

NAME: KUSUM M R
USN: 1BM19CS077

DATE:16/12/2020

EVALUATION OF A POLYNOMIAL:

CODE:

```
#include <stdio.h>
#include <stdlib.h>
#include <math.h>
struct node
{
    float cf;
    float px;
    float py;
    struct node *link;
};
typedef struct node *NODE;
NODE getnode()
{
    NODE x;
    x=(NODE)malloc(sizeof(struct node));
    if (x==NULL)
    {
        printf("Memory full\n");
        exit(0);
    }
    return x;
}
NODE insert_rear(float cf,float x,float y,NODE first)
{
    NODE temp,cur;
    temp=getnode();
    temp->cf=cf;
    temp->px=x;
    temp->py=y;
    temp->link=NULL;
    if (first==NULL)
    {
        return temp;
    }
    cur=first;
    while (cur->link!=NULL)
    {
        cur=cur->link;
    }
    cur->link=temp;
    return first;
}
NODE read_poly(NODE first)
{
    int i;
    float cf,px,py;
    printf("Enter 0 to end the polynomial:\n");
    for (i=1;;i++)
```

```

    {
        printf("Enter %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);
        first=insert_rear(cf,px,py,first);
    }
    return first;
}

float evaluate_polynomial(NODE first)
{
    float x,y,sum=0;
    NODE polynomial;
    printf("Enter the values of x and y:\n");
    scanf("%f%f",&x,&y);
    polynomial=first;
    while (polynomial!=NULL)
    {
        sum=sum+polynomial->cf*pow(x,polynomial->px)*pow(y,polynomial->py);
        polynomial=polynomial->link;
    }
    return sum;
}

void display(NODE first)
{
    NODE temp;
    if (first==NULL)
    {
        printf("Polynomial does not exist\n");
    }
    else
    {
        temp=first;
        while (temp->link!=NULL)
        {
            printf("(%5.2fx^%3.2fy^%3.2f)\t+",temp->cf,temp->px,temp->py);
            temp=temp->link;
        }
        printf("(%5.2fx^%3.2fy^%3.2f)\n",temp->cf,temp->px,temp->py);
    }
}

int main(){
    NODE first;
    float res;
    first=NULL;
    printf("Enter the polynomial: \n");
    first = read_poly(first);
}

```

```

    res = evaluate_polynomial(first);
    printf("Polynomial is: \n");
    display(first);
    printf("Result is %f\n",res);
    return 0;
}

```

OUTPUT:

```

Enter the polynomial:
Enter 0 to end the polynomial:
Enter 1 term:
Coefficient:
2
Power of x:
1
Power of y:
2
Enter 2 term:
Coefficient:
3
Power of x:
2
Power of y:
1
Enter 3 term:
Coefficient:
4
Power of x:
3
Power of y:
3
Enter 4 term:
Coefficient:
0
Enter the values of x and y:
1
2
Polynomial is:
( 2.00x^1.00y^2.00)      +( 3.00x^2.00y^1.00)      +( 4.00x^3.00y^3.00)
Result is 46.000000

Process returned 0 (0x0)   execution time : 27.015 s
Press any key to continue.

```