CMSC 201 Section 40
Sample Exam 1

Answers

Notes:

1. This exam has the same number and types of questions as will the actual exam
2. The actual exam lasts 75 minutes. If you want a realistic simulation, allow yourself 75 minutes to work through this.
3. Answers to this sample exam will be provided in a separate file.

Section 1: Multiple Choice/True-False questions.

10 questions; 3 points each. No partial credit will be given for these questions.

1. Which of the following is NOT a valid Python variable name?
    a. `Too_Much_4_me`
    b. `__main_program___`
    c. `Never-will-work` Not valid because hyphens aren't allowed
    d. `j`

2. Which of the following is the best description of the Python symbol table?
    a. The computer's memory that contains the actual values associated with each variable
    b. A data structure that contains each symbol (variable, constant or function name) currently known by the program; the type associated with each symbol; and a link or pointer to the location in memory where the value associated with that symbol is located this is the correct acnswer
    c. A table of emojis recognized by Python
    d. None of the above is correct

3. True or False: All input received from the keyboard is read in as strings
    a. True - and you must cast it to another type if you need an int, float, etc.
    b. False

4. True or false: a global variable is a variable that is defined inside a function, and can only be used within that function
    a. True
    b. False - this is the definition of a local variable

5. Suppose you have the following list assignment:
   `l = [1,2,3,4,5]`
   Which of the following statements will get rid of the value 3, leaving you with
   `l = [1,2,4,5]`
   a. l.pop(3)
   b. l.remove(2)
   c. Either a or b will work
   d. None of the above will work pop removes the element with that index; remove boots out the first element with that value. To get rid of the element with value 3, you'd need l.remove(3) or l.pop(2).

6. When you write a for i loop like:
   ```
   for i in range(20):
   ```
   What do you know about how many times the loop will be executed? (Presume that there is no "break" statement in the loop because those are banned in CMSC 201.)
   a. The loop will be executed exactly once, with i having a value of 20
   b. The loop will never be executed because this statement is an error
   c. The loop will be executed exactly 20 times. This is correct, because the start value defaults to 0 and the step value defaults to 1.
   d. None of the above is true.

7. True or False: A while loop is the most general type of Python loop we have studied. If a problem can be solved using a for loop, it can also be solved using a while loop.
   a. True this is correct
   b. False

8. X = 9 and Y = 2. Which of the following is true about X and Y?
   a. `X//Y = 1 and X%Y = 4`
   b. `X/Y = 4 and X%Y = 1`
   c. `X//Y = 4 and X%Y = 1` this is correct; integer division and modularization
   d. None of the above is true

9. True or False: in evaluating a Boolean expression, Python does all arithmetic operations before applying the logical operators and, or, and not
   a. True in Python operator precedence, the arithmetic operations come first.
   b. False

10. The string name has the value " `The Rams won the Super Bowl!!` "
    Which of the following methods removes the whitespace from the front of the string but not the back?

a. `name.lstrip()` lstrip removes whitespace from the front; rstrip from the end; and strip removes from both the front and the back.
b. `name.strip()`
c. `name.rstrip()`
d. All of the above would work

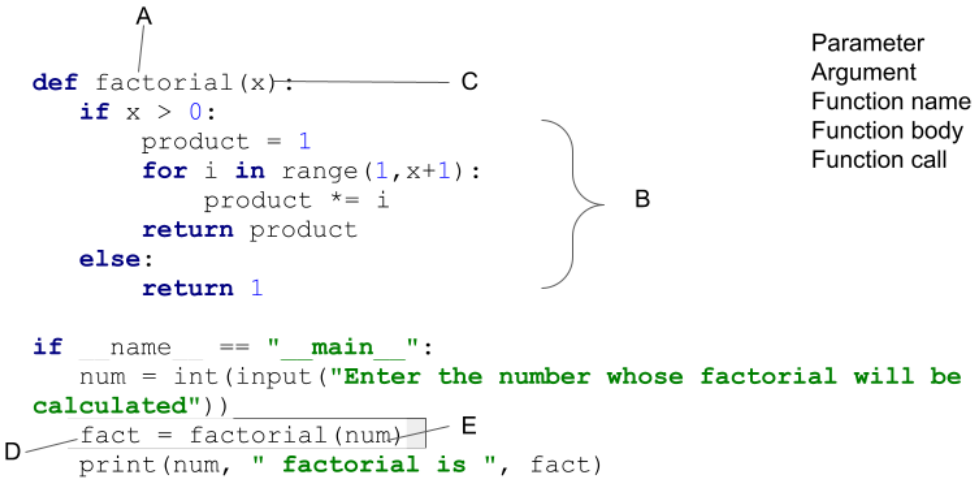
Section 2: Short Answer questions

8 questions; 5 points each. Partial credit will be given for these questions

11. Name and explain the four types of program control flow we have covered so far this semester.

Sequential - executes statements once each, in order
Conditions - execute statements if a defined condition (Boolean expression) is true
Iterative - execute statement multiple times, in a loop
Functions - jump to another place in the program, execute statements there, and return

12. Functions - give a program with a function; ask students to identify each part of the program (parameter, argument, function body, function call, return)



A - function name

B- function body
C - parameter
D - function call
E - argument

13. Why won't the following Python code work correctly?

```
pay_rate = float(input("what is your current pay rate in dollars and cents per hour?))
2_times_pay= pay_rate * 2
print(" we'll double your pay to ", 2_times_pay, "dollars per hour")
```

The second statement is a syntax error because Python variable names can not start with a digit.

14. Suppose that student_names is a list. Write a "for i" loop that prints out all the student_name values, one per line.

```
for i in range(len(student_names)):
    print(student_names[i])
```

15. Suppose that student_names is a list. What happens if I try to print out the final name in the list using

    `print(student_names[len(student_names])` ?

    Explain why.

An error occurs, because the last element in the list is always len(student_names) - 1.
You don't need to identify it, but the specific error would be "index out of range."

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16. Explain the difference between appending a value to a list and inserting a value into the list.

Appending always put the new value at the end of the list; inserting puts it into the element specified in the insert command.

17. Suppose that x has the value 6.28 and y has the value 2. Explain the difference between

    `x / y`

    and

    `x//y`

x/y is floating point division and the result is 3.14
x//y is integer division and the result is 3.

18. What is the value of the expression:

    `False or not((6//5)>1) and 4 == 10%6`

Starting from the inner-most parentheses: 6//5 = 1 so you have

False or not(1>1) and 4 == 10%6

1>1 is False, so not False is True. 4 == 10%6 is True. So now we have
False or True and True.
and has higher precedence than or; True and True is True. So:
False or True

So the answer is: True.

Section 3: Programming questions.

2 questions; 15 points each. Partial credit will be given for these questions

16. Write a Python program the prompts a user for five grades, and appends each grade in turn to a list. You need not validate the user's input; assume that the user will do this correctly.

```
grade_list = []
for i in range(5):
        num - int(input("Enter the next grade"))
        grade_list.append(num)
```

17.Write a Python program that asks the user to input a floating point number. Assume that the user will enter a valid floating point number; no error checking is necessary. Then, if the number is greater than 0.0, print out "that's positive" If the number is less than 0.0, print out "that's negative" If the number is equal to 0.0, print out "that's a zero."

```
num = float(input("enter a floating point number"))
if num > 0.0:
        print("That's positive")
elif num < 0.0:
        print("That's negative")
lse:
        print("That's a zero")
```