1. Write a program to calculate the sum of two matrices each of order 3x3.

```
#include<stdio.h>
int main()
{
   int a[3][3]={1,2,3,4,5,6,7,8,9};
   int b[3][3]={0,1,2,3,4,5,6,7,8};
   int c[3][3],i,j;
   for(i=0;i<3;i++)
  {
      for(j=0;j<3;j++)
         c[i][j]=a[i][j]+b[i][j];
   }  for(i=0;i<3;i++)
   {
      for(j=0;j<3;j++)
        printf("%d ",c[i][j]);
        printf("\n");
   }    return 0;
}
```

2. Write a program to calculate the product of two matrices each of order 3x3.

```
#include<stdio.h>
int main()
{
   int a[3][3]={1,0,0,4,5,6,7,8,9};
   int b[3][3]={0,1,2,3,4,5,6,7,8};
   int c[3][3],i,j,k,sum;
   for(i=0;i<3;i++)
   {
      for(j=0;j<3;j++)
        {
```

```
            sum=0;
        for(k=0;k<3;k++)
            sum=sum+a[i][k]*b[k][j];
        c[i][j] = sum;
          }
    }for(i=0;i<3;i++)
    {
        for(j=0;j<3;j++)
       printf("%d ",c[i][j]);
       printf("\n");
    }return 0;
}
```

3. Write a program in C to find the transpose of a given matrix.

```
#include<stdio.h>
int main()
{
    int a[3][3]={1,2,3,4,5,6,7,8,9};
    int c[3][3],i,j;
    for(i=0;i<3;i++)
   {
        for(j=0;j<3;j++)
            c[i][j]=a[j][i];
    } for(i=0;i<3;i++)
   {    for(j=0;j<3;j++)
         printf("%d ",c[i][j]);
         printf("\n");
   }
        return 0;
}
```

4. Write a program in C to find the sum of right diagonals of a matrix.

```
#include<stdio.h>
int main()
{
   int a[3][3]={1,2,3,4,5,6,7,8,9};
   int i,j,sum=0;
   for(i=0;i<3;i++)
   {
      for(j=0;j<3;j++)
      if(i==j)
      sum = a[i][j]+sum;
    }  printf("%d",sum);
     return 0;
}
```

5. Write a program in C to find the sum of left diagonals of a matrix.

```
#include<stdio.h>
int main()
{
   int a[3][3]={1,2,3,4,5,6,7,8,9};
   int i,j,sum=0;
   for(i=0;i<3;i++)
   {
      for(j=0;j<3;j++)
      if(i+j==2)
      sum = a[i][j]+sum;
    }  printf("%d",sum);
     return 0;
}
```

6. Write a program in C to find the sum of rows and columns of a Matrix.

```
#include<stdio.h>
int main()
{
   int a[3][3]={1,2,3,4,5,6,7,8,9};
   int i,j,sum=0;
   for(i=0;i<3;i++)
   {
      for(j=0;j<3;j++)
      sum = a[i][j]+sum;
    }  printf("%d",sum);
     return 0;
}
```

7. Write a program in C to print or display the lower triangular of a given matrix.

```
#include<stdio.h>
int main()
{
   int a[3][3]={1,2,3,4,5,6,7,8,9};
   int i,j;
   for(i=0;i<3;i++)
    {
      for(j=2-i;j<3;j++)
      printf("%d ",a[i][j]);
   printf("\n");
     }return 0;
}
```

8. Write a program in C to print or display an upper triangular matrix.

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

```
   int a[3][3]={1,2,3,4,5,6,7,8,9};
   int i,j;
   for(i=0;i<3;i++)
    {
       for(j=0;j<=2-i;j++)
       printf("%d ",a[i][j]);
   printf("\n");
    }return 0;
}
```

9. Write a program in C to accept a matrix and determine whether it is a sparse matrix.

```
#include<stdio.h>
int main()
{
   int a[3][3],i,j,count=0;
   printf("Enter the 3*3 matrix\n");
   for(i=0;i<3;i++)
   {
      for(j=0;j<3;j++)
      scanf("%d",&a[i][j]);
   } for(i=0;i<3;i++)
   {
      for(j=0;j<3;j++)
      if(a[i][j]==0)
      count++;
  }{
   if(count>((i*j)/2))
      printf("Matrix is a sparse matrix");
   else
      printf("Matrix is not sparse matrix");
```

```
    }    return 0;
}
```

10. Write a program in C to find the row with maximum number of 1s

```
#include<stdio.h>
int main()
{
   int a[3][3],i,j,count=0,max,index=0;
   printf("Enter the 3*3 matrix\n");
   for(i=0;i<3;i++)
   {
      for(j=0;j<3;j++)
      scanf("%d",&a[i][j]);
   } for(i=0;i<3;i++)
   {
      for(j=0;j<3;j++)
      if(a[i][j]==1)
      count++;
      }
       if(count>max)
       {
          max = count;
          index = i;
       }printf("Index of row with maximum no. of 1s is %d",index);
   return 0;
}
```