|  |
| --- |
| #include<stdio.h> |
|  |  |
|  | using namespace std; |
|  |  |
|  | int a = 0; |
|  |  |
|  | struct node |
|  | { |
|  | node \*next, \*prev, \*top; |
|  | int info; |
|  | }\*head = NULL, \*tail = NULL, \*p = NULL, \*r = NULL, \*np = NULL, \*q = NULL; |
|  |  |
|  | void create(int z) |
|  | { |
|  | np = new node; |
|  | np->info = z; |
|  | np->next = NULL; |
|  | np->prev = NULL; |
|  | np->top = NULL; |
|  | if (a == 0) |
|  | { |
|  | tail = np; |
|  | head = np; |
|  | p = head; |
|  | p->next = NULL; |
|  | p->prev = NULL; |
|  | p->top = NULL; |
|  | a++; |
|  | } |
|  | else |
|  | { |
|  | p = head; |
|  | r = p; |
|  | if (np->info < p->info) |
|  | { |
|  | np->next = p; |
|  | p->prev = np; |
|  | np->prev = NULL; |
|  | head = np; |
|  | p = head; |
|  | do |
|  | { |
|  | p = p->next; |
|  | } |
|  | while (p->next != NULL); |
|  | tail = p; |
|  | } |
|  | else if (np->info > p->info) |
|  | { |
|  | while (p != NULL && np->info > p->info) |
|  | { |
|  | r = p; |
|  | p = p->next; |
|  | if (p == NULL) |
|  | { |
|  | r->next = np; |
|  | np->prev = r; |
|  | np->next = NULL; |
|  | tail = np; |
|  | break; |
|  | } |
|  | else if (np->info <= p->info) |
|  | { |
|  | if (np->info < p->info) |
|  | { |
|  | r->next = np; |
|  | np->prev = r; |
|  | np->next = p; |
|  | p->prev = np; |
|  | if (p->next != NULL) |
|  | { |
|  | do |
|  | { |
|  | p = p->next; |
|  | } |
|  | while (p->next !=NULL); |
|  | } |
|  | tail = p; |
|  | break; |
|  | } |
|  | else if (p->info == np->info) |
|  | { |
|  | q = p; |
|  | while (q->top != NULL) |
|  | { |
|  | q = q->top; |
|  | } |
|  | q->top = np; |
|  | np->top = NULL; |
|  | break; |
|  | } |
|  | } |
|  | } |
|  | } |
|  | } |
|  | } |
|  |  |
|  | void traverse\_tail() |
|  | { |
|  | node \*t = tail; |
|  |  |
|  | while (t != NULL) |
|  | { |
|  | cout<<t->info<<"\t"; |
|  | q = t; |
|  | while (q->top != NULL) |
|  | { |
|  | q = q->top; |
|  | cout<<"top->"<<q->info<<"\t"; |
|  | } |
|  | t = t->prev; |
|  | } |
|  | cout<<endl<<endl; |
|  | } |
|  |  |
|  | void traverse\_head() |
|  | { |
|  | node \*t = head; |
|  | while (t != NULL) |
|  | { |
|  | cout<<t->info<<"\t"; |
|  | q = t; |
|  | while (q->top != NULL) |
|  | { |
|  | q = q->top; |
|  | cout<<"top->"<<q->info<<"\t"; |
|  | } |
|  | t = t->next; |
|  | } |
|  | cout<<endl<<endl; |
|  | } |
|  |  |
|  | int main() |
|  | { |
|  | int c = 0, no, value, ch; |
|  | cout<<"Please enter the number of nodes: "<<endl; |
|  | cin>>no; |
|  | while (c < no) |
|  | { |
|  | cout<<endl<<"Enter the value of node: "<<endl; |
|  | cin>>value; |
|  | create(value); |
|  | c++; |
|  | } |
|  | cout<<endl<<"Traversing Doubly Linked List head: "<<endl; |
|  | traverse\_head(); |
|  |  |
|  | cout<<endl<<"Traversing Doubly Linked List tail: "<<endl; |
|  | traverse\_tail(); |
|  |  |
|  | } |