

4. Suppose a struct is defined as:

```
struct NODE {
    int i; //Data
    Node* int; //Pointer to next node
}
```

Write a function `insert(NODE* p, int pos)` that inserts the NODE pointed to by p at the position pos in the list. (Note: pos=0 means insert at the beginning, pos=1 means insert after the first item, pos=4 means insert after the Node that is currently fourth from the beginning.)

```

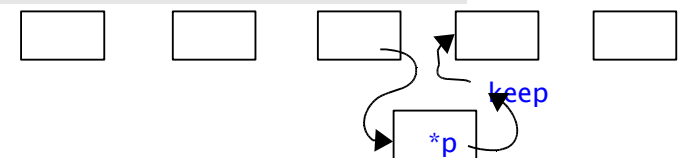
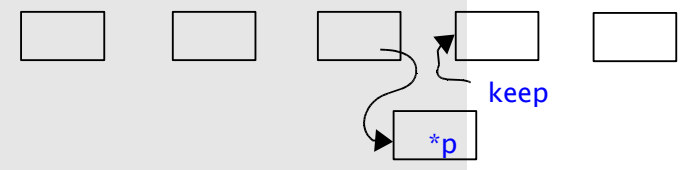
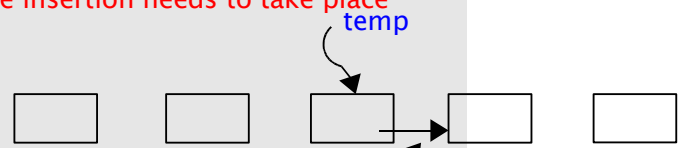
***** /
#include<iostream>
using namespace std;

struct Node{
    int i; //Data
    Node* next; //Pointer to next node
    Node(){next=NULL;} //default
    Node(int x){i=x;next=NULL;}

    Node* insert(Node* p, int pos){ //returns a pointer to the head of the list after
insertion
        Node* temp=this; //a pointer to itself; the head of the List
        if (pos==0){ //special case - insert at the head, return new head
            p->next=this;
            return p;
        }
        else{ // return "this" itself, after appropriate insertion is done
            for (int j=0;j<pos-1;j++){ //go to where insertion needs to take place
                temp=temp->next;
            }
            Node* keep=temp->next;
            temp->next=p;
            p->next=keep;
            return this;
        }
    }

    void display(){
        Node* p=this;
        while(p!= NULL){
            cout<<"i = "<<p->i<<"\t";
            p=p->next;
        }
        cout<<endl;
    }
}

```



```

}
};

/*****TEST*****/

int main(){
    Node np[10];
    int x;
    for (int j=0;j<10;j++){
        np[j].i=j*j;
        np[j].next=NULL;
    }

    Node* List=&np[0];
    Node * temp=List;
    for (int i=0;i<9;i++){
        List->next=&np[i];
        List=List->next;
    }
    List=temp;
    cout<<"Where do you want to insert new node?"<<endl;
    cin>>x;
    Node NewNode(22);
    Node* N=List->insert(&NewNode,x);
    N->display();
}

/*****Output*****/
linux2:~/PDS/C++$ ./ex6_4
Where do you want to insert new node?
0
i = 22 i = 0 i = 1 i = 4 i = 9 i = 16 i = 25 i = 36 i = 49 i = 64
linux2:~/PDS/C++$ ./ex6_4
Where do you want to insert new node?
3
i = 0 i = 1 i = 4 i = 22 i = 9 i = 16 i = 25 i = 36 i = 49 i = 64
linux2:~/PDS/C++$ ./ex6_4
Where do you want to insert new node?
8
i = 0 i = 1 i = 4 i = 9 i = 16 i = 25 i = 36 i = 49 i = 22 i = 64
linux2:~/PDS/C++$
*****/

```