Programmer Name: Param Chordiya
Batch: E5
Problem Statement:
Write a program in C to implement Polynomial addition using linked list

INPUT:

```
#include<stdio.h>
#include<malloc.h>
#include<conio.h>
struct link{
      int coeff;
      int pow;
      struct link *next;
      };
struct link *poly1=NULL,*poly2=NULL,*poly=NULL;
void create(struct link *node)
{
 char ch;
 do
 {
  printf("\nEnter coefficient:");
  scanf("%d",&node->coeff);
  printf("\nEnter power:");
  scanf("%d",&node->pow);
  node->next=(struct link*)malloc(sizeof(struct link));
  node=node->next;
  node->next=NULL;
  printf("\nPress 'y' to continue:");
  ch=getch();
 }
 while(ch=='y' || ch=='Y');
}
void show(struct link *node)
{
 while(node->next!=NULL)
```

```
 {
  printf("%dx^%d",node->coeff,node->pow);
  node=node->next;
  if(node->next!=NULL)
   printf("+");
 }
}
void polyadd(struct link *poly1,struct link *poly2,struct link *poly)
{
    while(poly1->next &&  poly2->next)
    {
     if(poly1->pow>poly2->pow)
     {
      poly->pow=poly1->pow;
      poly->coeff=poly1->coeff;
      poly1=poly1->next;
      }
     else if(poly1->pow<poly2->pow)
     {
      poly->pow=poly2->pow;
      poly->coeff=poly2->coeff;
      poly2=poly2->next;
      }
     else
     {
      poly->pow=poly1->pow;
      poly->coeff=poly1->coeff+poly2->coeff;
      poly1=poly1->next;
      poly2=poly2->next;
      }
     poly->next=(struct link *)malloc(sizeof(struct link));
     poly=poly->next;
     poly->next=NULL;
    }
    while(poly1->next || poly2->next)
    {
     if(poly1->next)
```

```
    {
     poly->pow=poly1->pow;
     poly->coeff=poly1->coeff;
     poly1=poly1->next;
     }
    if(poly2->next)
    {
     poly->pow=poly2->pow;
     poly->coeff=poly2->coeff;
     poly2=poly2->next;
     }
     poly->next=(struct link *)malloc(sizeof(struct link));
     poly=poly->next;
     poly->next=NULL;
     }
}
void main()
{
        printf("\n*****************************************\n");
        printf("            ROLL NO:22119          \n");
        printf("*****************************************\n");
        printf("POLYNOMIAL ADDITION USING LINKED LIST\n");
        printf("*****************************************\n");
    char ch;
    do{
    poly1=(struct link *)malloc(sizeof(struct link));
    poly2=(struct link *)malloc(sizeof(struct link));
    poly=(struct link *)malloc(sizeof(struct link));
    printf("\n1st Polynomial:");
    create(poly1);
    printf("\n2nd Polynomial:");
    create(poly2);
    printf("\n1st Number:");
    show(poly1);
    printf("\n2nd Number:");
    show(poly2);
    polyadd(poly1,poly2,poly);
```

```
    printf("\nAdded polynomial:");
    show(poly);
    printf("\nPress 'y' to continue:");
    ch=getch();
    }
    while(ch=='y' || ch=='Y');
}
```

OUTPUT:

```
**************************************
            ROLL NO:22119
**************************************
POLYNOMIAL ADDITION USING LINKED LIST
**************************************

1st Polynomial:
Enter coefficient:25

Enter power:2

Press 'y' to continue:
Enter coefficient:21

Enter power:1

Press 'y' to continue:
Enter coefficient:6

Enter power:3

Press 'y' to continue:
2nd Polynomial:
Enter coefficient:69

Enter power:3

Press 'y' to continue:
Enter coefficient:44

Enter power:2

Press 'y' to continue:
Enter coefficient:54

Enter power:1

Press 'y' to continue:
1st Number:25x^2+21x^1+6x^3
2nd Number:69x^3+44x^2+54x^1
Added polynomial:69x^3+69x^2+75x^1+6x^3
Press 'y' to continue:
```