

### **Program 1**

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

//declare variables
int rows, i, j, space;

int main()
{

    //receive input from the users (how many rows)
    cout << "Enter number of rows: ";
    cin >> rows;

    //nested for loops to iterate from 1 until == rows (number of rows, input from users)
    for(i = 1; i <= rows; i++)
    {
        //for loop to output spaces before outputting *
        //spaces will decrease by 1 for each new line created
        for(space = i; space < rows; space++)
        {
            cout << setw(2) << " ";
        }
        //for loop to output * after the spaces
        //* will increase by (2*i)-1 for each new line created
        //and will iterate until the condition is false or (j == 2*i - 1)
        for(j = 1; j <= (2 * i - 1); j++)
        {
            cout << " *";
        }
        // after the for loops above evaluated as false, then it will make
        // a new line and continues to output stars until (i == rows)
        cout << endl;
    }

    return 0;
}
```



## Program 2

```
#include <iostream>
#include <iomanip> //library used for adjusting the spaces between numbers [setw()]
using namespace std;
//declare the each variables
int num_max; //number from user to define the maximum multiplication table
int i; //i used for the starting number (0)
int firstrow, secondrow; //variables used for making the first and second rows

int main() {

    //receive inputs from the user
    cout << "Insert the maximum number to calculate the multiplication table: ";
    cin >> num_max;

    // make a nested loops to make the table
    for (i = 0; i <= num_max; i++) {
        //statement used to make the first row of the table
        if (i == 0) {
            cout << setw(5) << " ";
            //for loop used to output the first row number from 0 till num_max
            for (firstrow = 0; firstrow <= num_max; firstrow++) {
                cout << " " << setw(2) << firstrow << " ";
            }
            cout << setw(4) << " ";
            cout << endl;
        }

        //nested for loops to output the number on each columns
        for (int j = 0; j <= num_max; j++) {
            //if statement to output number on each rows until num_max
            if (j == 0) {
                cout << setw(3) << i << " -";
            }

            //output the number to fill each columns by multiplying x & y
            cout << setw(3) << (i * j) << " ";
        }

        //end of the line, repeats until the i = num_max
        cout << endl;
    }
    return 0;
}
```

```

1  #include <iostream>
2  #include <iomanip> //library used for adjusting the spaces between numbers [setw()]
3  using namespace std;
4  //declare the each variables
5  int num_max; //number from user to define the maximum multiplication table
6  int i; //i used for the starting number (0)
7  int firstrow, secondrow; //variables used for making the first and second rows
8
9  int main() {
10
11     //receive inputs from the user
12     cout << "Insert the maximum number to calculate the multiplication table: ";
13     cin >> num_max;
14
15     // make a nested loops to make the table
16     for (i = 0; i <= num_max; i++) {
17         //statement used to make the first row of the table
18         if (i == 0) {
19             cout << setw(5) << " ";
20             //for loop used to output the first row number from 0 till num_max
21             for (firstrow = 0; firstrow <= num_max; firstrow++) {
22                 cout << " " << setw(2) << firstrow << " ";
23             }
24             cout << setw(4) << " ";
25             cout << endl;
26         }
27
28         //nested for loops to output the number on each columns
29         for (int j = 0; j <= num_max; j++) {
30             //if statement to output number on each rows until num_max
31             if (j == 0) {
32                 cout << setw(3) << i << " - ";
33             }
34
35             //output the number to fill each columns by multiplying x & y
36             cout << setw(3) << (i * j) << " ";
37         }
38
39         //end of the line, repeats until the i = num_max
40         cout << endl;
41     }
42     return 0;
43 }
44

```

```

Insert the maximum number to calculate the multiplication table: 10
 0  0  1  2  3  4  5  6  7  8  9 10
0 - 0  0  0  0  0  0  0  0  0  0  0
1 - 0  1  2  3  4  5  6  7  8  9 10
2 - 0  2  4  6  8 10 12 14 16 18 20
3 - 0  3  6  9 12 15 18 21 24 27 30
4 - 0  4  8 12 16 20 24 28 32 36 40
5 - 0  5 10 15 20 25 30 35 40 45 50
6 - 0  6 12 18 24 30 36 42 48 54 60
7 - 0  7 14 21 28 35 42 49 56 63 70
8 - 0  8 16 24 32 40 48 56 64 72 80
9 - 0  9 18 27 36 45 54 63 72 81 90
10 - 0 10 20 30 40 50 60 70 80 90 100

...Program finished with exit code 0
Press ENTER to exit console.

```

```

Insert the maximum number to calculate the multiplication table: 3
 0  1  2  3
0 - 0  0  0  0
1 - 0  1  2  3
2 - 0  2  4  6
3 - 0  3  6  9

...Program finished with exit code 0
Press ENTER to exit console.

```

### Program 3

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

//declare variables
int number, even, odd, base_num;

int main(){

    //receive input from the users
    cout << "Input any positive integer number: ";
    cin >> number;

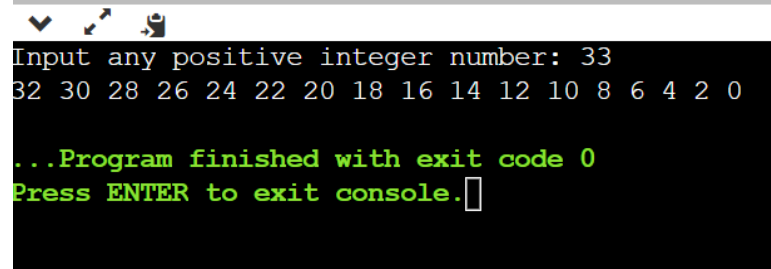
    //sort the interger value whether it's a even or odd
    if (number % 2 == 0){
        //if even, we dont need to subtract by 1
        even = number - 0;
        base_num = even;
    }
    else {
        //if odd, we need to subtract by 1 so the value is less then
        //or equal to the input number (even)
        odd = number - 1;
        base_num = odd;
    }
    //use nested for loops to iterate the number from the biggest even number
    //till == 0
    for (int i = 0; i <= base_num; i++)
    {
        if (i % 2 == 0)
            cout << base_num - i << " ";
    }

    return 0;
}
```

```

1  #include <iostream>
2  using namespace std;
3
4  //declare variables
5  int number, even, odd, base_num;
6
7  int main(){
8
9      //receive input from the users
10     cout << "Input any positive integer number: ";
11     cin >> number;
12
13     //sort the interger value whether it's a even or odd
14     if (number % 2 == 0){
15         //if even, we dont need to substract by 1
16         even = number - 0;
17         base_num = even;
18     }
19     else {
20         //if odd, we need to substract by 1 so the value is less then
21         //or equal to the input number (even)
22         odd = number - 1;
23         base_num = odd;
24     }
25     //use nested for loops to iterate the number from the biggest even number
26     //till == 0
27     for (int i = 0; i <= base_num; i++)
28     {
29         if (i % 2 == 0)
30             cout << base_num - i << " ";
31     }
32
33     return 0;
34 }

```

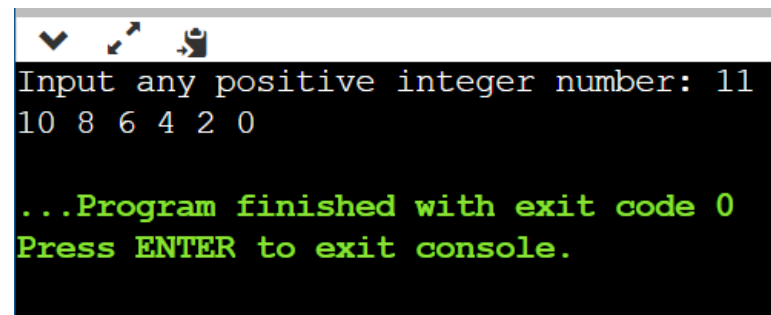


```

Input any positive integer number: 33
32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2 0

...Program finished with exit code 0
Press ENTER to exit console.

```



```

Input any positive integer number: 11
10 8 6 4 2 0

...Program finished with exit code 0
Press ENTER to exit console.

```

## Program 4

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

```
//declare variables
int num1, num2;
```

```
int main() {
```

```
    //receive input from the user
    cout << "Enter two integers: ";
    cin >> num1 >> num2;
```

```
    int multiple = num2;
    //use nested for loops to iterate the output
    for (int i = 1; i <= num1; i++){
```

```
        //if the i == the multiples of 2nd integers then output *
```

```
        if (i == num2){
```

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

```
            //after print out the *, we add the value of 2nd integer
```

```
            num2 = num2 + multiple;
```

```
        }
```

```
        //if the i != to multiples of 2nd integer, then
```

```
        //output regular interger number
```

```
        else{
```

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

```
        }
```

```
    }
```

```
    return 0;
```

```
}
```

```
1  #include <iostream>
2  using namespace std;
3
4  //declare variables
5  int num1, num2;
6
7  int main() {
8
9      //receive input from the user
10     cout << "Enter two integers: ";
11     cin >> num1 >> num2;
12
13     int multiple = num2;
14     //use nested for loops to iterate the output
15     for (int i = 1; i <= num1; i++){
16
17         //if the i == the multiples of 2nd integers then output *
18         if (i == num2){
19             cout << "* ";
20             //after print out the *, we add the value of 2nd integer
21             num2 = num2 + multiple;
22         }
23         //if the i != to multiples of 2nd integer, then
24         //output regular interger number
25         else{
26             cout << i << " ";
27         }
28     }
29
30     return 0;
31 }
```

```
input
Enter two integers: 30 3
1 2 * 4 5 * 7 8 * 10 11 * 13 14 * 16 17 * 19 20 * 22 23 * 25 26 * 28 29 *

...Program finished with exit code 0
Press ENTER to exit console.
```

```
Enter two integers: 15 4
1 2 3 * 5 6 7 * 9 10 11 * 13 14 15

...Program finished with exit code 0
Press ENTER to exit console.
```