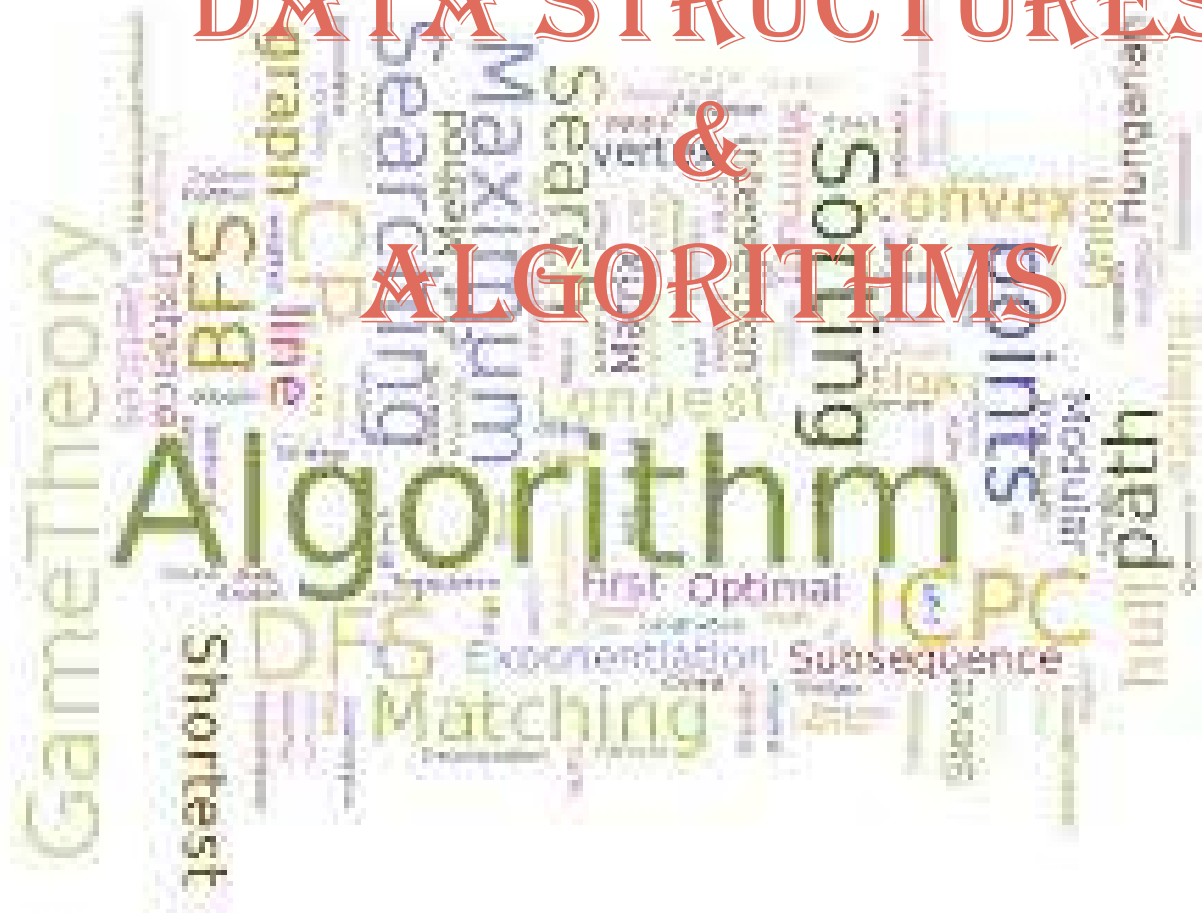




INTERNATIONAL
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DATA STRUCTURES & ALGORITHMS



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ADDITION OF TWO POLYNOMIALS

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```
#include<stdio.h>  
#include<conio.h>
```

```
typedef struct poly  
{  
    int power;  
    int coeff;  
}poly;
```

We have created
user defined
datatype.

```
void print(poly [], int);/*function declaration*/
```

```
void main()
```

```
{ int t1,t2,i,j,k;
```

```
poly p1[10],p2[10],p3[10];
```

```
clrscr();
```

```
printf("\n Enter number of terms in 1st polynomial :");
```

```
scanf("%d",&t1);
```

```
for (i=0;i<t1;i++)
```

```
{ printf("\n Enter a term(coeff. power)");
```

```
scanf("%d%d",&p1[i].coeff,&p1[i].power); }
```

```
printf("\n1'st polynomial = ");
```

```
print(p1,t1); /*Function Call*/
```

Structure
variables

```
void print(poly p[],int n) /*Function Definition*/  
{ int i;  
for(i=0;i<n-1;i++)  
printf("%dX^%d + ",p[i].coeff,p[i].power);  
printf("%dX^%d =0 \n",p[i].coeff,p[i].power);  
}
```

```
printf("\n Enter number of terms in 2nd polynomial :");  
scanf("%d",&t2);  
for (i=0;i<t2;i++)  
{  
    printf("\n Enter a term(coeff. power)");  
    scanf("%d%d",&p2[i].coeff,&p2[i].power);  
}  
printf("\n2'nd polynomial = ");  
print(p2,t2);
```

*/*Function Call*/*

```
void print(poly p[],int n) /*Function Definition*/  
{  
    int i;  
    for(i=0;i<n-1;i++)  
        printf("%dX^%d + ",p[i].coeff,p[i].power);  
    printf("%dX^%d =0 \n",p[i].coeff,p[i].power);  
}
```

```

i=j=k=0;
while(i<t1 || j<t2)
{
  if(p1[i].power==p2[j].power)
  {
    p3[k].power=p1[i].power;
    p3[k].coeff=p1[i].coeff+p2[j].coeff;
    i++;j++;k++;
  }
  else if(p1[i].power > p2[j].power)
  {
    p3[k].power=p1[i].power;
    p3[k].coeff=p1[i].coeff;
    i++;k++;
  }
  else { p3[k].power=p2[j].power;
        p3[k].coeff=p2[j].coeff;
        j++;k++;
      }
}

```

$$2X^6 + 5X^0 = 0$$

$$i=0$$

$$7X^5 + 4X^0 = 0$$

$$j=0$$

$$2X^6 +$$

$$k=0$$

```

i=j=k=0;
while(i<t1 || j<t2)
{
  if(p1[i].power==p2[j].power)
  {
    p3[k].power=p1[i].power;
    p3[k].coeff=p1[i].coeff+p2[j].coeff;
    i++;j++;k++;
  }
  else if(p1[i].power > p2[j].power)
  {
    p3[k].power=p1[i].power;
    p3[k].coeff=p1[i].coeff;
    i++;k++;
  }
  else {
    p3[k].power=p2[j].power;
    p3[k].coeff=p2[j].coeff;
    j++;k++;
  }
}

```

$$2X^6 + 5X^0 = 0$$

$$i=1$$

$$7X^5 + 4X^0 = 0$$

$$j=0$$

$$2X^6 + 7X^5 +$$

$$k=0 \quad k=1$$

```

i=j=k=0;
while(i<t1 || j<t2)
{
  if(p1[i].power==p2[j].power)
  {
    p3[k].power=p1[i].power;
    p3[k].coeff=p1[i].coeff+p2[j].coeff;
    i++;j++;k++;
  }
  else if(p1[i].power > p2[j].power)
  {
    p3[k].power=p1[i].power;
    p3[k].coeff=p1[i].coeff;
    i++;k++;
  }
  else {
    p3[k].power=p2[j].power;
    p3[k].coeff=p2[j].coeff;
    j++;k++;
  }
}

```

$$2X^6 + 5X^0 = 0$$

$$i=1$$

$$7X^5 + 4X^0 = 0$$

$$j=1$$

$$2X^6 + 7X^5 + 9X^0 = 0$$

$$k=0 \quad k=1 \quad k=2$$


```
/* for rest over terms of polynomial 1 */
```

```
while(i<t1)
```

```
{    p3[k].power=p1[i].power;  
    p3[k].coeff=p1[i].coeff;  
    i++;k++;
```

```
}
```

```
/* for rest over terms of polynomial 2 */
```

```
while(j<t2)
```

```
{    p3[k].power=p2[j].power;  
    p3[k].coeff=p2[j].coeff;  
    j++;k++;
```

```
}
```

```
printf("\n Addition of two polynomials = ");  
print(p3,k);          /*Function Call*/  
getch();  
}
```

```
void print(poly p[],int n) /*Function Definition*/  
{  
int i;  
for(i=0;i<n-1;i++)  
    printf("%dX^%d + ",p[i].coeff,p[i].power);  
printf("%dX^%d =0 \n",p[i].coeff,p[i].power);  
}
```

THANK YOU!!

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