

## 15-110 Check1 - Written Portion

Name:

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### #1 - Syllabus Review - 10pts

Take a few minutes to read the entire syllabus on [www.cs.cmu.edu/~110/syllabus.html](http://www.cs.cmu.edu/~110/syllabus.html) , then answer the following questions.

Select all situations that are potentially eligible for an assignment extension, if instructors are notified before the deadline.

- A medical emergency
- Temporarily heavy workload
- Family/personal emergency
- University-approved absence
- Accidental incorrect submission

Select all actions that are allowed by the 15-110 collaboration & academic integrity policy.

- Pair-programming (where two students type out a solution together on the same computer, then one student emails it to the other)
- Providing debugging help by showing a friend your own solution
- Writing out solutions on a whiteboard with other students, if the solution is erased before you implement it
- Receiving debugging help from TAs during office hours
- Having a friend email you their solution so you can check your solution against it.

## #2 - Algorithm Tracing - 30pts

Consider the following plain-language algorithm, which is supposed to compute the sum of the numbers 1 to a value  $n$  that is inputted.

1. Input a number  $n$
2. Set value **answer** to 0
3. Set value **number** to 1
4. If **number** is less than or equal to  $n$ , do the following. Otherwise, go to Step 5.
  - a. Add **number** to **answer**
  - b. Add 1 to **number**
  - c. Repeat Step 4 with updated values
5. Output the value **answer**

We've generated a table below to show the results of each step of the algorithm, and filled out the first line. Fill out the remaining steps to determine what the algorithm will output given the input  $n = 5$ .

Step 4 Execution	#4 Comparison	#4a value of <b>answer</b>	#4a value of <b>number</b>	#4b value of <b>answer</b>	#4b value of <b>number</b>
1st time	$1 \leq 5$	1	1	1	2
2nd time					
3rd time					
4th time					
5th time					

On this input ( $n = 5$ ), what will the algorithm output at the end?

Now suppose you want to change the algorithm so that it calculates the factorial of  $n$  ( $1*2*3*...*(n-1)*n$ ) instead of the sum of 1 to  $n$ . Which lines would need to change? Check all that apply.

- Input a number **n**
- Set value **answer** to 0
- Set value **number** to 1
- If **number** is less than or equal to **n**, do the following. Otherwise, go to Step 5.
  - Add **number** to **answer**
  - Add 1 to **number**
  - Repeat Step 4 with updated values
- Output the value **answer**

### #3 - Basic Programming Syntax - 30pts

Assume that two variables (x and y) have been defined already. 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. So if x is equal to 1 and y is equal to 2, the string should be set to "1 2".

**Make sure your code uses the variables x and y.**

Next, write a print statement that outputs "The values are ", and then the string s. For example, given the values stated above, the code should print "The values are 1 2".

**Make sure your code uses the variable s.**

Finally, write in the box below what the following code would print to the console.

```
age = 21
print(age + 5)
print(age % 4)
# print(age * 3)
```

### #3 - Python Error Identification - 30pts

For each of the following lines of code, select whether it causes a **Syntax Error**, **Runtime Error**, or **No Error**. You are guaranteed that no code has a logical error.

```
print("Hello World"
```

- Syntax Error
- Runtime Error
- No Error

```
print(Test)
```

- Syntax Error
- Runtime Error
- No Error

```
print("2+2=" + 4)
```

- Syntax Error
- Runtime Error
- No Error

```
x = 2 - 7
```

- Syntax Error
- Runtime Error
- No Error

```
x - y = 5
```

- Syntax Error
- Runtime Error
- No Error

```
x = 1 == 2
```

- Syntax Error
- Runtime Error
- No Error