Assignment # 8

Two Dimensional Array

1. WAP to read elements in an array (3x3) and calculate the sum and average of all elements.
2. WAP to read elements in an array (2x3) and calculate sum of rows.
3. WAP to read elements in an array (3x5) and calculate sum of columns.
4. WAP to find the maximum number in an array (3x3) and replace all the elements with the maximum.
5. WAP to read elements in an array (3x3) and calculate the sum of diagonal matrix.
6. WAP to read elements in an array (3x3) and find the transpose of a matrix.
7. WAP to add two given matrices (3x3) and print the resultant matrix.
8. WAP to multiply two given matrices (3x3) and print the resultant matrix.

1).

```
#include<stdio.h>
int main()
{
  int a[3][3],i,j,sum=0,avg;
  printf("enter a number for 3x3\n");
  for(i=0;i<=2;i++){
     for(j=0;j<=2;j++)
     {printf("a[%d%d]=",i,j);
     scanf("%d",&a[i][j]);}
  }
  for(i=0;i<=2;i++)
```

```
  {
     for(j=0;j<=2;j++)
     {
        sum =sum + a[i][j];
        avg =sum/9;
     }
  }
  printf("sum is = %d  ",sum);
  printf("\nthe avg is =% d  ",avg);
  return 0;
}
```

2).

```
#include<stdio.h>
int main()
{
   int a[2][3],i,j,sum=0,s=0;
   printf("enter a number for 2 x 3\n");
   for(i=0;i<=1;i++)
   {
      for(j=0;j<=2;j++)
      {
         printf("a[%d%d]=",i,j);
         scanf("%d",&a[i][j]);
      }
   }
   for(i=0;i<=1;i++)
   {
      for(j=0;j<=2;j++)
   {
      sum = sum +a[i][j];
   }
   printf("the sum of %d row is =%d\n",i+1,sum-s);
```

```
   s=sum;
   }
   return 0;
}
```

3).

```
#include<stdio.h>
int main()
{
   int a[3][5],i,j,sum=0,sum1=0;
   printf("enter a number for 3 x  5\n");
   for(i=0;i<=2;i++)
   {
      for (j=0;j<=4;j++)
      {
         printf("a[%d%d]=",i,j);
         scanf("%d",&a[i][j]);
      }
   }
   for(j=0;j<=4;j++)
   {
      for(i=0;i<=2;i++)
      {
         sum =sum +a[i][j];
      }
      printf("the sum of %d colom is =%d\n",j+1,sum-sum1);
      sum1 = sum;
   }
   return 0;
}
```

4).

```
#include<stdio.h>
int main()
```

```
{
   int a[3][3],i,j;
   printf("enter a number for 3 x 3 :\n");
   for(i=0;i<=2;i++)
   {
      for(j=0;j<=2;j++)
      {
         scanf("%d",&a[i][j]);
      }
   }
   for(i=0;i<=2;i++){
      for(j=0;j<=2;j++){
         if(a[0][0] < a[i][j]){
            a[0][0]=a[i][j];

         }
      }
   }
   printf("the max num is :%d\n",a[0][0]);printf("\n");
   a[3][3]=a[0][0];
   for(i=0;i<=2;i++){
      for(j=0;j<=2;j++){

   printf("%d\t",a[3][3]);
   }
   printf("\n");
   }

   return 0;
}
```

5).

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

```
int main()
{
    int a[3][3],i,j,b[3][3],sum=0;
   printf("enter a number for 3 x 3 :\n");
   for(i=0;i<=2;i++)
   {
      for(j=0;j<=2;j++)
      {
         printf("a[%d%d]=",i,j);
         scanf("%d",&a[i][j]);
      }
   }
   printf("the matrix is :\n");
   for(i=0;i<=2;i++)
   {
      for(j=0;j<=2;j++)
      {
         b[i][j] = a[i][j];
         printf("%d\t",b[i][j]);
      }
       printf("\n");
   }

       for(i=0;i<=2;i++){
          for(j=0;j<=2;j++){
             sum = a[0][0] +a[0][2]+a[1][1]+a[2][2] +a[2][0];
          }
       }
       printf("sum %d=",sum);

   return 0;
}
```

6).

```
#include<stdio.h>
int main()
{
    int a[3][3],i,j,b[3][3],sum=0;
   printf("enter a number for 3 x 3 :\n");
   for(i=0;i<=2;i++)
   {
      for(j=0;j<=2;j++)
      {
         printf("a[%d%d]=",i,j);
         scanf("%d",&a[i][j]);
      }
   }
      printf("the initial matrix is :\n");
      for(i=0;i<=2;i++)
   {
      for(j=0;j<=2;j++)
      {
         b[i][j] = a[i][j];
         printf("%d\t",b[i][j]);
      }
       printf("\n");
   }

   printf("the tranpose of  matrix is :\n");
   for(j=0;j<=2;j++)
   {
      for(i=0;i<=2;i++)
      {
         b[i][j] = a[i][j];
         printf("%d\t",b[i][j]);
```

```
        }
         printf("\n");
    }
    return 0;
}
```

7).

```
#include<stdio.h>
int main()
{
    int a[3][3],b[3][3],c[3][3],i,j;
    printf("enter a number for matrix 1 :");
    for(i=0;i<=2;i++){
    for(j=0;j<=2;j++)
    scanf(" %d",&a[i][j]);
    }
    printf("enter a number for matrix 2 :");
     for(i=0;i<=2;i++){
    for(j=0;j<=2;j++)
    scanf("%d",&b[i][j]);
    }
    printf("the sum of matrix is :\n");
    for(i=0;i<=2;i++)
    {
        for(j=0;j<=2;j++)
        {
            c[i][j]=a[i][j] +b[i][j];
            printf(" %d\t",c[i][j]);
        }
             printf("\n");

    }
    return 0;
```

```
}
```

8).

```
#include<stdio.h>
int main()
{
   int a[3][3],b[3][3],c[3][3],i,j;
   printf("enter a number for matrix 1 :");
   for(i=0;i<=2;i++){
   for(j=0;j<=2;j++)
   scanf(" %d",&a[i][j]);
   }
   printf("enter a number for matrix 2 :");
    for(i=0;i<=2;i++){
   for(j=0;j<=2;j++)
   scanf("%d",&b[i][j]);
   }
   printf("the sum of matrix is :\n");
   for(i=0;i<=2;i++)
   {
      for(j=0;j<=2;j++)
      {
         c[i][j]=a[i][j] * b[i][j];
         printf(" %d\t",c[i][j]);
      }
          printf("\n");

   }
   return 0;
}
```