

HW1 Check-In (Written)

STUDENT NAME

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Q1 Algorithms

11.5 Points

Consider the following algorithm for computing the sum of the numbers 1 to a value n that you input.

1. Input n
2. Set answer = 0.
3. Set number = 0.
4. If number $< n$, do the following. Otherwise, go to 5.
 1. Add 1 to number.
 2. Add number to answer.
 3. Go to 4.
5. Else: Output answer and finish.

Use a pencil and paper to write down the values of the variables as the algorithm executes with input $n=5$. In particular pay attention to the values of n , number, and answer, on lines 4, 4.1, 4.2, and 4.3. Then, fill in the values to a-r below.

EXECUTION	INEQUALITY LINE 4	LINE 4.1 N	LINE 4.1 NUMBER	LINE 4.1 ANSWER	LINE 4.2 NUMBER	LINE 4.2 ANSWER
1st time	a	b	c	d	e	f
2nd time	g	h	i	j	k	l
3rd time	m	n	o	p	q	r

Q1.1 Fill in the table

9 Points

- a. What will the inequality be on line 4 the first time it executes (i.e., fill in the values _____ $<$ _____)?

Enter your answer here

b. What is the value of n after 4.1 executes?

Enter your answer here

c. What is the value of number after 4.1 executes?

Enter your answer here

d. What is the value of answer after 4.1 executes?

Enter your answer here

e. What is the value of number after 4.2 executes?

Enter your answer here

f. What is the value of answer after 4.2 executes?

Enter your answer here

g. Confirm that Line 4 is executed again. What will the inequality be on line 4 the second time it executes (i.e., fill in the values _____ < _____)?

Enter your answer here

h. What is the value of n after 4.1 executes?

Enter your answer here

i. What is the value of number after 4.1 executes?

Enter your answer here

j. What is the value of answer after 4.1 executes?

k. What is the value of number after 4.2 executes?

l. What is the value of answer after 4.2 executes?

m. Confirm that Line 4 is executed again. What will the inequality be on line 4 the third time it executes (i.e., fill in the values _____ < _____)?

n. What is the value of n after 4.1 executes?

o. What is the value of number after 4.1 executes?

p. What is the value of answer after 4.1 executes?

q. What is the value of number after 4.2 executes?

r. What is the value of answer after 4.2 executes?

Q1.2

0.5 Points

Continue the algorithm until it runs line 5. What is the value of answer? (write the number only)

Q1.3

2 Points

Suppose we wanted to change the algorithm to compute factorial ($1*2*...*n$). Which lines would need to change (check all that apply)?

 Input n Set answer = 0. Set number = 0. If number < n, do the following. Otherwise, go to 5. 4.1. Add 1 to number. 4.2. Add number to answer. 4.3. Go to 4. Else: Output answer and finish.**Q2 Programming**

7.5 Points

Consider the following program:

1. $x = 1$
2. $y = 1$
3. $x = x+y$
4. $y = y+x$
5. $x = x+y$
6. $y = y+x$
7. $x = x+y$
8. $y = y+x$

Q2.1 Trace the Algorithm

3.5 Points

After finishing line 3, what is the value of x ? (write the number only)

Enter your answer here

After finishing line 3, does the value of y change?

Yes

No

After finishing line 4, what is the value of x ? (write the number only)

Enter your answer here

After finishing line 4, what is the value of y ? (write the number only)

Enter your answer here

After line 5, what is the value of x ? (write the number only)

Enter your answer here

After line 6, what is the value of y ? (write the number only)

Enter your answer here

After line 8, what is the value of y ? (write the number only)

Enter your answer here

Q2.2

2 Points

Write a line of code that sets a variable `s` to a string that equals the value of `x`, then a space, then the value of `y`. For example, after line 2, `s` would be "1 1". Make sure your code uses the variables `x` and `y`. You can copy our code and your line into a python file and run it to make sure it is correct.

Q2.3

2 Points

Write a print statement to output "The values are " and then the string `s`. For example, it should print "The values are 1 1" after line 2.

Q3 Python Interpreter

2 Points

True or False: The Interpreter finds all bugs in code.

- True
- False

Why or Why not?

Enter your answer here

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