Question 1

#include <iostream>

using namespace std;

class node{

public:

int data;

node \* next;

node(int d)

{

this->data=d;

this->next=NULL;

}

void create(node \* & head)

{

int d;

cout<<"enter the data : ";

cin>>d;

node \* n=new node(d);

if(head==NULL)

{

head=n;

return;

}

node \* temp=head;

while(temp->next!=NULL)temp=temp->next;

temp->next=n;

return;

}

void print(node\*&head)

{

node\* temp=head;

if(head==NULL)

{

cout<<"NULL\n";

return;

}

while(temp!=NULL)

{

cout<<temp->data<<"->";

temp=temp->next;

}

cout<<"NULL\n";

}

void searchi(node \* & head)

{

int d;

cout<<"enter the element for search : ";

cin>>d;

node\* temp=head;

if(head==NULL)

{

cout<<"the list is empty : not present\n";

return;

}

while(temp!=NULL)

{

if(temp->data==d)

{

cout<<"present \n";

return;

}

temp=temp->next;

}

cout<<"not present\n";

}

};

int main()

{

int n;

cout<<"enter the length of link list : ";

cin>>n;

node\* head=NULL;

for(int i=0;i<n;i++)

{

head->create(head);

}

head->print(head);

head->searchi(head);

}

Question 2 and 3

#include <iostream>

using namespace std;

class node{

public:

int data;

node \* next;

node(int d)

{

this->data=d;

this->next=NULL;

}

void in\_at\_end(node \* & head)

{

int d;

cout<<"enter the data : ";

cin>>d;

node \* n=new node(d);

if(head==NULL)

{

head=n;

return;

}

node \* temp=head;

while(temp->next!=NULL)temp=temp->next;

temp->next=n;

return;

}

void in\_at\_beg(node \* & head)

{

int d;

cout<<"enter the data : ";

cin>>d;

node \* n=new node(d);

if(head==NULL)

{

head=n;

return;

}

n->next=head;

head=n;

return;

}

void in\_at\_pos(node \* & head)

{

int d;

cout<<"enter the data : ";

cin>>d;

int pos;

cout<<"enter the pos : ";

cin>>pos;

node \* n=new node(d);

if(head==NULL)

{

head=n;

return;

}

else if(pos==1)

{

n->next=head;

head=n;

return;

}

else

{

int cn=1;

node \* temp=head;

int s=0;

while(temp->next!=NULL)

{

s++;

temp=temp->next;

}

if(pos>++s)

{

temp->next=n;

return;

}

temp=head;

while(cn<pos-1)

{

cn++;

temp=temp->next;

}

n->next=temp->next;

temp->next=n;

}

}

void print(node\*&head)

{

node\* temp=head;

if(head==NULL)

{

cout<<"NULL\n";

return;

}

while(temp!=NULL)

{

cout<<temp->data<<"->";

temp=temp->next;

}

cout<<"NULL\n";

}

};

int main()

{

int n;

cout<<"enter the value of n when 3n is the length of link list : ";

cin>>n;

node\* head=NULL;

for(int i=0;i<n;i++)

{

head->in\_at\_beg(head);

}

head->print(head);

for(int i=0;i<n;i++)

{

head->in\_at\_pos(head);

}

head->print(head);

for(int i=0;i<n;i++)

{

head->in\_at\_end(head);

}

head->print(head);

}

Question 4

#include <iostream>

using namespace std;

class node{

public:

int data;

node \* next;

node(int d)

{

this->data=d;

this->next=NULL;

}

void change(node \* & head)

{

if(head==NULL)

{

return;

}

if(head->next==NULL) return;

node\* temp=head;

while(temp->next->next!=NULL)

{

temp=temp->next;

}

node\* t=temp->next;

temp->next=NULL;

t->next=head;

head=t;

}

void create(node \* & head)

{

int d;

cout<<"enter the data : ";

cin>>d;

node \* n=new node(d);

if(head==NULL)

{

head=n;

return;

}

node \* temp=head;

while(temp->next!=NULL)temp=temp->next;

temp->next=n;

return;

}

void print(node\*&head)

{

node\* temp=head;

if(head==NULL)

{

cout<<"NULL\n";

return;

}

while(temp!=NULL)

{

cout<<temp->data<<"->";

temp=temp->next;

}

cout<<"NULL\n";

}

};

int main()

{

int n;

cout<<"enter the length of link list : ";

cin>>n;

node\* head=NULL;

for(int i=0;i<n;i++)

{

head->create(head);

}

head->print(head);

head->change(head);

head->print(head);

}

Question 5

#include <iostream>

#include<set>

using namespace std;

class node{

public:

char data;

node \* next;

node(char d)

{

this->data=d;

this->next=NULL;

}

void create(node \* & head,string s, int i)

{

char c = s[i];

node \* n=new node(c);

if(head==NULL)

{

head=n;

return;

}

node \* temp=head;

while(temp->next!=NULL)temp=temp->next;

temp->next=n;

return;

}

void del(node\*&head)

{

set<char> s;

s.insert('a');

s.insert('e');

s.insert('i');

s.insert('o');

s.insert('u');

s.insert('A');

s.insert('E');

s.insert('I');

s.insert('O');

s.insert('U');

if(head== NULL)return;

if(s.find(head->data)!=s.end()){ if(head->next!=NULL){node \* t=head;head=head->next ;delete(t);} else {head=NULL;return;}}

node\* temp=head;

while(temp->next!=NULL)

{

if(s.find(temp->next->data)!=s.end())

{

node \* to=temp->next;

temp->next=to->next;

delete(to);

}

else

{

temp=temp->next;

}

}

}

void print(node\*&head)

{

node\* temp=head;

if(head==NULL)

{

cout<<"NULL\n";

return;

}

while(temp!=NULL)

{

cout<<temp->data<<"->";

temp=temp->next;

}

cout<<"NULL\n";

}

};

int main()

{

string n;

cout<<"enter the name : ";

cin>>n;

node\* head=NULL;

for(int i=0;i<n.length();i++)

{

head->create(head,n,i);

}

head->print(head);

head->del(head);

head->print(head);

}

Question 6

#include <iostream>

using namespace std;

class node{

public:

int data;

node \* next;

node(int d)

{

this->data=d;

this->next=NULL;

}

void create(node \* & head)

{

int d;

cout<<"enter the data : ";

cin>>d;

node \* n=new node(d);

if(head==NULL)

{

head=n;

return;

}

node \* temp=head;

while(temp->next!=NULL)temp=temp->next;

temp->next=n;

return;

}

void print(node\*&head)

{

node\* temp=head;

if(head==NULL)

{

cout<<"NULL\n";

return;

}

while(temp!=NULL)

{

cout<<temp->data<<"->";

temp=temp->next;

}

cout<<"NULL\n";

}

void searchi(node \* & head)

{

int d=0 ,mi=INT\_MAX,ma=INT\_MIN;

node\* temp=head;

while(temp!=NULL)

{

if(temp->data<mi)

{

mi=temp->data;

}

if(temp->data>ma)

{

ma=temp->data;

}

d++;

temp=temp->next;

}

cout<<"size : "<<d<<" min : "<<mi<<" max : "<<ma<<endl;

}

};

int main()

{

int n;

cout<<"enter the length of link list : ";

cin>>n;

node\* head=NULL;

for(int i=0;i<n;i++)

{

head->create(head);

}

head->print(head);

head->searchi(head);

}

Question 7

#include <iostream>

using namespace std;

class node{

public:

int data;

node \* next;

node(int d)

{

this->data=d;

this->next=NULL;

}

void create(node \* & head)

{

int d;

cout<<"enter the data : ";

cin>>d;

node \* n=new node(d);

if(head==NULL)

{

head=n;

return;

}

node \* temp=head;

while(temp->next!=NULL)temp=temp->next;

temp->next=n;

return;

}

node\* reverse ( node \* & head )

{

if(head==NULL ||head->next==NULL)

{

return head;

}

node \* ch= reverse(head->next);

head->next->next=head;

head->next=NULL;

return ch;

}

void print(node\*&head)

{

node\* temp=head;

if(head==NULL)

{

cout<<"c\n";

return;

}

int n=0;

while(temp!=NULL)

{

n++;

temp=temp->next;

}

temp=head;

cout<<temp->data<<"( x ^ "<<--n<<" ) ";

temp=temp->next;

while(temp!=NULL)

{

cout<<"+ "<<temp->data<<"( x ^ "<<--n<<" ) ";

temp=temp->next;

}

cout<<" \n";

}

};

int main()

{

int n=1;

node\* head=NULL;

while(n){

head->create(head);

cout<<"enter 1 to continue link list : ";

cin>>n;

}

head->print(head);

head=head->reverse(head);

head->print(head);

}