Assignment 1

Data Structure

Submission deadline: Thursday 18 Nov 2021 11:59 pm

Q1: Suppose that we have a linked list (2 marks)

1. Write a function in C++ to travers and display the value of each node in the linked list?

```cpp
Void displayList(void)
 {
   Node *curr;
   curr = head;
   while (curr!=NULL)
{
     cout << curr->data << endl;
     curr = curr->next;
   }
}
```

1. Write a function in C++ to inserts a new node in the middle of a linkedlist, considering the order of the values in the node?

```cpp
Void insertNode(float value)
{

Node *newNode, *curr, *previous;
// Allocate a new node & store Num
   newNode = new Node();
   newNode->data = value;
 // If there are no nodes in the list // make newNode the first node
   if (head==NULL)
```

```
        {
    head = newNode;
        newNode->next = NULL;
        }
        else// Otherwise, insert newNode
    .   {
        curr = head;

        // Skip all nodes whose value member is less than value.
        while (curr != NULL && curr->data < value)
            {
        previous = curr;    curr = curr->next;
        }

        // If the new mode is to be the 1st in the list, // insert it
        before all other nodes. if (previous == NULL)
        {
        head = newNode;
            newNode->next = curr;
        }
         else
         {
        previous->next = newNode;
            newNode->next = curr;

        }
        }
        }
```

Q2: Assume that we have the following 10-elements array called A (2,5 marks):

A

2	4	0	9	6	0	0	3	5	1

Write a code to declare A, then calculate and print the number of elements equal to zero (0)?

```
Int main()
{
Int a [10] = {2,4,0,9,6,0,0,3,5,1};
Int count=0;
```

```
For (int i=0;i++)
{
if(a[i]= =0)
cout<<"The number zeros:"<<count;
}
```

Q3: what are the outputs of the following fragments of code (3 marks)::

1.

```
int a=10;
int *P=&a;
int
**q=Null;
q=&p;
cout << *p
<<end1;10
 cout <<
**q<<end1;10
```

```
int a[5]=[-3,6,3,-2,5],*P;
pt=a;
*pt=3;
 cout<<a[0]<<end1; 3
a[1]+=*pt;
cout<<a[1]<<end1: 9
pt=pt+3;
 cout<<*pt<<end1;-2
*pt+=a[4];
cout<<a[3]<<end1;3
```

.2

Q4: To create an E-commerce website, we need to choose the best data structure which can arrange products purchased by consumer and design in the best way shopping cart solution (2.5 marks):

Let suppose the information for each products contains <u>code, name,</u> and <u>price</u>

1. Which data structure is suitable to use to declare product? Struct product
2. Write C++ statements allowing <u>to declare product</u> using the selected datastructure?

```
{
Int code;
String nama:
Double price;
};
```

3. Write C++ statements allowing to declare shopping cart containing <u>20 products</u>?

```
Int main()
{
product p1;
Product shopping_cart[20];
}
```

Good luck ☺

<u>Important Note</u>: It is highly recommended that you try this assignment yourself.Original work will be appreciated whereas plagiarized one will not be entertained.