Congratulations! You passed!
TO PASS 80% or higher

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GRADE
100%

Algorithm Practice

TOTAL POINTS 3

1. The numbers in the table below are the result of executing an algorithm that has one parameter N, a non-negative integer, and produces sequences of integers as outputs. For values of N from 0 to 5, the algorithm produces the following sequences of numbers as outputs. **1 / 1 point**

N	output
0	0 2
1	3 5 7 9
2	6 8 10 12 14 16
3	9 11 13 15 17 19 21 23
4	12 14 16 18 20 22 24 26 28 30
5	15 17 19 21 23 25 27 29 31 33 35 37

Determine the algorithm that was used to generate the numbers in this table, and

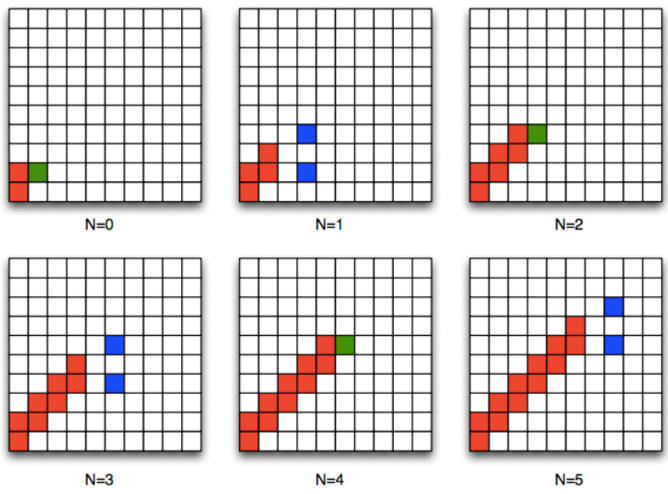
1. Write it down.
2. Execute it for N = 6, and write down your result.
3. Give your description of the algorithm to a friend who is not a programmer, and ask him or her to execute it for N = 6.

What is the sequence of numbers for N = 6? (Give your answer as integers separated by single spaces.)

18 20 22 24 26 28 30 32 34 36 38 40 42 44

Correct

2. The diagrams shown below are the result of executing an algorithm with one parameter N, a non-negative integer, that colors boxes on a 10 by 10 grid. For values of N from 0 to 5, the algorithm produces the following patterns: **1 / 1 point**



Determine the algorithm that was used to draw these patterns and

1. Write it down.
2. Execute it for N = 6, and write down your result.
3. Give your description of the algorithm to a friend who is not a programmer, and ask him or her to execute it for N = 6.

Which of the following diagrams is the result?

The image shows six squares each of which is a grid comprised of 100 smaller squares. The upper left one has red squares in the bottom two squares of the first column on the left and a green square in the second square from the bottom in the second column from the left. It is labeled N=0.

The middle top square shows red squares in the bottom two squares of the first column on the left and the second and third squares from the bottom in the second column from the left. It also shows blue squares in the second and fourth squares from the bottom in the fourth column from the left. It is labeled N=1.

The right top square shows red squares in the bottom two squares of the first column on the left, the second and third

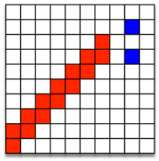
The right top square shows red squares in the bottom two squares of the first column on the left, the second and third squares from the bottom in the second column from the left, and the third and fourth squares from the bottom in the third column from the left. It also shows a green square in the fourth square from the bottom in the fourth column from the left. It is labeled N=2.

The left bottom square shows red squares in the bottom two squares of the first column on the left, the second and third squares from the bottom in the second column from the left, the third and fourth squares from the bottom in the third column from the left, and the fourth and fifth squares from the bottom in the fourth column from the left. It also shows blue squares in the fourth and sixth squares from the bottom in the sixth column from the left. It is labeled N=3.

The left middle square shows red squares in the bottom two squares of the first column on the left, the second and third squares from the bottom in the second column from the left, the third and fourth squares from the bottom in the third column from the left, the fourth and fifth squares from the bottom in the fourth column from the left, and the fifth and sixth squares from the bottom in the fifth column from the left. It also shows a green square in the sixth square from the bottom in the sixth column from the left. It is labeled N=4.

The right bottom square shows red squares in the bottom two squares of the first column on the left, the second and third squares from the bottom in the second column from the left, the third and fourth squares from the bottom in the third column from the left, the fourth and fifth squares from the bottom in the fourth column from the left, the fifth and sixth squares from the bottom in the fifth column from the left, and the sixth and seventh squares from the bottom in the sixth column from the left. It also shows blue squares in the sixth and eighth squares from the bottom in the eighth column from the left. It is labeled N=5.

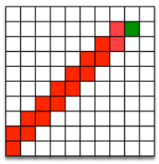
○ pattern:



N=6

This is a square with a grid comprised of 100 smaller squares. It shows red squares in the bottom two squares of the first column on the left, the second and third squares from the bottom in the second column from the left, the third and fourth squares from the bottom in the third column from the left, the fourth and fifth squares from the bottom in the fourth column from the left, the fifth and sixth squares from the bottom in the fifth column from the left, the sixth and seventh squares from the bottom in the sixth column from the left, and the seventh and eighth squares from the bottom in the seventh column from the left. It also shows blue squares in the seventh and ninth squares from the bottom in the ninth column from the left. It is labeled N=6.

○ pattern:



N=6

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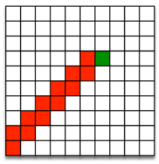
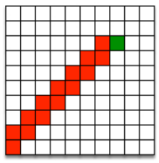
○ pattern:



N=6

This is a square with a grid comprised of 100 smaller squares. It shows red squares in the bottom two squares of the first column on the left, the second and third squares from the bottom in the second column from the left, the third and fourth squares from the bottom in the third column from the left, the fourth and fifth squares from the bottom in the fourth column from the left, the fifth and sixth squares from the bottom in the fifth column from the left, and the sixth and seventh squares from the bottom in the sixth column from the left. It also shows a green square in the seventh square from the bottom in the eighth column from the left. It is labeled N=6.

◉ pattern:



N=6

This is a square with a grid comprised of 100 smaller squares. It shows red squares in the bottom two squares of the first column on the left, the second and third squares from the bottom in the second column from the left, the third and fourth squares from the bottom in the third column from the left, the fourth and fifth squares from the bottom in the fourth column from the left, the fifth and sixth squares from the bottom in the fifth column from the left, the sixth and seventh squares from the bottom in the sixth column from the left, and the seventh and eighth squares from the bottom in the seventh column from the left. It also shows a green square in the eighth square from the bottom in the eighth column from the left. It is labeled N=6.

✓ Correct

3. The numbers in the table below are the result of executing an algorithm that has one parameter N, a non-negative integer, and produces sequences of integers as outputs. For values of N from 0 to 5, the algorithm produces the following sequences of numbers as outputs. **1 / 1 point**

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

Determine the algorithm that was used to generate the numbers in this table, and

1. Write it down.
2. Execute it for N = 6, and write down your result.
3. Give your description of the algorithm to a friend who is not a programmer, and ask him or her to execute it for N = 6.

What is the sequence of numbers for N = 6? (Give your answer as integers separated by single spaces.)

0 2 4 6 8 10 6 7 8 9 10 11

✓ **Correct**