



UNIVERSITY OF LAGOS
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
B.Sc. (Hon.) Computer Engineering Degree Examinations
First Semester Test 2024/2025 Session
CPE 415/405: Computer Programming Languages

Instructions:

- **Time Allowed: 1 Hour 30 Minutes Attempt all questions**
- **Create a new project with the format: MatricNo_CPE415_QNumber and save all your source and header files into the appropriate folders.**
- **When you complete a question, zip the project folder and upload it to the server.**
- **Use only Visual Studio 2010 unless otherwise stated.**
- **Use multi-file technique.**

QUESTION 1

Write a complete C++ program that implements a receipt for YemYem Ltd using a LinkedList data structure which contains entries called Node. A Node has subentries: customerName, customerPhoneNo, productName, productUnitPrice, productQuantity, totalPrice.

When you enter a new item on the LinkedList, you allocate the new node and then set the pointers to the previous and next nodes. The totalPrice is the product of productUnitPrice and productQuantity.

The node structure definition in C++ has the form shown in Fig. Q1.

Copy and complete the structure by initializing the variables within the node structure appropriately and noting that the stored values of the LinkedList are provided by the user when you create a new node. Given that the public member functions of the LinkedList class are LinkedList(), ~LinkedList(), appendNode(), displayNodes(), destroyList().

Define completely the

- (a) implementations of the member functions of the LinkedList class LinkedList(), ~LinkedList(), appendNode(), displayNodes(), destroyList() and its private data members in addition to the ones provided in Fig Q1.
- (b) Write a main function as given in Table Q1 that displays the results on the screen as shown in Fig Q2.

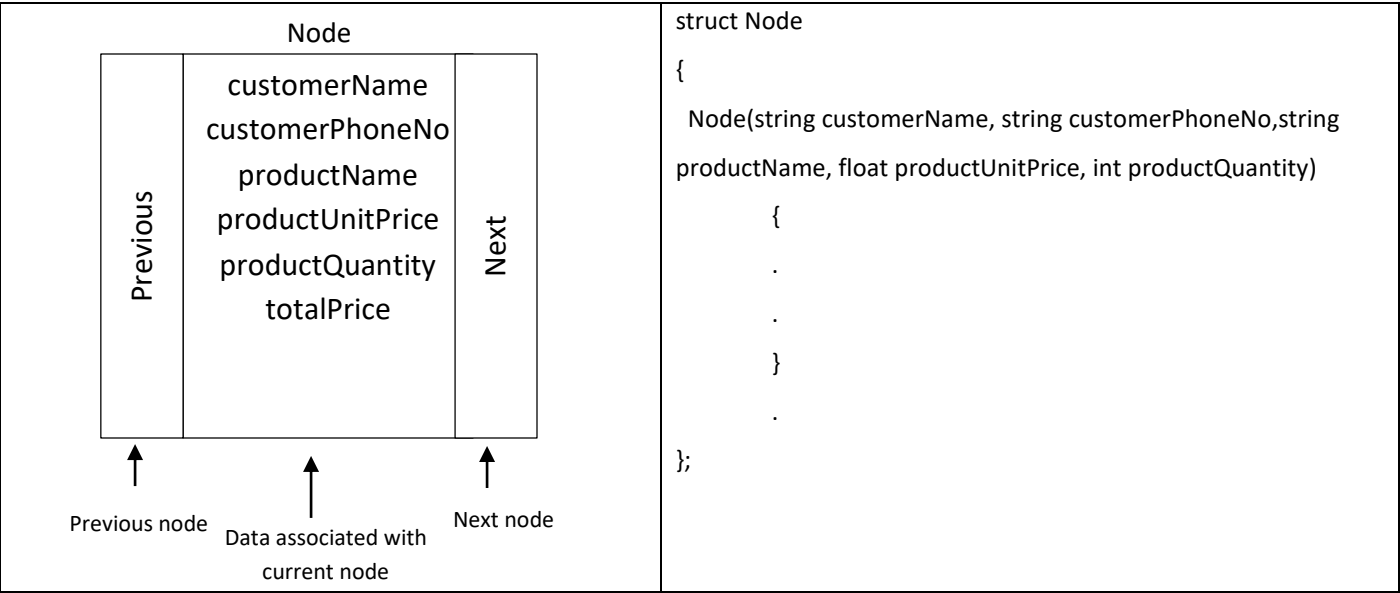


Fig. Q1

```
void main()
{
    LinkedList * list = new LinkedList();
    list->appendNode("Adenola Adeniyi", "08062701569", "Chocolate", 500, 2);
    list->appendNode("Bukola Adenola ", "08035114392", "Bournvita", 6200, 3);
    list->displayNodes();
    delete list;
    system("pause");
}
```

Table Q1

Yem Yem Ltd
University of Lagos, Akoka

Customer Adenola Adeniyi
Phone Number 08062701569

Your Order

Product Name	UnitPrice	Quantity Ordered
Chocolate	500	2

Total Price 1000

Thanks for your patronage

Fig Q2

QUESTION 2

Write a complete C++ program using **stack** which can be used to reverse and string of characters. The private access specifier section has attributes **size, top and values**. The character strings are placed on the stack by a push method and the pop method is used to reverse the string. Always check if the stack isfull or isempty.