

HATFD1035

Problem Statement:

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
11
121
1331
14641
```

Program Code:

```
#include<stdio.h>

int binomialCoeff(int n,int k);

void printPascal(int n)
{
    for(int line=0;line < n;line++)
    {
        for(int i=0;i<=line;i++)
            printf("%d",binomialCoeff(line,i));
        printf("\n");
    }
}

int binomialCoeff(int n,int k)
{
    int res =1;
    if(k>n-k)
        k=n-k;
    for(int i=0;i<k;++i)
```

```

{
    res*=(n-i);
    res/=(i+1);
}

return res;
}

int main()
{
    int n=5;

    printPascal(n);

    return 0;
}

```

Output:

N=5;

The screenshot shows a C++ IDE with a file named 'main.c'. The code defines a function 'binomialCoeff' and a function 'printPascal'. The 'printPascal' function calls 'binomialCoeff' for each line from 0 to n-1. The 'binomialCoeff' function calculates the binomial coefficient for a given line and index. The output shows the first five rows of Pascal's triangle for n=5.

```

1 #include<stdio.h>
2 int binomialCoeff(int n,int k);
3 void printPascal(int n)
4 {
5     for(int line=0;line < n;line++)
6     {
7         for(int i=0;i<=line;i++)
8             printf("%d",binomialCoeff(line,i));
9         printf("\n");
10    }
11 }
12 int binomialCoeff(int n,int k)
13 {
14     int res =1;
15     if(k>n-k)
16         k=n-k;
17     for(int i=0;i<k;++i)
18     {
19         res*=(n-i);
20         res/=(i+1);
21     }
22     return res;

```

Output:

```

/tmp/eI8q3irmbF.o
1
11
121
1331
14641

=== Code Execution Successful ===

```

Sample Output:

N=4;

```
main.c
8     printf("%d",binomialCoeff(line,i));
9     printf("\n");
10 }
11 }
12 int binomialCoeff(int n,int k)
13 {
14     int res =1;
15     if(k>n-k)
16         k=n-k;
17     for(int i=0;i<k;++i)
18     {
19         res*=(n-i);
20         res/=(i+1);
21     }
22     return res;
23 }
24 int main()
25 {
26     int n=4;
27     printPascal(n);
28     return 0;
29 }
```

Output

```
/tmp/cec719Lf9y.o
1
11
121
1331

=== Code Execution Successful ===
```

N=8;

```
main.c
8     printf("%d",binomialCoeff(line,i));
9     printf("\n");
10 }
11 }
12 int binomialCoeff(int n,int k)
13 {
14     int res =1;
15     if(k>n-k)
16         k=n-k;
17     for(int i=0;i<k;++i)
18     {
19         res*=(n-i);
20         res/=(i+1);
21     }
22     return res;
23 }
24 int main()
25 {
26     int n=8;
27     printPascal(n);
28     return 0;
29 }
```

Output

```
/tmp/S2g18ccZgB.o
1
11
121
1331
14641
15101051
1615201561
172135352171

=== Code Execution Successful ===
```

N=10;

main.c

Run

Share

8

printf("%d",binomialCoeff(line,i));

9

printf("\n");

10

}

11

}

12

int binomialCoeff(int n,int k)

13

{

14

int res =1;

15

if(k>n-k)

16

k=n-k;

17

for(int i=0;i<k;++i)

18

{

19

res*=(n-i);

20

res/=i+1;

21

}

22

return res;

23

}

24

int main()

25

{

26

int n=10;

27

printPascal(n);

28

return 0;

29

}

Output

Clear

/tmp/BDaK0qb0BS.o

1

11

121

1331

14641

15101051

1615201561

172135352171

18285670562881

193684126126843691

--- Code Execution Successful ---