

ASSESSMENT #2: GROUP PROJECT
CSC248: FUNDAMENTALS OF DATA STRUCTURES
QUEUE DATA STRUCTURE

Deadline: 7th January 2022, 11:59PM

The question is designed to attain the followings:

Programme Learning Outcomes/Malaysian Qualification Framework:

PLO3 - *To display technical skills and tools in managing construction projects from inception to completion.*

Psychomotor:

P3 - *Guided Response*

Achievement of MOHE Learning Outcomes:

LO2 - *Practical Skills*

LO3 - *Critical Thinking Problem Solving and Scientific Skills*

LO5 - *Social skills, teamwork and responsibility*

REQUIREMENTS AND SPECIFICATIONS

1. Download the followings from the Google Classroom:

File Name	Description
a. <i>Cake.java</i>	<i>Cake.java</i> is a <i>Cake</i> ADT (<i>Cake</i> class definition). Students are to complete the <i>Cake</i> class definition based on the requirements and specifications in (2) below.
b. <i>MyAss2QApp.java</i>	<i>MyAss2App.java</i> is an application class. Students are to complete the application class based on the requirements and specifications of the questions in (3) below.
c. <i>Node.java</i>	<i>Node.java</i> is a <i>Node</i> ADT (<i>Node</i> class definition). The <i>LinkedList</i> class will be referred to <i>Node</i> class.
d. <i>LinkedList.java</i>	<i>LinkedList.java</i> is a <i>LinkedList</i> ADT (<i>LinkedList</i> class definition). The <i>Queue</i> class will inherit from <i>LinkedList</i> class
e. <i>Queue.java</i>	<i>Queue.java</i> is a <i>Queue</i> ADT (<i>Queue</i> class definition). The <i>Cake</i> objects will be stored in this <i>Queue</i> data structures.
f. <i>cakeOrder.txt</i>	<i>cakeOrder.txt</i> is the file that contains the <i>cake order</i> data that the students will be working on for this group project (Assessment #2). Refer to Table 1 below.

2. Complete the *Cake.java* class to do the following tasks:

- Write the retriever method for *custID*, *cakeType* and *qty* attributes.
- Write the **detPrice()** method that will return the price of cake based on *cakeType*. Given the price of cake for each cake type as follow:

Cake Type	Price (RM)
D24 Chocolate Cake	120.00
Red Velvet	80.00
Burnt Cheese Cake	100.00

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Black Forest	80.00
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Write the **toString** method that will return the output looks like as below:

Customer ID: XXXX Cake Type: XXXXXXXX Price: RM XX.XX Quantity: XX

-The price value will be retrieved from the *detPrice()* method at **b)**

3. Complete the **main()** method in application class to do the following tasks:
- Read the records from '**cakeOrder.txt**' text file (as shown in Table 1).
 - For each record retrieved from '**cakeOrder.txt**', instantiate an object of the '**cakeOrder**' to store each of the records.
 - For each instance of the **cakeOrder**, store it into a **queue** data structure named **cakeQ**.
 - Display all the **cakeOrder** data from the list (as shown in Table 2). Please make sure you store the data that remove from **cakeQ** into **tempQ**.
 - The first character of **custID** is based on the delivery type. if the first character is '**P**' means the customer chooses to pick up the cake and if the first character is '**D**', the customer chooses to have delivery service. The examples of custID are P002, D112, etc. Write the data for delivery into **delivery.txt** output file and the data for customer that chooses self-pick up into **pickup.txt**. The content of these output file as shown in Table 3 (delivery.txt) and Table 4 (pickup.txt).
 - Display the total quantity order for each cake type and display the cake name of the highest total order. The sample output as shown in Table 5.
 - Display the receipt that will display the **custID**, **cakeType**, **price** (using **detPrice()** method), **qty**, **payment** for each order. In order to calculate the payment for each order you need to multiply quantity with the cake price, and it is an extra charge of RM 5.00 for delivery service. Lastly, display the total payment for all the orders. The sample output as shown in Table 6.
4. Upload a complete answer ('**MyAss2App.java**') to the link given by your lecturer.
- P.S. Students should not change or add anything on the definition of **Node** ADT, **LinkedList** ADT and **Queue** ADT. The definition of these ADTs is enough and perfect for the students to work on the application class.*

Table 1: cakeOrder.txt (question a)

D001*Red Velvet*2
D003*D24 Chocolate Cake*1
P111*D24 Chocolate Cake*1
D012*Burnt Cheese Cake*3
P113*Red Velvet*3
D005*Burnt Cheese Cake*1
P123*D24 Chocolate Cake*3
P118*Burnt Cheese Cake*1
D009*Black Forest*2
D002*D24 Chocolate Cake*1
P115*Red Velvet*4

Data in Table 1 depicts the customer ID, cake type and quantity

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Table 2: List of order from cakeQ (question d)

Customer ID:D001	Cake Type:Red Velvet	Price:RM 80.00	Quantity:2
Customer ID:D003	Cake Type:D24 Chocolate Cake	Price:RM 20.00	Quantity:1
Customer ID:P111	Cake Type:D24 Chocolate Cake	Price:RM 120.00	Quantity:1
Customer ID:D012	Cake Type:Burnt Cheese Cake	Price:RM 100.00	Quantity:3
Customer ID:P113	Cake Type:Red Velvet	Price:RM 80.00	Quantity:3
Customer ID:D005	Cake Type:Burnt Cheese Cake	Price:RM 100.00	Quantity:1
Customer ID:P123	Cake Type:D24 Chocolate Cake	Price:RM 120.00	Quantity:3
Customer ID:P118	Cake Type:Burnt Cheese Cake	Price:RM 100.00	Quantity:1
Customer ID:D009	Cake Type:Black Forest	Price:RM 80.00	Quantity:2
Customer ID:D002	Cake Type:D24 Chocolate Cake	Price:RM 120.00	Quantity:1
Customer ID:P115	Cake Type:Red Velvet	Price: RM 80.00	Quantity:4

Table 3: Content in the delivery.txt (question e)

Data for delivery:			
1)Customer ID:D001	Cake Type:Red Velvet	Price: RM 80.00	Quantity:2
2)Customer ID:D003	Cake Type:D24 Chocolate Cake	Price: RM 120.00	Quantity:1
3)Customer ID:D012	Cake Type:Burnt Cheese Cake	Price: RM 100.00	Quantity:3
4)Customer ID:D005	Cake Type:Burnt Cheese Cake	Price: RM 100.00	Quantity:1
5)Customer ID:D009	Cake Type:Black Forest	Price: RM 80.00	Quantity:2
6)Customer ID:D002	Cake Type:D24 Chocolate Cake	Price: RM 120.00	Quantity:1

Table 4: Content in the pickup.txt (question e)

Data for self-pick-up:			
1)Customer ID:P111	Cake Type:D24 Chocolate Cake	Price: RM 120.00	Quantity:1
2)Customer ID:P113	Cake Type:Red Velvet	Price: RM 80.00	Quantity:3
3)Customer ID:P123	Cake Type:D24 Chocolate Cake	Price: RM 120.00	Quantity:3
4)Customer ID:P118	Cake Type:Burnt Cheese Cake	Price: RM 100.00	Quantity:1
5)Customer ID:P115	Cake Type:Red Velvet	Price: RM 80.00	Quantity:4

Table 5: Sample output (question f)

Total quantity of D24 Chocolate Cake:6
Total quantity of Red Velvet Cake:9
Total quantity of Burnt Cheese Cake:5
Total quantity of Black Forest Cake:2
Highest total order is 9 for Red Velvet

Table 6: Sample output (question g)

+++++
Customer no 1
+++++
Customer ID:D001
Cake Name:Red Velvet
Price: RM 80.00
Quantity:2
Delivery/Self Pick-Up:Delivery
Payment: RM 160.00

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```
+++++
Customer no 2
+++++
Customer ID:D003
Cake Name:D24 Chocolate Cake
Price: RM 120.00
Quantity:1
Delivery/Self Pick-Up:Delivery
Payment: RM 120.00
      :
      :
      :
+++++
Customer no 11
+++++
Customer ID:P115
Cake Name:Red Velvet
Price: RM 80.00
Quantity:4
Delivery/Self Pick-Up:Self Pick-Up
Payment: RM 320.00

Total payment: RM 2130.00
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REPORTS OF GROUP PROJECT (20%)

SCORING RUBRIC

No.	Name	Student ID	Mark
1	CHE WAN NUR SAFIYYA BALQIS	2020610304	<div>30</div>
2	MUHAMMAD AZRI BIN MOKHZANI	2020836218	
3	MUHAMMAD AIRUL HAFIQ BIN MUHAMMAD AINI @ AHMAD	2020487774	
4	LUQMAN SYAKIR BIN YAHYA	2020893248	
Group : CS1103E			
Project Title : Secret Recipe Interactive GUI			

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Attribute	Attribute	1 - Very weak	2 - Weak	3 - Fair	4 - Good	5 - Very good
Problem Solving	Understanding DS Understands the Problem and Requirements	Student's work shows incomplete understanding of problem and/or requirements	Student's work shows slight understanding of problem and requirements	Student's work shows understanding of problem and most requirements	Student's work shows complete understanding of problem and all requirements	Student recognizes potential conflicts between requirements and seeks clarification from client/user
	Algorithm Uses Appropriate Algorithms	Student 'hacks out' program with no thought to algorithm design	Student chooses/ designs algorithm(s) that are incorrect	Student chooses/ designs algorithm(s) that is/are correct but somewhat inefficient	Student chooses/ designs efficient algorithm(s)	Student research trade-offs between different algorithms & implements the results of this research
	Select DS Uses Appropriate Data Structures	No use of ADTs (aggregate data types/structures)	Use of ADTs; but are none are appropriate for task	Use of ADTs; but some are not most appropriate for task	Use of ADTs; all are appropriate for task	Uses advanced ADTs that improves program performance
Learning Skills	Design Designs Appropriate User Interface	Implements very poor I/O functionality	Only implements basic I/O functionality	Some concepts of 'user-friendly' I/O used	Uses well-designed 'user-friendly' I/O interface appropriate for task and client	'User-friendly' I/O interface with GUI components
	Testing Tests Program for Correctness	No evidence of any testing by student	Evidence of only one case tested	Evidence of a few cases tested	Evidence of "typical cases tested, but only assuming valid inputs	'Robust design' with extensive testing.
	Documentation Documents Program	Absolutely no documentation other than name.	Little or no documentation; few or no internal comments	Some documentation, but sparse internal comments	Complete documentation with numerous internal comments	Thorough documentation;

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PRESENTATION (10%)

SCORING RUBRIC

No.	Name	Student ID	Mark
1	CHE WAN NUR SAFIYYA BALQIS	2020610304	
2	MUHAMMAD AZRI BIN MOKHZANI	2020836218	
3	MUHAMMAD AIRUL HAFIQ BIN MUHAMMAD AINI @ AHMAD	2020487774	
4	LUQMAN SYAKIR BIN YAHYA	2020893248	
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Attribute	Sub-attribute	1 - Very weak	2 - Weak	3 - Fair	4 - Good	5 - Very good
Verbal Communication	Clear delivery of ideas (content)	Not able to deliver ideas clearly and require major improvements	Able to deliver ideas and require further improvements	Able to deliver ideas fairly clearly and require minor improvements	Able to deliver ideas clearly	Able to deliver ideas with great clarity
	Confident and articulate delivery of ideas (Communicative ability)	Not able to deliver idea confidently and articulate	Able to deliver ideas with limited confidence and effect and require further improvements	Able to deliver ideas fairly confidently and effectively and require minor improvements	Able to deliver ideas confidently effectively and articulately	Able to deliver ideas with great confidence, effect and articulately
	Understand and respond to questions	Not able to understand and respond to a question	Able to understand and answer questions but not able to accurately answer the question	Able to understand and answer questions satisfactorily	Able to respond to questions well	Able to fully understand and respond to questions very well
Written Communication	Clarity and accuracy written academic discourse (Content)	Not able to write ideas with limited clarity and accuracy	Able to write ideas with limited clarity and accuracy	Able to write ideas fairly clearly and accuracy	Able to write ideas clearly and accuracy	Able to write ideas with excellent clarity and accuracy
	Coherently written academic discourse (Communicative ability)	Not able to write ideas coherently	Able to write ideas with limited coherence and require	Able to write ideas fairly coherently but require minor improvements	Able to write ideas coherently	Able to write ideas with excellent coherence

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	Systematically written academic discourse (Technicality)	Not able to write ideas systematically	Able to write ideas fairly systematically but require minor improvements	Able to write ideas fairly systematically but require minor improvements	Able to write ideas systematically	Excellent ability to write ideas systematically
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