iNeuron

Course Name: Job Ready Bootcamp in C++, DSA and IOT

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

Program

```
#include<stdio.h>
int main()
{
   int a[3][3],b[3][3],c[3][3],i,j;
   printf("Enter 9 numbers:");
   for(i=0;i<=2;i++)
      for(j=0;j<=2;j++)
         scanf("%d",&a[i][j]);
   printf("Enter 9 numbers:");
   for(i=0;i<=2;i++)
   {
      for(j=0;j<=2;j++)
      {
         scanf("%d",&b[i][j]);
         c[i][j]=(a[i][j]+b[i][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.

Program

```
#include<stdio.h>
int main()
{
   int a[3][3],b[3][3],i,j,sum,addition,plus;
   printf("Enter 9 values for matrix a:");
   for(i=0;i<=2;i++)
      for(j=0;j<=2;j++)
         scanf("%d",&a[i][j]);
   printf("Enter 9 values for matrix b:");
   for(i=0;i<=2;i++)
      for(j=0;j<=2;j++)
         scanf("%d",&b[i][j]);
   for(i=0;i<=2;i++)
   {
      sum=0,addition=0,plus=0;
      for(j=0;j<=2;j++)
      {
         sum=(a[i][j]*b[j][0])+sum;
         addition=(a[i][j]*b[j][1])+addition;
         plus=(a[i][j]*b[j][2])+plus;
      }
      printf("%d %d %d",sum,addition,plus);
      printf("\n");
   }
```

```
    return 0;
}
```

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

Program

```
#include<stdio.h>
int main()
{
   int a[3][3],b[3][3],i,j;
   printf("Enter 9 numbers:");
   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++)
      {
         b[i][j]=a[j][i];
         printf("%d ",b[i][j]);
      }
      printf("\n");
   }
   return 0;
}
```

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

Program

```
#include<stdio.h>
int main()
{
   int a[3][3],i,j,sum=0;
   printf("Enter 9 numbers:");
   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=2-i;j<=2-i;j++)
      {
         sum=sum+a[i][j];
      }
   }
   printf("Sum of right diagonals values:%d",sum);
   return 0;
}
```

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

Program

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

```
    int a[3][3],i,j,sum=0;
    printf("Enter 9 numbers:");
    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=i-0;j<=i-0;j++)
        {
            sum=sum+a[i][j];
        }
    }
    printf("Sum of left diagonals values:%d",sum);
    return 0;
}
```

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

Program

```
#include<stdio.h>
int main()
{
    int a[3][3],i,j,sum,plus;
    printf("Enter a 9 values for a matrix:");
    for(i=0;i<=2;i++)
    {
        sum=0;
```

```
        for(j=0;j<=2;j++)
        {
            scanf("%d",&a[i][j]);
            sum=(sum+a[i][j]);
        }
        printf("Sum of %d row:%d\n",i+1,sum);
    }
    printf("********************\n");
    for(i=0;i<=2;i++)
    {
        plus=0;
        for(j=0;j<=2;j++)
        {
            plus=(plus+a[j][i]);
        }
        printf("Sum of %d colum:%d\n",i+1,plus);
    }
    return 0;
}
```

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

Program

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

```
    int a[3][3],i,j;
    printf("Enter 9 values for matrix a:");
    for(i=0;i<=2;i++)
    {
       for(j=0;j<=2;j++)
       {
          scanf("%d",&a[i][j]);
          if(a[i][j]==a[0][1])
             a[i][j]=0;
          if(a[i][j]==a[0][2])
             a[i][j]=0;
          if(a[i][j]==a[1][2])
             a[i][j]=0;
       }
    }
     for(i=0;i<=2;i++)
     {
       for(j=0;j<=2;j++)
       {
          printf("%d ",a[i][j]);
       }
       printf("\n");
     }
     return 0;
}
```

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

Program

```
#include<stdio.h>
int main()
{
   int a[3][3],i,j;
   printf("Enter 9 values for matrix a:");
   for(i=0;i<=2;i++)
   {
      for(j=0;j<=2;j++)
      {
         scanf("%d",&a[i][j]);
         if(a[i][j]==a[1][0])
            a[i][j]=0;
         if(a[i][j]==a[2][0])
            a[i][j]=0;
         if(a[i][j]==a[2][1])
            a[i][j]=0;
      }
   }
    for(i=0;i<=2;i++)
    {
      for(j=0;j<=2;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.

Program

```
#include<stdio.h>
int main()
{
   int a[3][3],i,j,count=0,sum=0;
   printf("Enter 9 values for matrix a:");
   for(i=0;i<=2;i++)
   {
      for(j=0;j<=2;j++)
      {
         scanf("%d",&a[i][j]);
         if(a[i][j])
            count++;
         else
            sum++;
      }
   }
   if(sum>count)
      printf("Given matrix is sparse matrix");
   else
```

```
        printf("Given matrix is not sparse matrix");
    return 0;
}
```

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

Program

```
#include<stdio.h>
int main()
{
    int a[3][3],i,j,count=0,sum=0,add=0;
    printf("Enter 9 values for matrix a:");
    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(i==0)
            {
                if(a[i][j]==1)
                    count++;
            }
            else if(i==1)
            {
                if(a[i][j]==1)
                    sum++;
```

```
            }
            else
            {
                if(a[i][j]==1)
                    add++;
            }
        }
    }
    if(count>sum&&count>add)
        printf("1st row maximum number of 1's");
    else if(sum>count&&sum>add)
        printf("2nd row maximum number of 1's");
    else
        printf("3rd row maximum number of 1's");
    return 0;
}
```