
C Programming & Lab

6. Loops

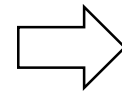
Sejong University

6-2) Problem 1

- **Read an integer N, print submultiples of N**
 - Use while loop

Input Example 1

7

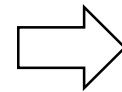


Output Example 1

1 7

Input Example 2

18

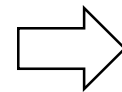


Output Example 2

1 2 3 6 9 18

Input Example 3

23



Output Example 3

1 23

6-3) Problem 2

- **Read a number N (answer). Guess the number and as follows:**
 - Following example: N is 5
 - Your guess is K
 - ✓ If greater than K, print "K<"
 - ✓ If less than K, print "K>"

Output Example

Answer	→	5
Guess	→	10
Less than 10	→	10>
Guess	→	3
Greater than 3	→	3<
Guess	→	7
Less than 7	→	7>
Guess	→	4
Greater than 4	→	4<
Guess	→	5
Number of trial	→	5

OJ system:

- No space

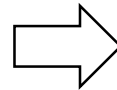
- New line once

6-3) Problem 3

- **Read a number of integers until it receives 0. Calculate and print the sum of the integers.**
 - ✓ Use do while loop

Input Example 1

2 3 4 0

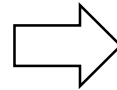


Output Example 1

9

Input Example 2

3 2 1 0



Output Example 2

6

6-4) Problem 4

- **Use for loop to calculate factorials from 2 to 10.**
 - ✓ Use for loop

OJ System:

- No space
- New line once

Output Example

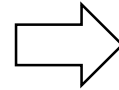
```
2!=1*2=2
3!=1*2*3=6
4!=1*2*3*4=24
5!=1*2*3*4*5=120
6!=1*2*3*4*5*6=720
7!=1*2*3*4*5*6*7=5040
8!=1*2*3*4*5*6*7*8=40320
9!=1*2*3*4*5*6*7*8*9=362880
10!=1*2*3*4*5*6*7*8*9*10=3628800
```

6-4) Problem 5

- Read two integers N and M. Find the greatest common denominator. Use for loop or while loop.

Input Example 1

4 3

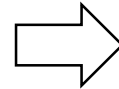


Output Example 1

1

Input Example 2

16 24

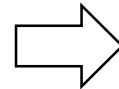


Output Example 2

8

Input Example 3

27 36



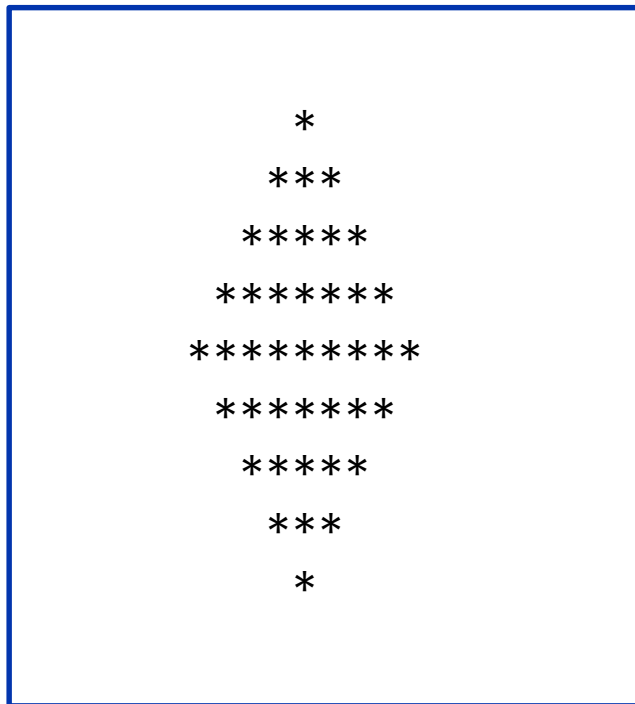
Output Example 3

9

6-5) Problem 6

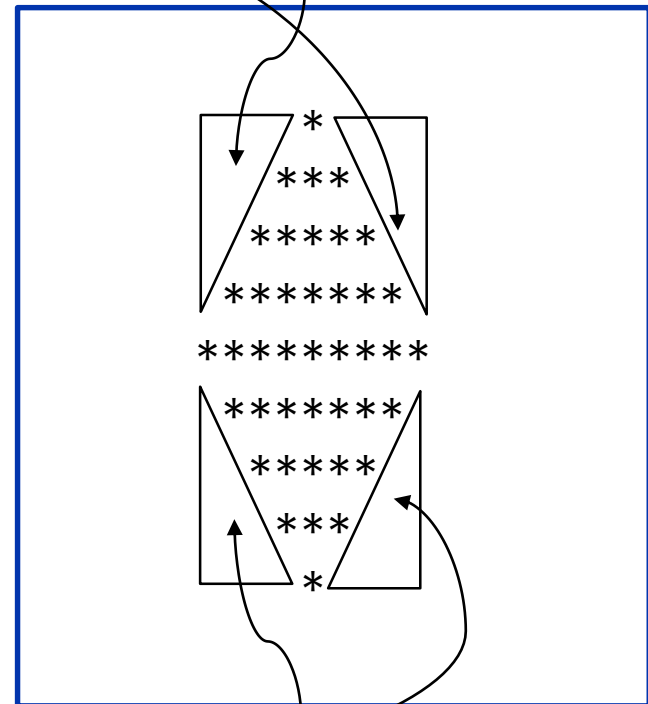
- Use nested for loops to print as shown below:

Output Example



Print spaces appropriately

Hit



Print spaces appropriately

6-5) Problem 7

- Use for loop and while loop together to print as shown below:

OJ system:

- Space once

- New line once

Output Example

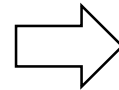
1	2	3	4	5	6	7	8	9	0
2	3	4	5	6	7	8	9	0	1
3	4	5	6	7	8	9	0	1	2
4	5	6	7	8	9	0	1	2	3
5	5	7	8	9	0	1	2	3	4
6	7	8	9	0	1	2	3	4	5
7	8	9	0	1	2	3	4	5	6
8	9	0	1	2	3	4	5	6	7
9	0	1	2	3	4	5	6	7	8
0	1	2	3	4	5	6	7	8	9

6-5) Problem 8

- **Read an integer N. Count how many times a number 3 appears from 1 to N.**
 - ✓ Use nested loops (for loop, while loop)
 - ✓ 13 -> once
 - ✓ 33 -> twice

Input Example 1

10

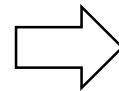


Output Example 1

1

Input Example 2

33

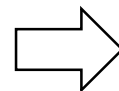


Output Example 2

8

Input Example 3

333

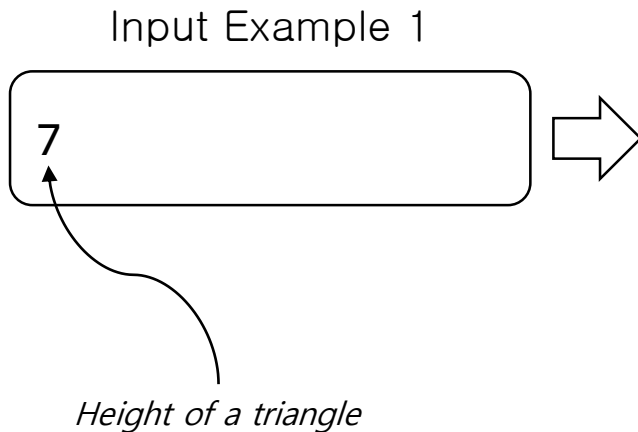


Output Example 3

102

6-5) Problem 9

- **Read an integer N. Print as shown below:**
 - ✓ Use nested loops
 - ✓ Print numbers 1, 2, 3, 4, 9, 0 in a circular fashion



Output Example

```
      1
    2 3
  4 5 6
7 8 9 0
1 2 3 4 5
6 7 8 9 0 1
2 3 4 5 6 7 8
```

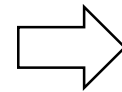
OJ system:
- Space once
- New line once

6-5) Problem 10

- **Read an integer that is greater than or equal to 10. Calculate the digital root of the integer.**
 - ✓ Digital root ex) $6234 \rightarrow 6+2+3+4 = 15 \rightarrow 1+5 = 6$
 - ✓ Use nested while loop

Input Example 1

6234

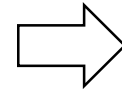


Output Example 1

6

Input Example 2

123456789

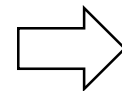


Output Example 2

9

Input Example 3

40



Output Example 3

4

6-5) Problem 11

- **Suppose you draw three dices (1 to 6). Print all possible cases that the sum of them is equal to 10.**
 - Use nested loops

Output Example

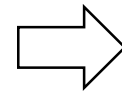
```
1 3 6
1 4 5
1 5 4
1 6 3
2 2 6
2 3 5
2 4 4
2 5 3
2 6 2
3 1 6
3 2 5
3 3 4
3 4 3
3 5 2
3 6 1
4 1 5
4 2 4
4 3 3
4 4 2
4 5 1
5 1 4
5 2 3
5 3 2
5 4 1
6 1 3
6 2 2
6 3 1
```

6-6) Problem 12

- **Read an integer N. Print the number of the integers from 1 to N.**
 - ✓ Use infinite for loop
 - ✓ break statement

Input Example 1

10

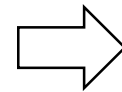


Output Example 1

55

Input Example 2

33

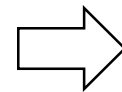


Output Example 2

561

Input Example 3

40



Output Example 3

820

6-7) Problem 13

- Read integers N between 0 and 100 until it gets 0 or a negative integer. Calculate and print the sum, average, count of the integers.

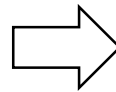
✓ Use While loop, if loop, break statement, continue statement

OJ system

- One space between integers

Input Example 1

2 8 3 7 4 6

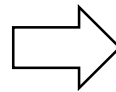


Output Example 1

30 5.00 6

Input Example 2

1 2 3 4 5 6 7 8 9

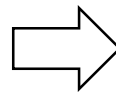


Output Example 2

45 5.00 9

Input Example 3

10 20 30 40 50 60 70



Output Example 3

280 40.00 7

Sum

Average

Count