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Homework 2 Question 8

Company X generally processes orders based on a first come, first serve basis. Sometimes a client will ask for rush processing and will be awarded a number based on the urgency. If they pay extra they will receive a 3 priority, if they have a bulk order they will receive a 2 priority, and if they know someone in the company and ask for a favor they will receive the highest priority, a 1. Design a system that accepts orders from clients and processes these orders based on no priority or somewhere on the priority scale. Show how the system will work for random orders with a random processing time.

Program Description:

The program includes three classes: queue, Order, and OrderProcessor. The Order class allows for the creation of Order objects that have several properties that determine its priority in the order processor. An order can have a priority of 1, 2, 3, or 4. An order with priority 1 is an order in which the customer has asked someone in the company for a favor. An order with priority 2 is an order in which there are at least 10 items. An order with priority 3 is an order where the customer has paid extra for faster shipping. An order with priority 4 is any order that does not meet the requirements for priority 1, 2, or 3, meaning that the customer has not asked for any favors, they have not paid for faster shipping, and they have placed an order with less than 10 items.

The OrderProcessor class has a function to create any number of orders with random properties. It uses four queues to store Orders based on their priority. OrderProcessor first processes orders

of priority 1, then 2, and so on with the last processed order being of priority 4. Orders get stored

into the proper queue and are processed on a first come first serve basis.

Here are sample outputs from the program:

```
*********Processing Orders*********
=====ORDER #1=====
Number of items: 8
Priorities:  favor   fast shipping
Priority: 1
========================
=====ORDER #2=====
Number of items: 7
Priorities:  favor   fast shipping
Priority: 1
========================
=====ORDER #3=====
Number of items: 12
Priorities:  favor   bulk order   fast shipping
Priority: 1
========================
=====ORDER #4=====
Number of items: 20
Priorities:  bulk order   fast shipping
Priority: 2
========================
=====ORDER #5=====
Number of items: 19
Priorities:  bulk order
Priority: 2
========================
*********5 orders processed*********
```

```
*********Processing Orders*********
=====ORDER #1=====
Number of items: 9
Priorities:  favor
Priority: 1
========================
=====ORDER #2=====
Number of items: 7
Priorities:  fast shipping
Priority: 3
========================
=====ORDER #3=====
Number of items: 5
Priorities:  fast shipping
Priority: 3
========================
=====ORDER #4=====
Number of items: 1
Priorities:
Priority: 4
========================
=====ORDER #5=====
Number of items: 2
Priorities:
Priority: 4
========================
*********5 orders processed*********
```