



C++ Assignments | Pattern Printing - 2 | Week 3

1. Print the following pattern

Input: n = 5 Output:

```
1
1 2 3
1 2 3 4 5
1 2 3 4 5 6 7
```

Ans

```
#include <iostream>
```

```
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 << " "<<endl;
```

```
        }
```

2. Print the following pattern

Input: n = 4

Output:

```
A
A B C
A B C D E
A B C D E F G
```

Ans

```
#include<iostream>
```

```
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) << " "<<endl;
```

```
}
```

3. Print the following pattern

Input: n = 4

Output:

A

B A B

C B A B C

D C B A B C D

Ans

```
#include <iostream>
```

```
int main() {
```

```
int n;
```

```
cin >> n;
```

```
for(int i = 1; i <= n; ++i) {
```

```
for(int i = 1; i <= n; ++i) {
```

```
cout << " ";
```

```
}
```

```

for(int j = i-1; j >= 0; --j) {
    cout << (char)('A'+j) << " ";
}

    for(int j = 1; j < i; ++j) {
        cout << (char)('A'+j) << " "<<endl;
    }

```

4. 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

```

Ans

```

#include <iostream>

Using namespace

int main() {
    int n;
    cin >> n;
    for(int i = 0; i < 2 * n - 1; ++i) {
        cout << (char)('A' + i) << " "<<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) << " "<<endl;
        }
    }
}

```

```
}
```

5. 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
```

Ans

```
#include <iostream>
```

```
using namespace std;
```

```
int main() {
```

```
    int n;
```

```
    cin >> n;
```

```
    // First part: Ascending and descending numbers
```

```
    for (int i = 0; i < n; ++i) {
```

```
        cout << i + 1 << " ";
```

```
    }
```

```
    for (int i = n - 1; i >= 1; --i) {
```

```
        cout << i << " ";
```

```
    }
```

```
    cout << endl;
```

```
    // Second part: Pattern with spaces
```

```
    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 << " "; // Adjusted space to match the numbers' width
```

```
        }
```

```

for (int j = n - i; j >= 1; --j) {
    cout << j << " " << endl;
}

```

6. Print the following pattern

Input : n = 5

Output:

```

*           *
 *         *
  *       *
   *     *
    *   *
     *

```

Ans

```

#include <iostream>

```

```

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 << " ";
    }
    cout << "*" << endl;
}

```

7. Print the following pattern

Sample Input : m = 4, n = 6

Sample Output :

```

      *
    *  *
  *      *
*          *
  *      *
    *  *
      *

```

Ans

```
#include <iostream>
```

```
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 << " <<endl";
    }

```

8. Print the following pattern

Sample Input : n = 4

Output

```

  1
 2 2
3  3
4    4

```

Ans

```
#include <iostream>
```

```
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;
    }
}

```

9. Print the following pattern

Sample Input : n = 5

Output :

```

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

Ans

```
#include
```

```
int main() {
```

```
    int n;
```

```
    cin >> n;
```

```
    for(int i = 0; i < n; ++i) {
```

```
        for(int j = 0; j <= i; ++j) {
```

```
            cout << "* ";
```

```
        }
```

```
        for(int j = 0; j < 2 * (n - i - 1); ++j) {
```

```
            cout << " ";
```

```
        }
```

```
        for(int j = 0; j <= i; ++j) {
```

```
            cout << "* ";
```

```
        }
```

```
        cout << endl;
```

```
    }
```

```
    for(int i = n-1; i >= 0; --i) {
```



```

for(int j = 0; j <= i; ++j) {
cout << "* ";
}

```

10. Print the following pattern Input : n = 4 Output :

```

*      *
**     **
***   ***
*****
*****
***   ***
**     **
*      *

```

```

#include<iostream>
int main() {
int n;
cin >> n;
for(int i = 0; i < 2 * n -
1; ++i) {
cout <<"* ";
}
cout << endl;
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 << "* "<<endl;
}
}

```

11. Print the following
pattern Input: n = 4
Output:

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

```
#include<iostream>
```

```
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 << " "<<endl;
```

```
}
```

```
}
```

