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// Online C++ compiler to run C++ program online
#include <iostream>
using namespace std;

class Node{
public:
    int data;
    Node*next;

//constructor
Node(int data){
    this->data=data;
    this->next=NULL;
}

//destructor
~Node(){
    int value=this->data;
    if(this->next!=NULL){
        delete next;
        this->next=NULL;
    }
    cout<<"roll number "<<value<<" is deleted"<<endl;
}
};

void insertathead(Node*&head,int d){
    cout<<" roll number "<<d<<" is added at head"<<endl;

    Node*temp=new Node(d);
    temp->next=head;
    head=temp;//temp->next
}

void insertattail(Node*&tail,int d){
    cout<<" roll number "<<d<<" is added at tail"<<endl;
    Node*temp=new Node(d);
    tail->next=temp;
    tail=temp;//temp->next
}

void display(Node*&head){
    Node*temp=head;
    cout<<"your roll numbers are -> ";

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while(temp!=NULL){
    cout<<temp->data<<" ";
    temp=temp->next;
}
cout<<endl;
}

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void insertatposition(Node*&tail,Node*&head,int position,int d){
    //inset at head
    if(position==1){
        insertathead(head,d);
        return;
    }

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Node*temp=head;
int cnt=1;
if(cnt<position-1){
    temp=temp->next;
    cnt++;
}

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//insert at end
if(temp->next==NULL){
    insertattail(tail,d);
    return;
}

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//inertat middle
cout<<" roll number "<<d<<" is added at position " <<position<<endl;
Node*nodetoinsert=new Node(d);
nodetoinsert->next=temp->next;
temp->next=nodetoinsert;
}

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void deletenode(Node*&tail,Node*&head,int position){
    //delete at bigining
    if(position==1){
        Node*temp=head;
        head=head->next;
        temp->next=NULL;
        delete temp;
    }
    else{
        //delete at middle and end

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Node*curr=head;
Node*prev=NULL;
int cnt=1;
while(cnt<position){
    prev=curr;
    curr=curr->next;
    cnt++;
}
if(curr->next==NULL){
    tail=prev;
}
prev->next=curr->next;
curr->next=NULL;
delete curr;

}
}

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int main() {
    Node*node1=new Node(10);
    Node*head=node1;
    Node*tail=node1;
    insertathead(head,2);
    insertathead(head,1);
    insertatposition(tail,head,3,3);
    insertattail(tail,4);
    deletenode(tail,head,2);
    display(head);
}

```