

C-57 → Two Dimensional Array

2D-Array Program 2

* Program to print Transpose of a matrix:

```
void main()
```

```
{
```

```
int i, j, a[2][3];
```

```
// b[3][2];
```

```
printf("Enter Matrix elements:\n");
```

```
for(i=0; i<2; i++)
```

```
{
```

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

```
}
```

```
printf("2x3 Matrix is:\n");
```

```
for(i=0; i<2; i++)
```

```
{
```

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

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

```
}
```

```
printf("3x2 Transpose Matrix:\n");
```

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

```
{
```

```
// b[i][j] = a[j][i];
```

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

```
}
```

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

```
getch();
```

(2x3)

	0	1	2
0	$(0,0)$ 1	$(0,1)$ 2	$(0,2)$ 3
1	$(1,0)$ 4	$(1,1)$ 5	$(1,2)$ 6

(3x2)

	0	1
0	$(0,0)$ 1	$(0,1)$ 4
1	$(1,0)$ 2	$(1,1)$ 5
2	$(2,0)$ 3	$(2,1)$ 6

In, 3x2 matrix,

$(0,0) \rightarrow$ value $a[0][0]$
 i,j

so we access $(0,0) \rightarrow$ value (1).

$(0,1) \rightarrow$ value 4 $a[1][0]$
 i,j

so we access $(1,0) \rightarrow$ value (4).

o/p

$(0,0)$ 1	$(1,0)$ 4
$(0,1)$ 2	$(1,1)$ 5
$(0,2)$ 3	$(1,2)$ 6

CODE 1:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  #define N 100
4  /** 2 - 2D ARRAY PROGRAM **/
5  /** PRINT TRANSPOSE OF A MATRIX **/
6  int main()
7  {
8      int a[N][N], m, n, i, j;
9      printf("Enter number of rows:");
10     scanf("%d", &m);
11     printf("Enter number of columns:");
12     scanf("%d", &n);
13     for(i=0; i<m; i++)
14     {
15         for(j=0; j<n; j++)
16         {
17             printf("Enter value of a[%d][%d]:", i, j);
18             scanf("%d", &a[i][j]);
19         }
20     }
21
```

```
21     printf("\nMatrix is:\n");
22     for(i=0; i<m; i++)
23     {
24         for(j=0; j<n; j++)
25         {
26             printf("%d\t", a[i][j]);
27         }
28         printf("\n");
29     }
30
31     printf("\nTranspose Matrix is:\n");
32     for(i=0; i<n; i++)
33     {
34         for(j=0; j<m; j++)
35         {
36             printf("%d\t", a[j][i]);
37         }
38         printf("\n");
39     }
40     getch();
41 }
```

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```
Enter number of rows:4
Enter number of columns:5
Enter value of a[0][0]:1
Enter value of a[0][1]:2
Enter value of a[0][2]:3
Enter value of a[0][3]:4
Enter value of a[0][4]:5
Enter value of a[1][0]:1
Enter value of a[1][1]:2
Enter value of a[1][2]:3
Enter value of a[1][3]:4
Enter value of a[1][4]:5
Enter value of a[2][0]:1
Enter value of a[2][1]:2
Enter value of a[2][2]:3
Enter value of a[2][3]:4
Enter value of a[2][4]:5
Enter value of a[3][0]:1
Enter value of a[3][1]:2
Enter value of a[3][2]:3
Enter value of a[3][3]:4
Enter value of a[3][4]:5
```

Matrix is:

```
1      2      3      4      5
1      2      3      4      5
1      2      3      4      5
1      2      3      4      5
```

Transpose Matrix is:

```
1      1      1      1
2      2      2      2
3      3      3      3
4      4      4      4
5      5      5      5
```