COSC 101, Exam #1
September 2018

Name: _____

Please write your name and circle your section. Do not start the exam until instructed to do so.

You have 50 minutes to complete this exam.

There are 6 questions and a total of 39 points available for this exam. Don't spend too much time on any one question.

Since indentation is important in Python, please be sure that your use of indentation is obvious for any code you write.

If you want partial credit, show as much of your work and thought process as possible.

If you run out of space for answering a question, you can continue your answer on one of the blank pages at the end of the exam. If you do so, be sure to indicate this in two places: (1) below the question, indicate which blank page contains your answer, and (2) on the blank page, indicate which question you are answering.

Question	Points	Score
1	7	
2	5	
3	4	
4	3	
5	10	
6	10	
Total:	39	

1. (7 points) Assume that the following statements have already been executed:

```
a = 2
b = "42"
c = "apples"
d = 2.5
e = "fall"
```

For each of the following expressions, evaluate the expression and write the resulting value, or identify the error in the code that would prevent it from running.

(a) `d != a`

> **Solution:**
>
> ```
> True
> ```

(b) `(int(b) // 10) * str(a)`

> **Solution:**
>
> ```
> '2222'
> ```

(c) `c + " " + 10 + a`

> **Solution:**
>
> ```
> Error: cannot concatenate 'str' and 'int' objects
> ```

(d) `len(e) > a and (int(b) % 4) > 10`

> **Solution:**
>
> ```
> False
> ```

(e) `c + "!" + e`

> **Solution:**
>
> ```
> 'apples!fall'
> ```

(f) `int(d) / 0.5`

> **Solution:**
>
> ```
> 4.0
> ```

(g) `2 ** a / (len(e) - a)`

> **Solution:**
>
> 2

2. (5 points) What is the output of the following program?

```python
size = 5
for i in range(size):
    if i % 2 == 0:
        a = size + i
    else:
        a = size - i
    print(a)
```

Solution:

5
4
7
2
9

3. (4 points) Rewrite the program below to have only a *single* if statement. Your solution must have exactly one **if**, zero or more **elif** branches, and zero or one **else** branch. (In your solution, you need only to rewrite the part below the comment.)

```
response = input("Is it snowing out? ")
snowy = response == 'yes'
wind = int(input("What is the wind speed? "))
A = "Wear your ski mask!"
B = "Wear your hat and gloves!"
C = "Wear your windbreaker!"

# rewrite the program from here down...
if snowy:
    if wind > 30:
        print A
    else:
        print B
else:
    if wind > 30:
        print C
```

Solution:

```
if snowy and wind > 30:
    A
elif snowy:
    B
elif wind > 30:
    C
```

4. Consider the following Python code:

```python
if x > 10 and x <= 100:
    print("first")
elif not (x > 50):
    print("second")
else:
    print("third")
```

(a) (1 point) Identify one value that, if assigned to the variable x, would cause `first` to be printed.

> **Solution:** Something greater than 10 and less than 100.

(b) (1 point) Identify one value that, if assigned to the variable x, would cause `second` to be printed.

> **Solution:** Something less than 10.

(c) (1 point) Identify one value that, if assigned to the variable x, would cause `third` to be printed.

> **Solution:** Something greater than 100.

5. (10 points) Write a program that asks a user for how cold they are on a scale of 1 to 5, and prints a message corresponding to the value they enter. If the user types 1, the output should be:

```
b!
br!
```

If the user types 2, the output should be:

```
b!
br!
brr!
```

In other words, the first line should always be b!, and subsequent lines should consist of the letter b followed by an increasing number of r's, all the way up to the scale value entered by the user. Each line should end in an exclamation point, with no space between the last r and the exclamation point.

You can assume that the user always types an integer between 1 and 5, inclusive. (That is, you don't need to check that the user gives the expected input.)

Hint: nested loops are not needed for this problem.

Solution:

```python
val = int(input("How cold are you on a scale of 1-5? "))
s = "b"
print(s + "!")
for i in range(val):
    s = s + "r"
    print(s + "!")
```

6. (10 points) For this problem, select one line of code from each of the pairs of lines of code below and reorder them to solve the following problem:

> Help your professor out by writing a program to compute and print the average value of a series of quiz scores. The program should first ask for the number of quiz scores in the series. It should then repeatedly ask for each score, which is expected to be an integer between 0 and 10. For simplicity, you can assume that at least one grade is entered. Whenever the user enters a score that is less than 0 or greater than 10, your program should ignore that score in computing the average. After all quiz scores have been entered, the program should print the average score, which may include a fractional part.

```
A1      if value >= 0 or value <= 10:
A2      if 0 <= value <= 10:

B1          numscores - 1
B2          numscores = numscores - 1

C1      elif False:
C2      else:

D1  numscores = input("How many quiz scores? "))
D2  numscores = int(input("How many quiz scores? "))

E1  sumscore = ''
E2  sumscore = 0

F1  print("Average score:", sumscore/numscores)
F2  print("Average score: " + sumscore/numscores)

G1          sumscore + value
G2          sumscore = sumscore + value

H1      value = input("What is the next score? ")
H2      value = int(input("What is the next score? "))

I1  for i in range(numscores):
I2  for i in range(numscores+1):
```

Select only 9 lines of code from above, and only one line from each pair. You may fill in line identifiers (*e.g.*, E2) below, or write out the code.

_____

_____

_____

_____

_____

_____

_____

_____

_____

Solution:

- D2

- E2

- I1

- H2

- G2

- C2

- A2

- B2

- F2

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