

# Numerical Methods & **Computer Programming**

## Lecture 12

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## MATRIX ADDITION

```
#include<stdio.h>
#define m 2
#define n 2
void main()
{
int i,j,a[m][n], b[m][n], c[m][n], d[m][n];
printf("Enter the elements of a[2][2] matrix=\n");
for(i=0;i<m;i++)
{
for(j=0;j<n;j++)
{
scanf("%d",&a[i][j]);}}
printf("Enter the elements of b[2][2] matrix=\n");
```

## Matrix Addition cont.....

```
for(i=0;i<m;i++)
{
for(j=0;j<n;j++)
{
scanf("%d",&b[i][j]);}}
printf("Enter the elements of c[2][2] matrix=\n");
for(i=0;i<m;i++)
{
for(j=0;j<n;j++)
{
scanf("%d",&c[i][j]);}}
```

# Matrix Addition cont.....

```
//computation
for(i=0;i<m;i++)
{
for(j=0;j<n;j++)
{
d[i][j]=a[i][j]+b[i][j]+c[i][j];}}
//print the new matrix in output screen
printf("The elements of d matrix are=\n");
for(i=0;i<m;i++)
{
for(j=0;j<n;j++)
{printf("\t%d",d[i][j]);}
printf("\n");
}}
```

# Matrix Multiplication

```
#include<stdio.h>
void main()
{
int a[10][10],b[10][10],c[10][10],i,j,k,r1,r2,c1,c2,result,sum=0;
printf("Enter the row and column of 'a' matrix=\n");
Scanf("%d %d", &r1, &c1);
printf("Enter the row and column of 'b' matrix=\n");
Scanf("%d %d", &r2, &c2);
While(c1!=r2)
{printf("Error !! Column of first matrix not equal to second matrix")
printf("Enter the row and column of 'a' matrix=\n");
Scanf("%d %d", &r1, &c1);
printf("Enter the row and column of 'b' matrix=\n");
Scanf("%d %d", &r2, &c2);
}
```

```
// taking matrix 'a'
```

```
printf("\nEnter the elements of 'a' matrix=\n");
```

```
for(i=0;i<r1;i++)
```

```
{
```

```
for(j=0;j<c1;j++)
```

```
{printf("a [%d] [%d]= ", i,j);
```

```
scanf("\t%d",&a[i][j]);}}
```

```
// taking matrix 'b'
```

```
printf("Enter the elements of 'b' matrix=\n");
```

```
for(i=0;i<r2;i++)
```

```
{
```

```
for(j=0;j<c2;j++)
```

```
{printf("b [%d] [%d]= ", i,j);
```

```
scanf("\t%d",&b[i][j]);}}
```

```
// printing the matrix "a"
Printf("\n\n matrix 'a'\n");
for(i=0;i<r1;i++)
{
for(j=0;j<c1;j++)
{
printf("\t%d",a[i][j]);
printf("\n");
}}
// printing the matrix "a"
Printf("\n\n matrix 'b'\n");
for(i=0;i<r2;i++)
{
for(j=0;j<c2;j++)
{
printf("\t%d",b[i][j]);
printf("\n");
}}
```

```
//computation
for(i=0;i<r1;i++)
{
for(j=0;j<c2;j++)
{
for(k=0;k<c1;k++)
{
sum=sum+a[i][k]*b[k][j];}
Result [i] [j] = sum;
Sum=0;}}
```

```
// printing the result matrix
Printf("\n\n result matrix\n");
for(i=0;i<r1;i++)
{
for(j=0;j<c2;j++)
{
printf("\t%d",result[i][j]);
printf("\n");
}}
}
```

```
# include <stdio.h>
int sum(); // function prototype
main ()
{
sum(); // function call
return(0);
}
int sum() // function definition
{
int a,b,sum;
printf ("Enter the value of a and b);
scanf ("%d%d",&a,&b);
sum=a+b;
printf ("sum is=%d", sum);
return(0);
}
```

## **/\*A program to find the smallest and large number using function\*/**

```
#include<stdio.h>
int smallest(x,y,z);
int largest(x,y,z);
int main()
{
int x,y,z,d,e;
printf("Enter the value of x,y,z:");
scanf("%d%d%d",&x,&y,&z);
d=smallest(x,y,z);
e=largest(x,y,z);
printf("small value=%d",d);
printf("\nlarge value=%d",e);
}
```

## **/\*A program to find the smallest and large number using function\*/**

```
int smallest(x,y,z)
{
int small;
small=x;
if(y<small)
small=y;
if(z<small)
small=z;
return(small);
}
```

**/\*A program to find the smallest and large number using function\*/**

```
int largest(x,y,z)
{
int large;
large=x;
if(y>large)
large=y;
if(z>large)
large=z;
return(large);
}
```

THANK YOU ALL