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**Roll No: 83**

**Practical no: 1.7**

**Title: Polynomial addition Subtraction using linked list.**

#include<iostream.h>

#include<conio.h>

class NODE

{

public:

int coeff,power;

NODE \*link;

};

class POLY

{

int hp;

NODE \*eq1, \*eq2, \*eq3;

public:

POLY();

void READ\_EXPR\_83();

void READ\_EXPR\_83();

void ADD\_EXPR\_83();

void SUB\_EXPR\_83();

void SHOW\_EXPR\_83();

void SHOW\_EXPR\_83();

void SHOW\_EXPR\_83();

};

POLY::POLY()

{

eq1=NULL;

eq2=NULL;

eq3= NULL;

}

void POLY::READ\_EXPR\_83()

{

NODE \*ptr;

cout<<endl<<"Enter the highest power of expr :";

cin>>hp;

cout<<endl<<"enter the expr1: ";

for(int i =hp;i>=0;i--)

{

NODE \*NN=new NODE();

NN->link=NULL;

cout<<endl<<"Enter the coeff of power"<<i;

cin>>NN->coeff;

NN->power=i;

if(eq1==NULL)

eq1=NN;

else

{

ptr=eq1;

while(ptr->link!=NULL)

{

ptr=ptr->link;

}

ptr->link=NN;

}

}

}

void POLY::READ\_EXPR\_83()

{

NODE \*ptr;

cout<<endl<<"Enter the expr2 :";

for(int i=hp;i>=0;i--)

{

NODE \*NN=new NODE();

NN->link=NULL;

cout<<endl<<"Enter the coeff of power"<<i;

cin>>NN->coeff;

NN->power=i;

if(eq2==NULL)

eq2=NN;

else

{

ptr=eq2;

while(ptr->link!=NULL)

{

ptr=ptr->link;

}

ptr->link=NN;

}

}

}

void POLY::ADD\_EXPR\_83()

{

NODE \*ptr, \*ptr1, \*ptr2;

ptr1=eq1;

ptr2=eq2;

for(int i=hp;i>=0;i--)

{

NODE \*NN=new NODE();

NN->link=NULL;

NN->coeff=ptr1->coeff + ptr2->coeff;

NN->power=i;

if(eq3==NULL)

eq3=NN;

else

{

ptr=eq3;

while(ptr->link!=NULL)

{

ptr=ptr->link;

}

ptr->link=NN;

}

ptr1=ptr1->link;

ptr2=ptr2->link;

}

}

void POLY::SUB\_EXPR\_83()

{

NODE \*ptr,\*ptr1, \*ptr2;

ptr1=eq1;ptr2=eq2;

eq3=NULL;

for(int i=hp;i>=0;i--)

{

NODE \*NN=new NODE();

NN->link=NULL;

NN->coeff=ptr1->coeff - ptr2->coeff;

NN->power=i;

if(eq3==NULL)

eq3=NN;

else

{

ptr=eq3;

while(ptr->link!=NULL)

{

ptr=ptr->link;

}

ptr->link=NN;

}

ptr1=ptr1->link;

ptr2=ptr2->link;

}

}

void POLY::SHOW\_EXPR\_83()

{

NODE \*ptr;

ptr=eq1;

while(ptr!=NULL)

{

cout<<ptr->coeff<<"x^"<<ptr->power<<"+";

ptr=ptr->link;

}

}

void POLY::SHOW\_EXPR\_83()

{

NODE \*ptr;

ptr=eq2;

cout<<endl;

while(ptr!=NULL)

{

cout<<ptr->coeff<<"x^"<<ptr->power<<"+";

ptr=ptr->link;

}

}

void POLY::SHOW\_EXPR\_83()

{

NODE \*ptr;

ptr=eq3;

cout<<endl;

while(ptr!=NULL)

{

cout<<ptr->coeff<<"x^"<<ptr->power<<"+";

ptr=ptr->link;

}

}

void main()

{

clrscr();

POLY obj;

obj.READ\_EXPR\_83();

obj.READ\_EXPR\_83();

clrscr();

obj.ADD\_EXPR\_83();

obj.SHOW\_EXPR\_83();

obj.SHOW\_EXPR\_83();

cout<<endl<<"Addition of two exp";

obj.SHOW\_EXPR\_83();

obj.SUB\_EXPR\_83();

cout<<endl<<"substraction of two exp";

obj.SHOW\_EXPR\_83();

getch();

}