```
# include <stdio.h>
# include <stdlib.h>
char compare();
void Insertf();
void Inserta();
void Insertb();
void display();
void displayf();
struct poly {
	int coefficent;
	int exp;
	struct poly *address;
}*starta=NULL,*a,*b,*temp,*ptr,*startb=NULL,*startf=NULL;
int count=0;
void main()
{
	int num1,co1,exp1,i,num2;
	printf("Enter the number of terms of the first Polynomial\n");
	scanf("%d",&num1);
	for(i=0; i<num1; i++)
	{
		Inserta();
	}
	printf("Enter the number of terms of the second Polynomial\n");
	scanf("%d",&num2);
	for(i=0; i<num2; i++)
	{
		Insertb();
	}
	a=starta,b=startb;
	while(a!=NULL&&b!=NULL)
	{
		switch(compare(a->exp,b->exp))
		{
			case '=':
			{
				int sum=a->coefficent+b->coefficent;
				if(sum!=0)
				{
					Insertf(sum,a->exp);
					a=a->address;
					b=b->address;
				}
				break;
			}
			case '<':
			{
				Insertf(b->coefficent,b->exp);
				b=b->address;
				break;
			}
			case '>':
```

```
                {
                        Insertf(a->coefficent,a->exp);
                        a=a->address;
                        break;
                }
        }
    }
    while(a!=NULL)
    {
        Insertf(a->coefficent,a->exp);
        a=a->address;
    }
    while(b!=NULL)
    {
        Insertf(b->coefficent,b->exp);
        b=b->address;
    }
    display(num1,num2);
    displayf();

}
void Inserta()
{
    int co,exp;
    printf("Enter the coefficent\n");
    scanf("%d",&co);
    printf("Enter the exponent\n");
    scanf("%d",&exp);
    ptr=(struct poly*)malloc(sizeof(struct poly));
    if(ptr==NULL)
    {
        printf("Overflow Error!!\n");
        exit(0);
    }
    ptr->coefficent=co;
    ptr->exp=exp;
    if(starta==NULL)
    {
        ptr->address=starta;
        starta=ptr;
    }
    else
    {
        temp=starta;
        while(temp->address!=NULL)
        {
            temp=temp->address;
        }
        temp->address=ptr;
        ptr->address=NULL;
    }
}
```

```
void Insertb()
{
	int co,exp;
	printf("Enter the coefficent\n");
	scanf("%d",&co);
	printf("Enter the exponent\n");
	scanf("%d",&exp);
	ptr=(struct poly *)malloc(sizeof(struct poly));
	ptr->coefficent=co;
	ptr->exp=exp;
	if(ptr==NULL)
	{
		printf("Overflow Error!!\n");
		exit(0);
	}
	if(startb==NULL)
	{
		ptr->address=startb;
		startb=ptr;
	}
	else
	{
		temp=startb;
		while(temp->address!=NULL)
		{
			temp=temp->address;
		}
		temp->address=ptr;
		ptr->address=NULL;
	}
}
void display(int num1,int num2)
{
	int i=0;
	if(starta==NULL||startb==NULL)
	{
		printf("List is Empty\n");
		exit(0);
	}
	temp=starta;
	printf("First Polynomial:\n");
	while(temp!=NULL)
	{
		printf("%dx^%d ",temp->coefficent,temp->exp);
		if(i!=num1-1)
		{
			printf("+ ");
			i++;
		}
		temp=temp->address;
	}
	printf("\n");
```

```
	temp=startb;
	i=0;
	printf("Second Polynomial:\n");
	while(temp!=NULL)
	{
		printf("%dx^%d ",temp->coefficent,temp->exp);
		if(i!=num2-1)
		{
			printf("+ ");
			i++;
		}
		temp=temp->address;
	}
	printf("\n");
}

char compare(int a, int b)
{
	if(a==b)
		return '=';
	else if (a<b)
		return '<';
	else
		return '>';
}
void Insertf(int a,int b)
{
	ptr=(struct poly*)malloc(sizeof(struct poly));
	if(ptr==NULL)
	{
		printf("Overflow Error\n");
		exit(0);
	}
	ptr->coefficent=a;
	ptr->exp=b;
	if(startf==NULL)
	{
		ptr->address=startf;
		startf=ptr;
	}
	else
	{
		temp=startf;
		while(temp->address!=NULL)
		{
			temp=temp->address;
		}
		temp->address=ptr;
		ptr->address=NULL;
	}
	count++;
}
```

```
void displayf()
{
	int i=0;
	if(startf==NULL)
	{
		printf("List is Empty\n");
		exit(0);
	}
	temp=startf;
	printf("Resultant Polynomial:\n");
	while(temp!=NULL)
	{
		printf("%dx^%d ",temp->coefficent,temp->exp);
		if(i!=count-1)
		{
			printf("+ ");
			i++;
		}
		temp=temp->address;
	}
	printf("\n");
}
```

```
Enter the number of terms of the first Polynomial
3
Enter the coefficent
2
Enter the exponent
3
Enter the coefficent
1
Enter the exponent
2
Enter the coefficent
5
Enter the exponent
0
Enter the number of terms of the second Polynomial
3
Enter the coefficent
5
Enter the exponent
3
Enter the coefficent
4
Enter the exponent
2
Enter the coefficent
8
Enter the exponent
0
First Polynomial:
2x^3 + 1x^2 + 5x^0
Second Polynomial:
```