

Practice Nested Loops

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Write a C program that uses nested for loop to print the following pattern for a given value of n entered by the user. For example:

Enter the value of n: 10

```
1  
2 3  
4 5 6  
7 8 9 10
```

Enter the value of n: 11

```
1  
2 3  
4 5 6  
7 8 9 10  
11
```

Question 2: Hollow Square with Diagonals

Write a C program to print a **hollow square pattern with both diagonals** using nested for loops.

For input n = 7, the output should be:

```
* *  
* *  
* *  
*  
* *  
* *  
* * *
```

Question 3: Multiplication Table Matrix

Write a C program that prints a **multiplication table in matrix form** using nested for loops.

For input n = 5, output should be:

```
1 2 3 4 5  
2 4 6 8 10  
3 6 9 12 15  
4 8 12 16 20  
5 10 15 20 25  
6 12 18 24 30  
7 14 21 28 35  
8 16 24 32 40  
9 18 27 36 45  
10 20 30 40 50
```

5

i	j	1	2	3	4
1	*	-	-	-	*
2	-	*	-	*	-
3	-	-	*	-	-
4	-	-	-	*	-

$$0+4=4 \quad n-1$$

```

#include <stdio.h>

void main(){
    int n,i,j;
    printf("Enter number of lines: ");
    scanf("%d",&n);
    for(i=0;i<n;i++){
        for(j=0;j<n;j++){
            if(i==j||i+j==n){ ← logic is important
                printf("*");
            }
            else{
                → printf(" ");
            }
        }
        printf("\n");
    }
}

```

	-	-	*	-	-
2	-	*	-	*	-
3	*	-	-	*	-

j	0	1	2	3
i	*	-	-	*
1	-	*	*	-
2	-	*	*	-
3	*	-	-	*

$n=4$

$3 = n-1$

Question-4: Pascal's Triangle

Write AC program to generate Pascal's triangle up to north rows using nested for loop. For input N = 5, output should be:

```

1
1   1
1   2   1
1   3   3   1
1   4   6   4   1

```

Question-5: Frequency count of digits (0 - 9)

Write a program C program that reads an integer from the user and counts the frequency of each digit zero to 9 using. Nested for loop.

For example:

Input: 11112222000333444233

Output:

```

Digit 0: 0 times
Digit 1: 4 times
Digit 2: 5 times
Digit 3: 5 times
Digit 4: 3 times

```

```

...
Digit 9: 0 times

```