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Course: DSA

Lab tasks

INSERTION AT START AND END

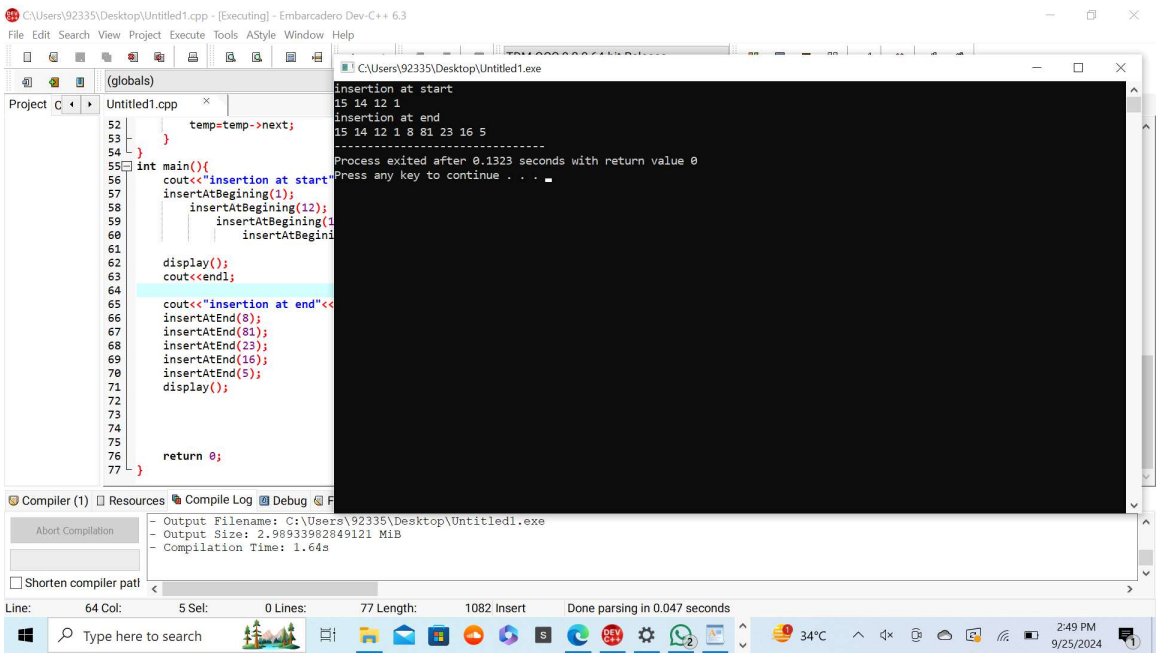
```
#include<iostream>

using namespace std;


    struct Node{

        int data;

      Node *next;

          Node *prev;

       };

  Node *head=NULL;
```

```
void insertAtBegining(int n){
    Node *newnode=new Node;
    newnode->data=n;
    newnode->next=head;
    newnode->prev=NULL;

    if(head!=NULL)
    {
    head->prev=newnode;
    }
    head=newnode;
    }

void insertAtEnd(int n)
    {
    Node *newnode=new Node;
    newnode->data=n;
    newnode->next=NULL;
    newnode->prev=NULL;

    if(head==NULL)
    {
    head=newnode;
```

```
        return;
    }

    Node *temp=head;
    while(temp->next!=NULL)
    {
        temp=temp->next;
    }
    temp->next=newnode;
    newnode->prev=temp;
}

void display(){

    Node *temp=head;
    while(temp!=NULL){
        cout<<temp->data<<" ";
        temp=temp->next;
    }
}
int main(){
cout<<"insertion at start"<<endl;
    insertAtBegining(1);
    insertAtBegining(12);
```

```
insertAtBegining(14);
insertAtBegining(15);

display();
cout<<endl;

cout<<"insertion at end"<<endl;
insertAtEnd(8);
insertAtEnd(81);
insertAtEnd(23);
insertAtEnd(16);
insertAtEnd(5);
display();

return 0;
}
```

OUTPUT:



DELETION AT START AND END

```
#include <iostream>

using namespace std;


struct Node {

int data;

Node* next;

Node* prev;

};


Node* head = NULL;
```

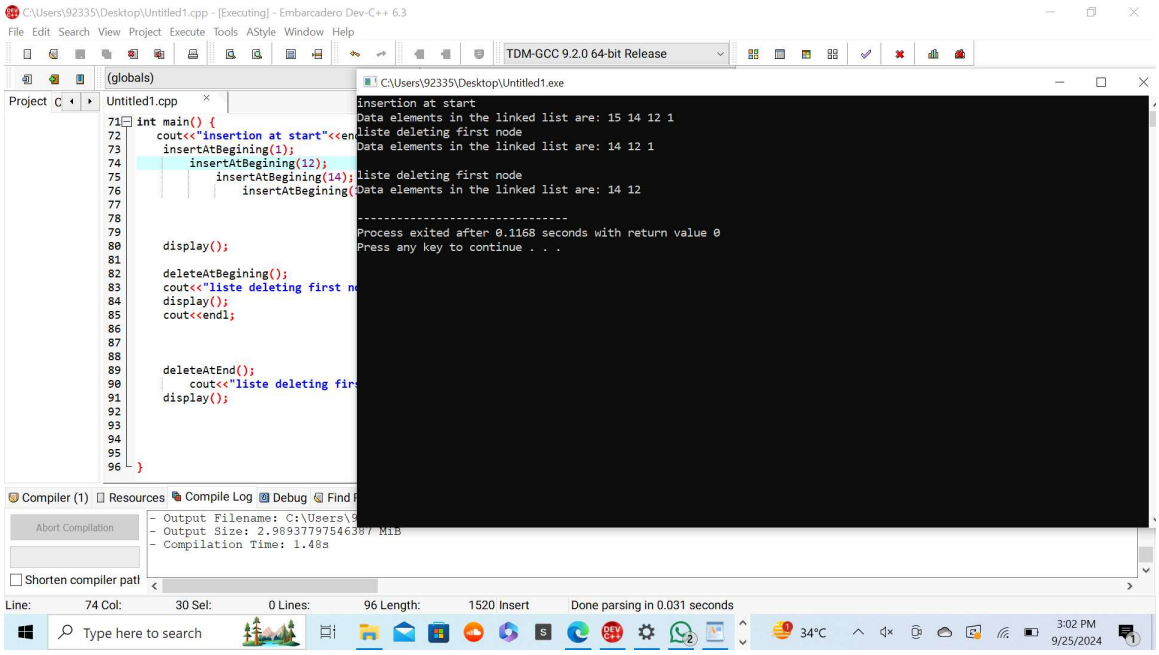
```
void insertAtBegining(int n) {
 Node* newnode = new Node;
        newnode->data = n;
      newnode->next = head;
      newnode->prev = NULL;

          if (head != NULL) {
       head->prev = newnode;
                }
          head = newnode;
                }

  void deleteAtBegining() {
          if (head == NULL) {
 cout << "List is empty." << endl;
                return;
                }
        Node* temp = head;
        head = head->next;

          if (head != NULL) {
         head->prev = NULL;
                }
```

```
delete temp;
}

void deleteAtEnd() {
if (head == NULL) {
cout << "List is empty." << endl;
return;
}
Node *temp=head;
while(temp->next!=NULL)
{
temp=temp->next;
}
if(temp->prev!=NULL)
{
temp->prev->next=NULL;
return;
}

head=NULL;

delete temp;

}
```

```
void display() {
cout << "Data elements in the linked list are: ";
Node* temp = head;
while (temp != NULL) {
cout << temp->data << " ";
temp = temp->next;
}
cout << endl;
}

int main() {
cout<<"insertion at start"<<endl;
insertAtBegining(1);
insertAtBegining(12);
insertAtBegining(14);
insertAtBegining(15);

display();

deleteAtBegining();
```

```
cout<<"liste deleting first node"<<endl;

display();

cout<<endl;



deleteAtEnd();

cout<<"liste deleting first node"<<endl;

display();



}
```

OUTPUT:


C:\Users\92335\Desktop\Untitled1.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 9.2.0 64-bit Release
(globals)
Project
Untitled1.cpp
71 int main() {
72 cout<<"insertion at start"<<en
73 insertAtBegining(1);
74 insertAtBegining(12);
75 insertAtBegining(14);
76 insertAtBegining(
77
78
79
80 display();
81
82 deleteAtBegining();
83 cout<<"liste deleting first n
84 display();
85 cout<<endl;
86
87
88
89 deleteAtEnd();
90 cout<<"liste deleting fir
91 display();
92
93
94
95
96 }
C:\Users\92335\Desktop\Untitled1.exe
insertion at start
Data elements in the linked list are: 15 14 12 1
liste deleting first node
Data elements in the linked list are: 14 12 1
liste deleting first node
Data elements in the linked list are: 14 12
Process exited after 0.1168 seconds with return value 0
Press any key to continue . . .
Compiler (1) Resources Compile Log Debug Find
Abort Compilation
- Output Filename: C:\Users\9
- Output Size: 2.98937797546387 MiB
- Compilation Time: 1.48s
Shorten compiler path
Line: 74 Col: 30 Sel: 0 Lines: 96 Length: 1520 Insert Done parsing in 0.031 seconds
Type here to search
34°C
3:02 PM
9/25/2024