# EXPERIMENT-1

## Program :

```
#include <stdio.h>
struct polynomial {
    int coeff;
    int expo;
};
int main() {
    struct polynomial poly1[3], poly2[3], result[6];
    int n1, n2, i = 0, j = 0, k = 0;
    printf("Enter number of terms in polynomial 1: ");
    scanf("%d", &n1);
    printf("Enter terms in descending order of exponent:\n");
    for (int idx = 0; idx < n1; idx++) {
        printf("Enter coefficient and exponent of term %d: ", idx + 1);
        scanf("%d%d", &poly1[idx].coeff, &poly1[idx].expo);
    }
    printf("Enter number of terms in polynomial 2: ");
    scanf("%d", &n2);
    printf("Enter terms in descending order of exponent:\n");
    for (int idx = 0; idx < n2; idx++) {
        printf("Enter coefficient and exponent of term %d: ", idx + 1);
        scanf("%d%d", &poly2[idx].coeff, &poly2[idx].expo);
    }
```

```
while (i < n1 && j < n2) {
    if (poly1[i].expo == poly2[j].expo) {
        result[k].coeff = poly1[i].coeff + poly2[j].coeff;
        result[k].expo = poly1[i].expo;
        i++; j++; k++;
    }
    else if (poly1[i].expo > poly2[j].expo) {
        result[k] = poly1[i];
        i++; k++;
    }
    else {
        result[k] = poly2[j];
        j++; k++;
    }
}
while (i < n1) {
    result[k++] = poly1[i++];
}
while (j < n2) {
    result[k++] = poly2[j++];
}
printf("Resultant Polynomial: ");
for (int idx = 0; idx < k; idx++) {
    printf("%d x^%d", result[idx].coeff, result[idx].expo);
    if (idx != k - 1) {
        printf(" + ");
    }
```

```
    }

    return 0;

}
```

## Output :

```
cseb2@sjcet-OptiPlex-SFF-7020:~$ cd anand
cseb2@sjcet-OptiPlex-SFF-7020:~/anand$ gcc Sumofpolynomials.c
cseb2@sjcet-OptiPlex-SFF-7020:~/anand$ ./a.out
Enter number of terms (up to 100): 3
Input terms in descending exponent order:
 Coefficient and exponent (term 1): 5 3
 Coefficient and exponent (term 2): 4 2
 Coefficient and exponent (term 3): 2 0
Enter number of terms (up to 100): 3
Input terms in descending exponent order:
 Coefficient and exponent (term 1): 3 3
 Coefficient and exponent (term 2): 2 1
 Coefficient and exponent (term 3): 1 0

Polynomial A: 5x^3 + 4x^2 + 2
Polynomial B: 3x^3 + 2x^1 + 1

Sum = 8x^3 + 4x^2 + 2x^1 + 3
cseb2@sjcet-OptiPlex-SFF-7020:~/anand$
```