Valid discount codes are located in the Discount.txt file, which is binary. By constructing a Huffman tree, these codes are converted into letters and a list of valid codes is created. If the user's discount code was in this list, 10% discount will be deducted from the final amount.

Construct a Huffman tree using the face table.

A	5
B	6
C	7
D	8
E	10
F	16

4. Graph modeling for the neighborhoods around the restaurant

The neighborhoods around the restaurant are modeled as a graph. The restaurant is located in node A and a route from the restaurant to the destination is displayed for the user. The graph is as follows: