

HATFD1035

Print Pascal's Triangle

Write a program to generate and print the first n rows of Pascal's triangle without using built-in math or array functions. For n = 5, the output should be:

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

Program Code

```
#include<Stdio.h>

void triangle(int n){
    int val, x, y;
    for(x=0;x<n;x++){
        for(y=0;y<n-x-1;y++){
            printf(" ");
            val= 1;
        }
        for(y = 0; y <= x; y++) {
            printf("%d ", val);
            val = val * (x - y) / (y + 1);
        }
        printf("\n");
    }
}

int main() {
    int n;
    printf("Enter the number of rows: ");
    scanf("%d", &n);
    triangle(n);
    return 0;
}
```

The screenshot shows a C++ IDE with the following components:

- Source Code (triangle.c):**

```
1 #include<stdio.h>
2
3 void triangle(int n){
4     int val, x, y;
5     for(x=0;x<n;x++){
6         for(y=0;y<n-x-1;y++){
7             printf(" ");
8             val=1;
9             for(y=0; y <= x; y++){
10                printf("%d ", val);
11                val = val * (x - y) / (y + 1);
12            }
13        }
14    }
15
16    int main() {
17        printf("Enter the number of rows: ");
18        scanf("%d", &n);
19        triangle(n);
20        return 0;
21    }
22 }
```
- Compiler Output:**

```
Processing C source file...
- C Compiler: C:\Program Files (x86)\Dev-Cpp\MinGW64\bin\gcc.exe
- Command: gcc.exe "C:\Users\kirub\OneDrive\Documents\triangle.c" -o "C:\Users\kirub\OneDrive\Documents\triangle.exe" -I"C:\Program Files (x86)\Dev-Cpp\MinGW64\include"
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\kirub\OneDrive\Documents\triangle.exe
- Output Size: 129.291015625 KiB
- Compilation Time: 0.44s
```

Output 1:

N=5

The terminal window shows the following output:

```
Enter the number of rows: 5
 1
1 1
1 2 1
1 3 3 1
1 4 6 4 1

-----
Process exited after 1.545 seconds with return value 0
Press any key to continue . . .
```

Output 2:

N=3

The terminal window shows the following output:

```
Enter the number of rows: 3
 1
1 1
1 2 1

-----
Process exited after 1.39 seconds with return value 0
Press any key to continue . . .
```

Output 3:

N=7

```
C:\Users\kirub\OneDrive\Doc x + v
Enter the number of rows: 7
  1
 1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
1 6 15 20 15 6 1

-----
Process exited after 1.838 seconds with return value 0
Press any key to continue . . .
```