

Name:

Email id:

Pledge: On my honor, I pledge that I have neither given nor received help on this test.

Signature:

Notices

- Based on your past educational achievements, I expect you to do well on this test.
- You can answer the questions in any order that you want.

Test rules

- This pledged exam is closed notes. The only device you may access during the test is your laptop.
- Do not access class examples or your own past assignments during the test; that is, the only code you may access or view are ones that you develop for this test.
- The only windows to be open on your computer are PyCharm and a single browser with tabs reachable from the class website.
- PyCharm can be used for developing the programs to be submitted. It cannot be used for the short answer questions.
- Programs should demonstrate follow style rules; e.g., header comments, whitespace, identifier naming, etc.
- Whether a program is runnable is important.
- Only output what is requested.
- Whenever a written answer is a string, surround the string with single quotes. Also, make sure the uppercase and lowercase letters are easily distinguishable.
- Whenever a written answer is a list, surround the elements with a pair of brackets.
- Whenever a written answer is a decimal, include a decimal point.
- Whenever a written answer is an integer, do not include a decimal point.
- Any form of cheating on a test can result in expulsion from the class and the incident being referred to the Honor Committee.

Short Answer Questions (40 points)

1. Suppose m and n are numeric. What is the value of the expression $m ** n$?

m to the power n

2. Suppose m and n are integers. What is the value of the expression $m // n$?

3. Suppose m and n are integers. What is the value of the expression $m \% n$?

4. Suppose m and n are integers. What sequence of values does `range(m , n)` represent?

5. What is the value of the expression `'4' + '5'`?

6. Suppose s is a string. What character(s) of s does `s[1]` represent?

7. Suppose s is a string, and m and n are integers. What character(s) of s does `s[m : n]` represent?

8. Suppose in response to an invocation of built-in function `input()` a user enters 271. What type of value does function `input()` return?

9. Suppose s is a string. What happens to s if the function invocation `s.strip()` occurs?

10. Suppose s is a string. Is it possible for $s.lower()$ to be equal to $s.upper()$? Explain.

11. Write an assignment statement that sets variable b to be a random ternary digit (i.e., 0, 1, or 2). You can assume the module *random* has been already imported.

12. Suppose *states* is the list `['NC', 'NJ', 'NY']`? Why is *states.count('N')* not equal to 2?

13. What is wrong with the following statement that attempts to make variable *upper_s* an upper-case version of string s ?

```
upper_s = s.upper
```

14. Why does Python have `math.pi` equal `3.141592653589793`?

15. Suppose s is a string composed of two numeric string subsequences (e.g., '314 15'). Write a code segment that initializes variables a and b to be the integer equivalents for the two numeric string subsequences of s .

16. Why does the following **for** loop print the values 3 and 6, rather than the integers 3, 4, and 5? Read the code mindfully.

```
for nbr in (3, 6) :  
    print( nbr )
```

For the next four questions assume the following statement successfully executed.

```
info = url.get_csv_dataset( link )
```

You can assume all rows in *info* have the same number of columns, and that *info* does not have a header row. If you find it convenient, subsequent questions may make use of the variables set in prior questions (e.g., Question 18 can make use of the variable *rows* from Question 17).

17. Set variable *rows* to be the number of rows in datasheet *info*.

18. Set variable *first* to be the first row of datasheet *info*.

19. Set variable *columns* to be the number of columns in datasheet *info*.

20. Set variable *cells* to the total number of elements in datasheet *info*.

Part 2: Problem solving

21. (15 points) Implement program *yes.py* whose single line of output consists exactly of the string 'I am honorable'. All runs of the program should produce the following.

```
I am honorable
```

22. (15 points) Implement program *taxi.py* that separately prompts and gets two integer inputs: a number of taxis t and a number of days d . The program computes the number of miles driven by t taxis over d days, where the average number of rides per day per taxi is 74 and the average trip is 2.6 miles long.

The only program output is to be the total number of miles driven. Two sample program runs are

```
Enter number of taxis: 10
Enter number of days: 7
13468.0
```

```
Enter number of taxis: 2
Enter number of days: 14
5387.2
```

23. (15 points) Complete program *wordy.py* that prompts for a list of words. The program displays two values on the same line. The first value is the integer average of the word lengths, and the second value is the count of the number of words whose lengths are equal to the average. Two sample program runs are

```
Enter words: You don't know what you've got till it's gone
4 5
```

```
Enter text: I sailed the seven seas
3 1
```

24. (15 points) Complete program *check_it_out.py*. The program prompts and gets two values: the name of a CSV data set of integer values, and a search value v . The data set is stored in web folder:

<http://www.cs1112.org/datasets/csv/test1/>

One possible dataset is *dataset1.csv*

```
12,5,22,6
1,13,16,2
8,23,7,6,6
5,8,5,22
```

And another possible dataset is *dataset2.csv*

4,9,2,5,7

2,7,5,7

3,6,9,4,1

5,1,6,4,4

4,9,1,7

2,6,8

My testing of your solution will use different datasets and search values.

The program prints the number of occurrences of v for each row in the dataset. It also prints the total number of occurrences of v . Two sample runs of the program are

```
Enter name of data file: dataset1.csv
Enter value: 6
1
0
2
0
3
```

```
Enter name of data file: dataset2.csv
Enter value: 4
1
0
1
2
1
0
5
```