

## Assignment = 16

### Two dimensional Array in c

//1. write a program to calculate sum of two matrices in order 3\*3.

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
    int x[10][10],y[10][10],z[10][10],i,j,sum=0;
    printf("\n Enter First Array Elements\n:");
    for(i=0;i<2;i++)
    {
        for(j=0;j<2;j++)
        {
            printf("Enter first Array Elements[%d][%d] =",i,j);
            scanf("%d",&x[i][j]);
        }
        printf("\n");
    }
    printf("\n*****\n");
    for(i=0;i<2;i++)
    {
        for(j=0;j<2;j++)
        {
            printf("Enter 2nd Array Elements[%d][%d] =",i,j);
            scanf("%d",&y[i][j]);
        }
        printf("\n");
    }
    printf("\n*****\n");

    for(i=0;i<2;i++)
    {
        for(j=0;j<2;j++)
        {
            sum=x[j][i]*y[j][i];
            z[i][j]=sum;
            printf("\t%d",z[i][j]);
        }
        printf("\n");
    }
}
```

```
        printf("\n*****");
    }
```

**//2. write a program to calculate multiplication of two matrices in order 3\*3.**

```
#include <stdio.h>
#include <stdlib.h>
int main()
{
    int x[10][10],y[10][10],z[10][10],i,j,sum=0;
    printf("\n Enter First Array Elements\n:");
    for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
        {
            printf("Enter first Array Elements[%d][%d] =",i,j);
            scanf("%d",&x[i][j]);
        }
        printf("\n");
    }
    printf("\n*****\n");
    for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
        {
            printf("Enter 2nd Array Elements[%d][%d] =",i,j);
            scanf("%d",&y[i][j]);
        }
        printf("\n");
    }
    printf("\n*****\n");
    printf("\n Before multipliction the elements are :\n");
    for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
        {
            z[i][j]=x[i][j];
            printf("\t%d",z[i][j]);
        }
        printf("\n");
    }
    printf("\n\n");
```

```

for(i=0;i<3;i++)
{
    for(j=0;j<3;j++)
    {
        z[i][j]=y[i][j];
        printf("\t%d",z[i][j]);
    }
    printf("\n");
}
printf("\nAfter multiplication the elements are:\n");
for(i=0;i<3;i++)
{
    for(j=0;j<3;j++)
    {
        z[i][j]=x[i][j] * y[j][i];
        printf("\t%d",z[i][j]);
    }
    printf("\n");
}
printf("\n*****");
}

```

//3. write a program in c to find the transpose of given matrices.

```

#include <stdio.h>
int main()
{
    int x[10][10],i,j,r,c;
    printf("\nEnter the Size of Row for Matrices :");
    scanf("%d",&r);
    printf("\nEnter the Size of column for Matrices :");
    scanf("%d",&c);
    printf("\nEnter the Elements :");
    for(i=0;i<r;i++)
    {
        for(j=0;j<c;j++)
        {
            printf("\nEnter Element like [%d][%d]",i,j);
            scanf("%d",&x[i][j]);
        }
    }
    printf("\nThe matrices are:\n");
    for(i=0;i<r;i++)
    {

```

```

        for(j=0;j<c;j++)
        {
            printf("%d\t",x[i][j]);
        }
        printf("\n");
    }
    printf("\nAfter transpose the elements are :\n");
    for(i=0;i<c;i++)
    {
        for(j=0;j<r;j++)
        {
            printf("%d\t",x[j][i]);
        }
        printf("\n");
    }
    return 0;
}

```

**//4. write a c program to find the sum of left diogonal of matrices**

```

#include <stdio.h>
int main()
{
    int x[20][20],i,r,j,sum=0,k;
    printf("\nEnter the number for row and columns:");
    scanf("%d",&r);
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            printf("\nEnter Elements like[%d][%d]",i,j);
            scanf("%d",&x[i][j]);
        }
    }
    printf("\nThe matrices are:\n");
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            printf("\t%d",x[i][j]);
        }
        printf("\n");
    }
}

```

```

    k=r;
    for(i=0;i<r;i++)
    {
        k--;
        for(j=k;j>=k;j--)
        {
            sum+=x[i][j];
        }
    }
    printf("\nSum is %d",sum);

    return 0;
}

```

**//5. write a c program to find the sum of right diagonal of matrices**

```

#include <stdio.h>
int main()
{
    int x[20][20],i,r,j,sum=0;
    printf("\nEnter the number for row and columns:");
    scanf("%d",&r);
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            printf("\nEnter Elements like[%d][%d]",i,j);
            scanf("%d",&x[i][j]);
        }
    }
    printf("\nThe matrices are:\n");
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            printf("\t%d",x[i][j]);
        }
        printf("\n");
    }
    for(i=0;i<r;i++)
    {
        for(j=i;j>=i;j--)
        {

```

```

        sum+=x[i][j];
    }
}
printf("\nSum is %d",sum);

return 0;
}

```

**//6. write a c program to find the sum of rows and columns of given matrices**

```

#include <stdio.h>
int main()
{
    int a[10][10],i,j,sum=0,r;
    printf("\nEnter The Row and column:");
    scanf("%d",&r);
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            printf("\nEnter element like[%d][%d]",i,j);
            scanf("%d",&a[i][j]);
        }
    }
    printf("\nThe matrix are :\n");
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            printf("\t%d",a[i][j]);
        }
        printf("\n");
    }
    printf("\nSum of Rows and Columns in the matrices is:\n");
    for(i=0;i<r;i++)
    {
        sum=0;
        for(j=0;j<r;j++)
        {
            sum+=a[i][j];
        }
        printf("\nsum of %d row is %d",i+1,sum);
    }
}

```

```

        for(i=0;i<r;i++)
    {
        sum=0;
        for(j=0;j<r;j++)
        {
            sum+=a[j][i];
        }
        printf("\nsum of %d column is %d",i+1,sum);
    }
    return 0;
}

```

**//7. write a program to display the lower triangular of given number.**

```

#include <stdio.h>
int main()
{
    int x[20][20],i,j,r,sum=0,temp=0;
    printf("\nenter the row for matrices :");
    scanf("%d",&r);
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            scanf("%d",&x[i][j]);
        }
    }
    printf("\nthe given matrix is :\n");
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            printf("\t%d",x[i][j]);
        }
        printf("\n");
    }
    printf("\nthe result is:\n\n");
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            if(i>=j)
                printf("\t%d",x[i][j]);
        }
    }
}

```

```

        else
        {
            x[i][j]=sum;
            printf("\t%d",x[i][j]);
        }
    }
    printf("\n");
}
return 0;
}

```

**//8. write a program to display the upper triangular of given number.**

```

#include <stdio.h>
int main()
{
    int x[20][20],i,j,r,sum=0;
    printf("\nenter the row for matrices :");
    scanf("%d",&r);
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            scanf("%d",&x[i][j]);
        }
    }
    printf("\nthe given matrix is :\n");
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            printf("\t%d",x[i][j]);
        }
        printf("\n");
    }
    printf("\nthe result is:\n\n");
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            if(j>=i)
                printf("\t%d",x[i][j]);
            else

```



```

        {
            x[i][j]=sum;
            printf("\t%d",x[i][j]);
        }
    }
    printf("\n");
}
return 0;
}

```

**//9. write a program to accept a matrix and determine whether it is a sparse matrix**

```

#include <stdio.h>
int main()
{
    int x[20][10],i,r,j,sum=0,count=0,k=0;
    printf("\nEnter the Row for first matrix:");
    scanf("%d",&r);
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            printf("\nEnter Element[%d][%d]",i,j);
            scanf("%d",&x[i][j]);
        }
    }
    printf("the matrix is \n");
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            printf("\t%d",x[i][j]);
        }
        printf("\n");
    }
    for(i=0;i<r;i++)
    {
        for(j=0;j<r;j++)
        {
            if(x[i][j]==0)
                count++;
            else

```

```

        k++;
    }
}
if(count>k)
printf("\nsprase matrix");
else
printf("\n not a sprasee matrix");
return 0;
}

```

**//10. write a program to find the row with maximum number of 1s.**

```

#include <stdio.h>
int main()
{
    int x[20][10],i,n,j,count=0,k=0,sum=0;
    printf("\nEnter Number:\n");
    scanf("%d",&n);
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            printf("\nEnter element like[%d][%d]",i,j);
            scanf("%d",&x[i][j]);
        }
    }
    printf("\n matrices is :\n");
    for(i=0;i<n;i++)
    {
        for(j=0;j<n;j++)
        {
            printf("\t%d",x[i][j]);
        }
        printf("\n");
    }
    for(i=0;i<n;i++)
    {
        count=0;
        for(j=0;j<n;j++)
        {
            if(x[i][j]==1)
                count++;
        }
        if(count>k)
    }
}

```

```
        {  
            k=count;  
            sum=i+1;  
        }  
    }  
    printf("\n\n%d row is maximun",sum);  
    return 0;  
}
```