Function & 2D Array

- **Function:**

  Syntax:

  data_type function_name (data_type_parameters parameters)
  {
  //Code
  }

Example1:

```
int display(int a)
{
   printf("%d",a);
}

int main()
{
   int a=5;
   display(a);//function call
}
```

Example2:

```
int display(int a[], int n)
{
   for(int i=0; i<n; i++)
   {
      printf("%d ",a[i]);
   }
}

int main()
{
   int ara[5]= {5,4};
   display(ara,5);//function call
}
```

- **2D Array:**

  Syntax:

  data_type array_name [row_size][column_size];

Example:

int ara[2][3];

ara[0][0]	**ara[0][1]**	**ara[0][2]**
ara[1][0]	**ara[1][1]**	**ara[1][2]**

- **Declare and Initialize 2D Array:**

Example-1:

```
int ara[][3] = {{1,2,3},{4,5,6}};
 printf("%d ",ara[0][0]);
 printf("%d ",ara[0][1]);
 printf("%d ",ara[0][2]);

 printf("%d ",ara[1][0]);
 printf("%d ",ara[1][1]);
 printf("%d ",ara[1][2]);
```

Example-2:

```
int ara[][3] = {{1,2,3},{4,5,6}};

 for(int i=0; i<2; i++)
 {
    for(int j=0; j<3; j++)
    {
       printf("%d ",ara[i][j]);
    }
    printf("\n");
 }
```

Example-3:

```
int n,m;
 scanf("%d %d",&n,&m);

 int ara[n][m];

 for(int i=0; i<n; i++)
 {
    for(int j=0; j<m; j++)
    {
       scanf("%d",&ara[i][j]);
    }
 }
```

```
 for(int i=0; i<n; i++)
 {
    for(int j=0; j<m; j++)
    {
       printf("%d ",ara[i][j]);
    }
    printf("\n");
 }
```

- **Passing 2D Array in Function:**

Syntax:

```
data_type fun_name(array_data_type
array_name [][column_size])
{
    //code here

}
```

```
#include<stdio.h>
int m;
void display(int ara[][m],int n)
{
   for(int i=0; i<n; i++)
   {
      for(int j=0; j<m; j++)
      {
         printf("%d ",ara[i][j]);
      }
      printf("\n");
   }

}

int main()
{
   int n;
   scanf("%d %d",&n,&m);

   int ara[n][m];

   for(int i=0; i<n; i++)
   {
      for(int j=0; j<m; j++)
      {
         scanf("%d",&ara[i][j]);
      }
   }

   display(ara,n);


}
```

- **Practice:**
    1. Find the maximum and minimum value from array using function.
    2. Add the two matrix where A = [[1,2,3], [4,5,6]] and B = [[7,8,9], [10,11,12]]
- **Assignment:**
    1. Find the matrix multiplication of your roll number.