Final Project Proposal

for INFO 6205 Program Structure and Algorithms

Laundry Shop System Management

Team: Laundry Spider
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Laundry Shop System Management

The summary of the project:

This system is a laundry order processing system. In the real world situation, sometimes the laundry shop might receive tons of varied orders in one day, and it is particularly challenging for the outdated laundry order system to process the orders in the right way. Our idea for solving these problems is to create a new efficient order processing system. The main functions of the system are receiving laundry orders from customers, processing the orders in order of priority, and placing the laundry in the washer, dryer, or ironing area according to the order requirements, setting the right features to handle certain orders. The target users are mainly the laundry shop staff. It is a good idea because we saw the troubles in the laundry shop when the staff found it hard to find our clothes (orders) or washed our clothes in the wrong way and caused the clothes to be in jeopardy.

The system will use bag ADT to track laundry orders, binary search trees to manage the sorting and search of laundry, and priority queues to prioritize orders. In addition, the system includes washing, drying, and ironing area management functions, as well as troubleshooting and statistical reporting. This system enhances order processing efficiency and service quality for staff, offering diverse options tailored to meet the individual needs of customers, ensuring customer satisfaction.

The topic will be covered:

- Tool: Java in IntelliJ Idea
- GUI: JAVA FX
- Related topic:
  1. Bag: To handle the orders.
  2. Binary search tree: To identify which laundry working slot is available.
  3. Lists: To rearrange which order is urgent and push it in the front.
  4. Tree: To determine which method fits clothes and give an available laundry working slot.
  5. Graph: To analyze the net revenue for a certain day. (data visualization)

The Design of the Project:

Customers would place a bunch of clothes into one order, they have the option to designate the order as urgent, which would prioritize it in the front of the queue. Upon receiving the order, the system separates the clothes based on their colors and materials into several groups, using a tree algorithm to determine the appropriate washing methods based on the features. Each group is then placed into a list, awaiting an available slot. Once all the clothes groups within the same order are processed, the order is considered completed. The staff could move on to work on the new upcoming order. With the graph to show, staff could see how much money they earn, it is just a plus function.

Project Schedule & Excepted Result:

- Week-based schedule
  1. W1 (3/24~3/30): Analysis of the structure, make interface for the project.
  2. W2 (3/31~4/06): Continue making the interface, create the backend, and connect to the interface.
  3. W3 (4/06~4/13): Debug the program, and test and check the project.
  4. W4 (4/13~4/17): Record a demo video and submit the final project.

- Excepted Result

1. Staff can enter detailed information about orders and manage the laundry working slot efficiently.
2. The system can classify the cloth variety efficiently.
3. The system can handle the emergent order.
4. The system can identify which working slot is available.
5. It is expected to reduce the time spent doing the laundry.
6. Customers can receive their clothes in the most efficient time.
7. Staff can analyze the graph of revenue.