**1)**

#include<stdio.h>

int main()

{

int a[3][3],b[3][3],i,j;

printf("enter the values in first matrice \n");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

scanf("%d",&a[i][j]);

}

printf("\n");

}

printf("enter the values in the second matrice\n");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

scanf("%d",&b[i][j]);

}

printf("\n");

}

printf("the sum of the above two matrices is \n");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

printf("%d ",a[i][j]+b[i][j]);

}

printf("\n");

}

return 0;

}

**2)**

#include<stdio.h>

int main()

{

int a[3][3],b[3][3],j,i,s=0,n=0;

printf("enter the values in the first matrix \n");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

scanf("%d",&a[i][j]);

}

printf("\n");

}

printf("enter the values in the second matrix \n");

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

scanf("%d",&b[i][j]);

}

printf("\n");

}

printf("the product of two matrices is \n");

for(i=0;i<3;i++)

{

n=0;

int x=3;

while(x!=0)

{

s=0;

for(j=0;j<3;j++)

{

if(j==0)

{

b[j][n]=b[0][n];

}

else if(j==1)

{

b[j][n]=b[1][n];

}

else

{

b[j][n]=b[2][n];

}

s=s+a[i][j]\*b[j][n];

}

printf("%d ",s);

x--;

n++;

}

printf("\n");

}

return 0;

}

**3)**

#include<stdio.h>

int main()

{

int i,j,n,m;

printf("enter the dimension of the matrix a x b \n");

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

int a[n][m];

printf("enter the values in the array\n");

for(i=0;i<n;i++)

{

for(j=0;j<m;j++)

{

scanf("%d",&a[i][j]);

}

}

printf("transpose of the given matrix is \n");

for(i=0;i<n;i++)

{

for(j=0;j<m;j++)

{

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

}

printf("\n");

}

return 0;

}

**4)**

#include<stdio.h>

int main()

{

int n,m;

printf("enter the dimension of the matrix a x a\n");

scanf("%d",&n);

int a[n][n],i,j,s=0;

printf("enter the values in the matrix \n");

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

scanf("%d",&a[i][j]);

}

}

j=0;

for(i=0;i<n;i++)

{

while (j<n)

{

s=s+a[i][j];

j++;

}

}

printf("the sum of right diagonal is %d",s);

return 0;

}

**5)**

#include<stdio.h>

int main()

{

int n,m;

printf("enter the dimension of the matrix a x a\n");

scanf("%d",&n);

int a[n][n],i,j,s=0;

printf("enter the values in the matrix \n");

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

scanf("%d",&a[i][j]);

}

}

j=n-1;

for(i=0;i<n;i++)

{

while (j>=0)

{

s=s+a[i][j];

j--;

}

}

printf("the sum of right diagonal is %d",s);

return 0;

}

**6)**

#include<stdio.h>

int main()

{

int n;

printf("enter the dimension of the matrix a x a\n");

scanf("%d",&n);

int a[n][n],i,j,s=0;

printf("enter the values in the matrix \n");

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

scanf("%d",&a[i][j]);

}

printf("\n");

}

for(i=0;i<3;i++)

{

for(j=0;j<3;j++)

{

s=s+a[i][j];

}

printf("the sum of the %d row is %d\n",i+1,s);

s=0;

}

for(j=0;j<3;j++)

{

for(i=0;i<3;i++)

{

s=s+a[i][j];

}

printf("the sum of the %d column is %d\n",j+1,s);

s=0;

}

return 0;

}

**7)**

#include<stdio.h>

int main()

{

int n;

printf("enter the dimension of the matrix a x a\n");

scanf("%d",&n);

int a[n][n],i,j,s=0;

printf("enter the values in the matrix \n");

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

scanf("%d",&a[i][j]);

}

printf("\n");

}

for(j=0;j<n-1;j++)

{

for(i=(n-1);i>j;i--)

{

a[i][j]=0;

}

}

printf("the lower triangular matrix is given by \n");

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

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

}

printf("\n");

}

return 0;

}

**8)**

#include<stdio.h>

int main()

{

int n;

printf("enter the dimension of the matrix a x a\n");

scanf("%d",&n);

int a[n][n],i,j,s=0;

printf("enter the values in the matrix \n");

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

scanf("%d",&a[i][j]);

}

printf("\n");

}

for(j=n-1;j>0;j--)

{

for(i=j-1;i>=0;i--)

{

a[i][j]=0;

}

}

printf("the upper triangular matrix is given by \n");

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

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

}

printf("\n");

}

return 0;

}

**9)**

#include<stdio.h>

int main()

{

int n,c=0;

printf("enter the dimension of the matrix a x a\n");

scanf("%d",&n);

int a[n][n],i,j,s=0;

printf("enter the values in the matrix \n");

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

scanf("%d",&a[i][j]);

}

printf("\n");

}

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

if(a[i][j]!=0)

{

c++;

}

}

}

if(c>((n\*n)/2))

{

printf("the given matrix is dense matrix ");

}

else

{

printf("the given matrix is sparse matrix ");

}

return 0;

}

**10)**

#include<stdio.h>

int main()

{

int n,c,m=0,f;

printf("enter the dimension of the matrix a x a\n");

scanf("%d",&n);

int a[n][n],i,j,s=0;

printf("enter the values in the matrix \n");

for(i=0;i<n;i++)

{

for(j=0;j<n;j++)

{

scanf("%d",&a[i][j]);

}

printf("\n");

}

for(i=0;i<n;i++)

{

c=0;

for(j=0;j<n;j++)

{

if(a[i][j]==1)

{

c++;

}

}

if(c>m)

{

m=c;

f=i;

}

}

printf("the row having maximum number of 1s is %d",f);

return 0;

}