



Assignments

Pattern Printing - 2

Q1. Print the following pattern

Input : n = 5

Output :

```
1  
123  
12345  
1234567
```

Solution:

```
#include <bits/stdc++.h>  
using namespace std  
int main() {  
    int n;  
    cin >> n;  
    for(int i = 0; i < n; ++i) {  
        for(int j = 0; j < n-i-1; ++j) {  
            cout << " ";  
        }  
        for(int j = 0; j < 2 * i + 1; ++j) {  
            cout << j+1 << " ";  
        }  
        cout << endl;  
    }  
    return 0;  
}
```

Q2. Print the following pattern

Input : n = 4

Output :

```
A  
ABC  
ABCDE  
ABCDEFG
```

Solution:

```
#include <bits/stdc++.h>  
using namespace std  
int main() {  
    int n;  
    cin >> n;
```

```
for(int i = 0; i < n; ++i) {  
    for(int j = 0; j < n-i-1; ++j) {  
        cout << " ";  
    }  
    for(int j = 0; j < 2 * i + 1; ++j) {  
        cout << (char)('A' + j) << " ";  
    }  
    cout << endl;  
}  
return 0;  
}
```

Q3. Print the following pattern

Input: n = 4

Output:

A
B A B
C B A B C
D C B A B C D

Solution:

```
#include <bits/stdc++.h>  
using namespace std  
int main() {  
    int n;  
    cin >> n;  
    for(int i = 1; i <= n; ++i) {  
        for(int j = 1; j <= n - i; ++j) {  
            cout << " ";  
        }  
        for(int j = i-1; j >= 0; --j) {  
            cout << (char)('A'+j) << " ";  
        }  
        for(int j = 1; j < i; ++j) {  
            cout << (char)('A'+j) << " ";  
        }  
        cout << endl;  
    }  
    return 0;  
}
```

Q4. Print the following pattern

Input: n = 4

Output:

A B C D E F G

A B C E F G

A B F G

A G

Solution:

```
#include <bits/stdc++.h>
using namespace std
int main() {
    int n;
    cin >> n;
    for(int i = 0; i < 2 * n - 1; ++i) {
        cout << (char)('A' + i) << " ";
    }
    cout << endl;
    for(int i = 1; i < n; ++i) {
        for(int j = 0; j < n - i; ++j) {
            cout << (char)('A'+j) << " ";
        }
        for(int j = 0; j < 2*i-1; ++j) {
            cout << " ";
        }
        for(int j = 0; j < n - i; ++j) {
            cout << (char)('A'+n+i+j-1) << " ";
        }
        cout << endl;
    }
}
```

Q5. Print the following pattern

Input : n = 4

Output :

1 2 3 4 3 2 1

1 2 3 3 2 1

1 2 2 1

1 1

Solution:

```
#include <bits/stdc++.h>
using namespace std
int main() {
    int n;
    cin >> n;
    for(int i = 0; i < n; ++i) {
        cout << i+1 << " ";
    }
}
```

```
for(int i = n-1; i ≥ 1; --i) {  
    cout << i << " ";  
}  
cout << endl;  
for(int i = 1; i < n; ++i) {  
    for(int j = 0; j < n - i; ++j) {  
        cout << j+1 << " ";  
    }  
    for(int j = 0; j < 2*i-1; ++j) {  
        cout << " ";  
    }  
    for(int j = n-i; j ≥ 1; --j) {
```

Q6. Print the following pattern

Input: n = 4

Output:

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

Solution:

```
#include <bits/stdc++.h>  
using namespace std  
int main() {  
    int n;  
    cin >> n;  
    // Printing entire pattern except the bottommost star  
    for(int i = 0; i < n-1; ++i) {  
        for(int j = 0; j < i; ++j) {  
            cout << " ";  
        }  
        cout << "*";  
        int m = 2 * (n - i - 1);  
        for(int j = 0; j < m-1; ++j) {  
            cout << " ";  
        }  
        cout << "*" << endl;  
    }  
    //Printing last star  
    for(int i = 0; i < n-1; ++i) {  
        cout << " ";  
    }
```

Q7. Print the following pattern

Input : m = 4, n = 6

Output:

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

Solution:

```
#include <bits/stdc++.h>  
using namespace std  
int main() {  
    int n;  
    cin >> n;  
    // Printing the topmost star: 0th row  
    for(int i = 0; i < n; ++i)  
        cout << " ";  
    cout << "*" << endl;  
    // Printing the rest of the upper triangle: [1...n] rows  
    for(int i = 1; i <= n; ++i) {  
        // Printing initial spaces  
        for(int j = 0; j < n - i; ++j) {  
            cout << " ";  
        }  
        cout << "*";  
        int m = 2 * i - 1;  
        // Printing middle spaces  
        for(int j = 0; j < m; ++j) {  
            cout << " ";  
        }
```

Q8. Print the following pattern

Input : n = 4

Output:

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

```
#include <bits/stdc++.h>
using namespace std
int main() {
int n;
cin >> n;
for(int i = 0; i < n; ++i) {
cout << " ";
}
cout << 1 << endl;
for(int i = 1; i <= n; ++i) {
for(int j = 0; j < n - i; j++) {
cout << " ";
}
cout << i;
for(int j = 0; j < 2 * i - 1; ++j) {
cout << " ";
}
cout << i << endl;
}
return
```

Q9. Print the following pattern

Input: n = 5

Output:

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

Solution:

```
#include <bits/stdc++.h>
using namespace std
int main() {
int n;
cin >> n;
// Printing the topmost star: 0th row
for(int i = 0; i < n; ++i)
cout << " ";
```

```
cout << "*" << endl;
// Printing the rest of the upper triangle: [1...n] rows
for(int i = 1; i <= n; ++i) {
// Printing initial spaces
for(int j = 0; j < n - i; ++j) {
cout << " ";
}
cout << "*";
int m = 2 * i - 1;
// Printing middle spaces
for(int j = 0; j < m; ++j) {
cout << " ";
```

Q10. Print the following pattern

Input: n = 4

Output:

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

Solution:

```
#include <bits/stdc++.h>
using namespace std
int main() {
int n;
cin >> n;
// Printing 0th row
for(int i = 0; i < 2 * n - 1; ++i) {
cout << "* ";
}
cout << endl;
// Printing upper pattern
for(int i = 1; i < n; ++i) {
for(int j = 0; j < n - i; ++j) {
cout << "* ";
}
for(int j = 0; j < 2 * i - 1; ++j) {
cout << " ";
}
for(int j = 0; j < n - i; ++j) {
cout << "* ";
}
cout << endl;
```

Q11. Print the following pattern

Input : n = 4

Output :

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

Solution:

```
#include <bits/stdc++.h>
using namespace std
int main() {
    int n;
    cin >> n;
    for(int i = 0; i < 2 * n - 1; ++i) {
        for(int j = 0; j < 2 * n - 1; ++j) {
            if(i == n-1 || j == n-1 || i+j == n-1 || j-i == n-1 || i - j == n-1 || i + j == 3 * (n-1)) {
                cout << "* ";
            } else {
                cout << " ";
            }
        }
        cout << endl;
    }
    return 0;
}
```

Note:- Please try to invest time doing the assignments which are necessary to build a strong foundation. Do not directly Copy Paste using Google or ChatGPT. Please use your brain.



**THANK
YOU!**