

Week 3 -pattern printing assignment

C++ Assignments | Pattern Printing - 1 | Week 3

1.Print the following pattern

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

```
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     int rows = 4; // Number of rows in the pattern
6
7     // Outer loop for rows
8     for (int i = 1; i <= rows; ++i) {
9         // Inner loop for columns
10        for (int j = 1; j <= 4; ++j) {
11            cout << "1 ";
12        }
13        cout << endl; // Move to the next line after printing each row
14    }
15
16    return 0;
17 }
```

The terminal output shows the pattern of 1s as specified in the assignment.

2.Print the following pattern
Input: n = 4

```
Output:
1 2 3 4
1 2 3
1 2
1
```

```
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     int n = 4; // Number of rows in the pattern
6
7     // Outer loop for rows
8     for (int i = n; i >= 1; --i) {
9         // Inner loop for columns
10        for (int j = 1; j <= i; ++j) {
11            cout << j << " ";
12        }
13        cout << endl; // Move to the next line after printing each row
14    }
15
16    return 0;
17 }
```

The terminal output shows the pattern of numbers 1 to n as specified in the assignment.

Week 3 -pattern printing assignment

3.Print the following pattern

Input: n = 4

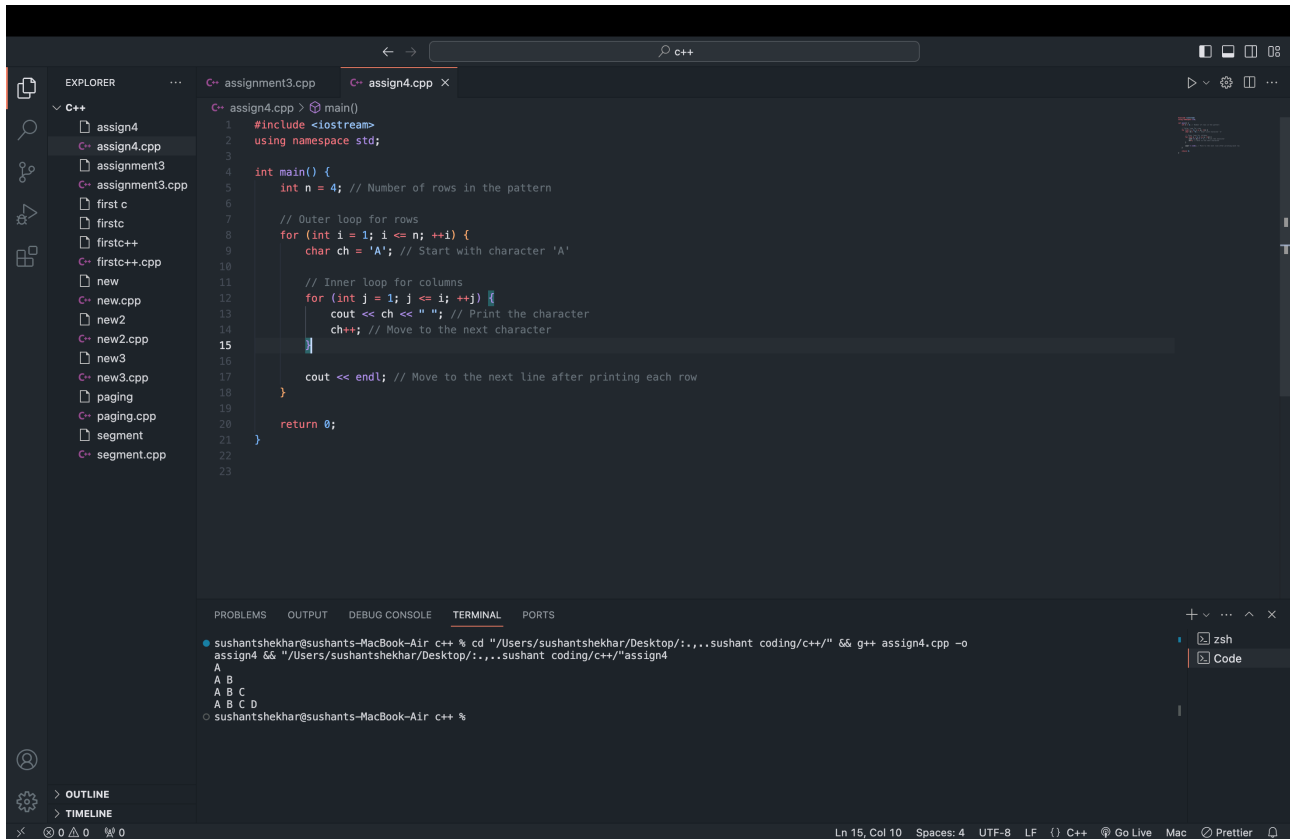
Output:

A

A B

A B C

A B C D



The screenshot shows a C++ IDE with a file explorer on the left containing various files like 'assign4.cpp', 'assignment3.cpp', 'firstc', 'firstc++', 'firstc++.cpp', 'new', 'new.cpp', 'new2.cpp', 'new3.cpp', 'new3.cpp', 'paging', 'paging.cpp', 'segment', and 'segment.cpp'. The main editor displays the code for 'assign4.cpp' which prints a pattern of 'A's. The terminal at the bottom shows the command to compile and run the program, and the output matches the expected pattern.

```
1 #include <iostream>
2 using namespace std;
3
4 int main() {
5     int n = 4; // Number of rows in the pattern
6
7     // Outer loop for rows
8     for (int i = 1; i <= n; ++i) {
9         char ch = 'A'; // Start with character 'A'
10
11         // Inner loop for columns
12         for (int j = 1; j <= i; ++j) {
13             cout << ch << " "; // Print the character
14             ch++; // Move to the next character
15         }
16
17         cout << endl; // Move to the next line after printing each row
18     }
19
20     return 0;
21 }
```

Terminal Output:

```
sushantshekhar@sushants-MacBook-Air c++ % cd "/Users/sushantshekhar/Desktop/...sushant coding/c++/" && g++ assign4.cpp -o assign4 && ./assign4
A
A B
A B C
A B C D
sushantshekhar@sushants-MacBook-Air c++ %
```

4.Print the following pattern

Input: n = 4

Output:

1

A B

1 2 3

A B C D

1 2 3 4 5

Solution:-

```
#include <iostream>
using namespace std;
```

```
int main() {
    int n = 4; // Number of rows in the pattern
    int num = 1; // Initial value for numbers
    char ch = 'A'; // Initial value for characters
```

```
    // Outer loop for rows
    for (int i = 1; i <= n; ++i) {
        // Print numbers for odd rows
```

Week 3 -pattern printing assignment

```
if (i % 2 != 0) {
    for (int j = 1; j <= i; ++j) {
        cout << num++ << " ";
    }
}
// Print characters for even rows
else {
    for (int j = 1; j <= i; ++j) {
        cout << ch++ << " ";
    }
}

cout << endl; // Move to the next line after printing each row
}

return 0;
}
```

5.Print the following pattern

Input n = 4

Output:

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

- Solution:-
- #include <iostream>
- using namespace std;
-
- int main() {
- int n = 4; // Number of rows in the pattern
-
- // Print upper half of the pattern
- for (int i = 1; i <= n; ++i) {
- for (int j = 1; j <= i; ++j) {
- cout << "*";
- }
- cout << endl;
- }
-
- // Print lower half of the pattern
- for (int i = n - 1; i >= 1; --i) {
- for (int j = 1; j <= i; ++j) {
- cout << "*";
- }
- cout << endl;
- }
-
- return 0;
- }
-

6.Print the following pattern

Sample Input : m = 4, n = 6

Sample Output :

```
*****
```

Week 3 -pattern printing assignment

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

- Solution:-
- `#include <iostream>`
- `using namespace std;`
-
- `int main() {`
- `int m = 4; // Number of rows`
- `int n = 6; // Number of columns`
-
- `// Print the first row of asterisks`
- `for (int i = 0; i < n; ++i) {`
- `cout << "*";`
- `}`
- `cout << endl;`
-
- `// Print the interior rows`
- `for (int i = 2; i < m; ++i) {`
- `cout << "*"; // Print asterisk for the left border`
- `for (int j = 2; j < n; ++j) {`
- `if (i == m - 1 || j == n - 1) { // Print asterisk for right border`
- `cout << "*";`
- `} else {`
- `cout << " "; // Print space for interior`
- `}`
- `}`
- `cout << "*" << endl; // Print asterisk for the right border`
- `}`
-
- `// Print the last row of asterisks`
- `for (int i = 0; i < n; ++i) {`
- `cout << "*";`
- `}`
- `cout << endl;`
-
- `return 0;`
- `}`
-

7. Print the following pattern

Sample Input : n = 4

Output :

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

- Solution:-
- `#include <iostream>`
- `using namespace std;`
-
- `int main() {`
- `int n = 4; // Number of rows in the pattern`
-
- `// Outer loop for rows`
- `for (int i = 1; i <= n; ++i) {`
- `// Inner loop for columns`
- `for (int j = 1; j <= n; ++j) {`
- `cout << "*";`
- `}`
- `}`

Week 3 -pattern printing assignment

- `cout << endl; // Move to the next line after printing each row`
- `}`
-
- `return 0;`
- `}`
-

8.Print the following pattern

Sample Input : n= 4

Output :

1

1 2

1 2 3

1 2 3 4

• Solution:-

• `#include <iostream>`

• `using namespace std;`

•

• `int main() {`

• `int n = 4; // Number of rows in the pattern`

•

• `// Outer loop for rows`

• `for (int i = 1; i <= n; ++i) {`

• `// Inner loop for printing numbers`

• `for (int j = 1; j <= i; ++j) {`

• `cout << j << " ";`

• `}`

• `cout << endl; // Move to the next line after printing each row`

• `}`

•

• `return 0;`

• `}`

•

9.Print the following pattern

Input : n = 4

Output :

A

A B

A B C

A B C D

• Solution:-

• `#include <iostream>`

• `using namespace std;`

•

• `int main() {`

• `int n = 4; // Number of rows in the pattern`

•

• `// Outer loop for rows`

• `for (int i = 1; i <= n; ++i) {`

• `char ch = 'A'; // Start with character 'A'`

•

• `// Inner loop for printing characters`

• `for (int j = 1; j <= i; ++j) {`

• `cout << ch++ << " ";`

• `}`

• `cout << endl; // Move to the next line after printing each row`

• `}`

•

• `return 0;`

• `}`

Week 3 -pattern printing assignment

•

10. Print the following pattern

Input: n = 4

Output:

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

• Solution:-

• #include <iostream>

• using namespace std;

•

• int main() {

• int n = 4; // Number of rows in the pattern

•

• // Outer loop for rows

• for (int i = 1; i <= n; ++i) {

• // Inner loop for printing numbers

• for (int j = i; j >= 1; --j) {

• cout << j << " ";

• }

• cout << endl; // Move to the next line after printing each row

• }

•

• return 0;

• }

•

11. Print the following pattern

Input: n = 4

Output:

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

Solution:-

#include <iostream>

using namespace std;

int main() {

int n = 4; // Number of rows in the pattern

// Print upper half of the pattern

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

for (int j = 1; j <= i; ++j) {

cout << " ";

}

cout << endl;

}

// Print lower half of the pattern

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

for (int j = 1; j <= i; ++j) {

cout << " ";

}

cout << endl;

}

Week 3 -pattern printing assignment

```
    return 0;  
}
```