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ADDITION OF TWO POLYNOMIALS

CODE:

```
#include<stdio.h>
#include<stdlib.h>
#include<math.h>
struct node{
        float cf;
        float px;
        float py;
        int flag;
        struct node *link;
};
typedef struct node *NODE;
NODE getnode()
{
   NODE x;
   x=(NODE)malloc(sizeof(struct node));
   if(x==NULL)
   {
      printf("Out of memory");
      exit(0);
   }
   return x;
}

   NODE insert_rear(float cf,float x,float y,NODE head)
   {
      NODE temp,cur;
      int flag;
      temp=getnode();
      temp->cf=cf;
      temp->px=x;
      temp->py=y;
      temp->flag=0;
      cur=head->link;
      while(cur->link!=head)
      cur=cur->link;
      cur->link=temp;
      temp->link=head;
      return head;
   }

   NODE read_poly(NODE head){
      int i;
      float cf,px,py;
```

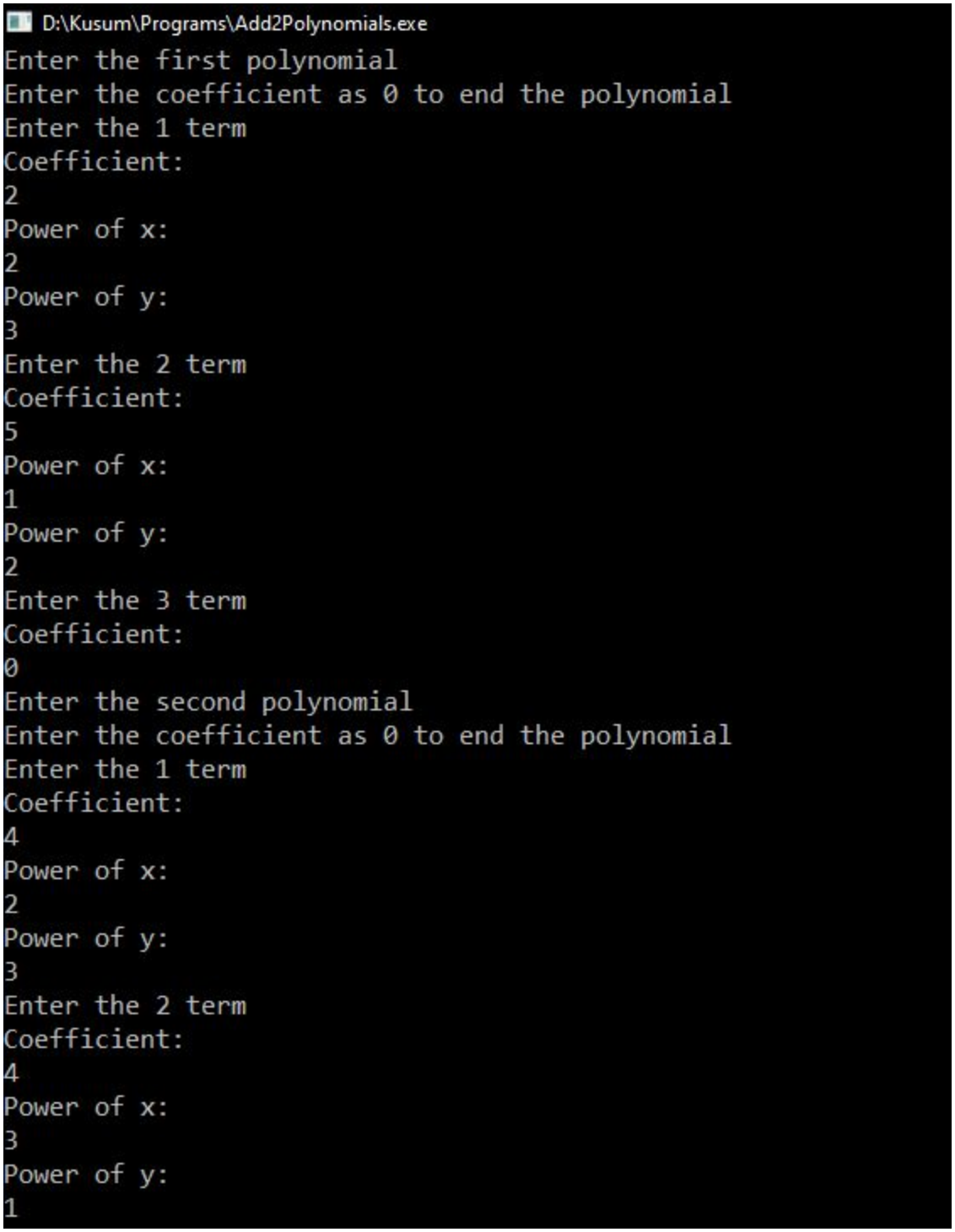
```
    printf("Enter the coefficient as 0 to end the polynomial\n");
    for(i=1;;i++){
        printf("Enter the %d term\n",i);
        printf("Coefficient:\n");
        scanf("%f",&cf);
        if(cf==0)
        break;
        printf("Power of x:\n");
        scanf("%f",&px);
        printf("Power of y:\n");
        scanf("%f",&py);
        head=insert_rear(cf,px,py,head);
    }
    return head;
}
void display(NODE head){
    NODE temp;
    if(head->link==head)
    {
        printf("Polynomial does not exist\n");
        return;
    }
    temp=head->link;
    while(temp!=head)
    {
        printf("%5.2fx^%3.1fy^%3.1f\t",temp->cf,temp->px,temp->py);
        temp=temp->link;
    }
    printf("\n");
}

NODE add_poly(NODE h1,NODE h2, NODE h3){
    NODE p1,p2;
    int x1,x2,y1,y2,cf1,cf2,cf;
    p1=h1->link;
    while(p1!=h1){
        x1=p1->px;
        y1=p1->py;
        cf1=p1->cf;
        p2=h2->link;
        while(p2!=h2)
        {
            x2=p2->px;
            y2=p2->py;
            cf2=p2->cf;
            if(x1==x2 && y1==y2)
            break;
            p2=p2->link;
```

```
        }
        if(p2!=h2){
           cf=cf1+cf2;
           p2->flag=1;
           if(cf!=0)
           h3=insert_rear(cf,x1,y1,h3);
        }
        else
        h3=insert_rear(cf1,x1,y1,h3);
        p1=p1->link;
     }
     p2=h2->link;
     while(p2!=h2)
     {
        if(p2->flag==0)
        {
           h3=insert_rear(p2->cf,p2->px,p2->py,h3);
        }
        p2=p2->link;
     }
     return h3;
  }
  int main()
  {
     NODE h1,h2,h3;
     h1=getnode();
     h2=getnode();
     h3=getnode();
     h1->link=h1;
     h2->link=h2;
     h3->link=h3;
     printf("Enter the first polynomial\n");
     h1=read_poly(h1);
     printf("Enter the second polynomial\n");
     h2=read_poly(h2);
     h3=add_poly(h1,h2,h3);
     printf("The first polynomial\n");
     display(h1);
     printf("The second polynomial\n");
     display(h2);
     printf("The sum of the polynomials\n");
     display(h3);
     return 0;

}
```

OUTPUT:


D:\Kusum\Programs\Add2Polynomials.exe
Enter the first polynomial
Enter the coefficient as 0 to end the polynomial
Enter the 1 term
Coefficient:
2
Power of x:
2
Power of y:
3
Enter the 2 term
Coefficient:
5
Power of x:
1
Power of y:
2
Enter the 3 term
Coefficient:
0
Enter the second polynomial
Enter the coefficient as 0 to end the polynomial
Enter the 1 term
Coefficient:
4
Power of x:
2
Power of y:
3
Enter the 2 term
Coefficient:
4
Power of x:
3
Power of y:
1

```
Enter the 3 term
Coefficient:
0
The first polynomial
 2.00x^2.0y^3.0  5.00x^1.0y^2.0
The second polynomial
 4.00x^2.0y^3.0  4.00x^3.0y^1.0
The sum of the polynomials
 6.00x^2.0y^3.0  5.00x^1.0y^2.0  4.00x^3.0y^1.0

Process returned 0 (0x0)   execution time : 41.450 s
Press any key to continue.
```