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Input

```
3 3
12 20 22
18 16 23
15 25 38
```

Output

```
Enter the number of rows and columns in matrix
3 3
Enter the elemnts of matrix
12  20  22
18  16  23
15  25  38
Sum of all elements of principal diagonal is 66
```

Input

```
3 3
12 20 22
18 16 23
15 25 38
```

Output

```
Enter the elemnts of matrix
12  20  22
18  16  23
15  25  38
Sum of all elements of principal diagonal is 66
Sum of all elements of secondary diagonal is 53
```

Principal diagonal and Secondary diagonal

Program

```
# include <stdio.h>
int main()
{
    int a[20][20], i, j, psum=0, m, n, ssum=0;
    printf("Enter the numbers of rows and
            columns in matrix \n");
    scanf("%d %d", &m, &n);
    printf("Enter the elements of matrix \n");
    for(i=0; i<m; i++)
    {
        for(j=0; j<n; j++)
        {
            scanf("%d", &a[i][j]);
        }
        printf("\n");
    }
    for(i=0; i<m; i++)
    {
        for(j=0; j<n; j++)
        {
            if(i==j)
            psum = psum + a[i][j];
        }
    }
printf("sum of all elements of principal
        diagonal is %d \n", psum);
```

```
i=0;
for(j=n-1; j>=0; j--)
{
    ssum = ssum +a[i][j];
    i++;
}
printf("sum of all elements of secondary
        diagonal is %d\n", ssum);
return(0);
}
```

Algorithm

Step1 - start

Step2 - Input m,n

Step3 - Repeat for (i=0; i<m; i++)
Repeat for (j=0; j<n; j++)
Input a[i][j]
[End for]
[End for]

Step4 - Repeat for (i=0; i<m; i++)
Repeat for (j=0; j<n; j++)
if (i==j)
psum= psum +a[i][j]
[End if]
[End for]
[End for]

Step5 - Output psum

step6 - i=0

step7 - for(j=n-1; j>=0; j--)

ssum = ssum + a[i][j]

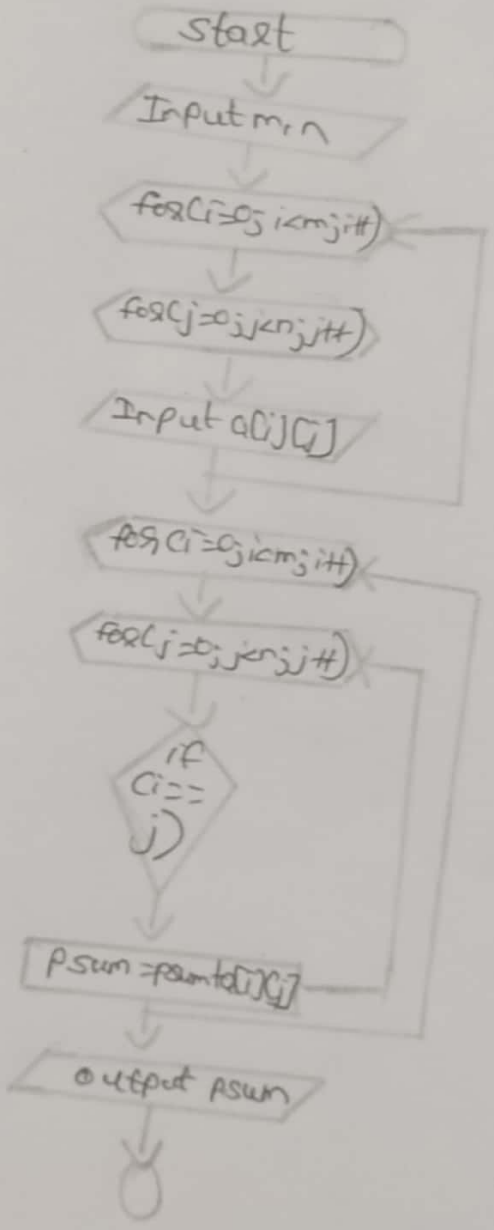
i++

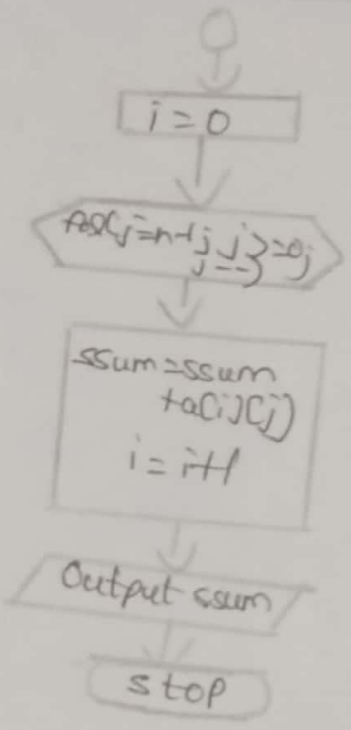
[End for]

step8 - Output ssum

step9 - stop

Flowchart





Output -

Enter the number of rows and columns in matrix

3 3

Enter the elements of matrix

12 20 22

18 16 23

15 25 38

Sum of all elements of principal diagonal is 66.

sum of all elements of secondary diagonal is 53.