Exam 1 review

COSC 101, 2018-02-23

Announcements
● Exam #1 Tuesday @ 7pm in 207 Lathrop Hall

Outline
● Exam topics
● Practice problems

Exam topics
● Types (int, str, float, bool)
● Variables and assignment
● Operators (+, -, *, /, //, %, **, ==, !=, <, >, <=, >=)
● Input and output (input, print)
● Conditional statements (if/elif/else)
● Repetition (non-nested for loops)
● Accumulator pattern

Practice problems
1) What is the result of each expression? If an error occurs, describe what is wrong.

a) type(5.0)
   <class 'float'>

b) type('17')
   <class 'str'>

c) type('abc123')
   <class 'str'>

d) type(true)
   NameError: name 'true' is not defined

e) 2 + 3 * 4
   14

f) 10 // 3
   3

g) 15 / 2
   7.5

h) 6 % 2
   0

i) 2 + 3 * 5 ** 2 / 25 - 1
   4.0

j) (1 + 2) * 3 ** 2 + 1
   28

k) 'abc' + 123
   'abc' + 123

l) 'ba' + 'na' * 2
   'banana'

m) 6 <= 5
   False
n) 1 = 2
    SyntaxError: can't assign to literal
o) 2 != 3 and 4 != 5
    True
p) 1 > 2 or 3 < 4
    True
q) False or True and not False
    True

2) What is the output of the following programs?
   a) a = 1
      b = 2
      c = a + 3
      a = b
      b = b + 1
      print(a, b, c)
      Output:
      2 3 4
   b) a = 'hi'
      b = 'bye'
      c = a + '!' + b + '!'  
      if (a == 'hello'):
          b = 'goodbye'
      else:
          b = 'adios'
      c = c * 2
      print(a, b, c)
      Output:
      hi adios hi!bye!hi!bye!
   c) a = ''
      b = str(8)
      for c in range(5):
          a = a + str(c)
      for c in range(6, 0, -2):
          b = b + str(c)
      print(a, b, c)
      Output:
      01234 8642 2

3) What is the output of the following program for each of the inputs below?
   a = int(input('A='))
   b = float(input('B='))
   c = input('C=')
   if (a > 10):
       if (b > 10 and a <= 15):
           print('1')
       else:
           print('2')
elif (a < 5):
    if (c == 'cat'):
        print('3')
else:
    if (c == 'dog' or b > 10):
        print ('4')
    else:
        print('5')

a) 11, 9, cat
    2
b) 10, 11, dog
    4
c) 4, 11, dog
    No output
d) 7, 15, cat
    4

4) What is the output of the following program for each of the inputs below?

```python
a = int(input('A='))
b = int(input('B= '))
c = 0
for i in range(a, b):
    if (i % 2 == 0):
        c += 1
print(c)
```

a) 0, 7
   4
b) 4, 8
   2
c) -3, 3
   3

5) Write a program that asks for a month and day and prints whether or not it is spring. Assume spring begins March 20 and ends June 20.

```python
month = int(input('Month? '))
day = int(input('Day? '))

if (month == "March"):
    if (day < 20):
        print('Not spring')
    else:
        print('Spring!')
elif (month == "April" or month == "May"):
    print('Spring!')
elif (month == "June"):
if (day > 20):
    print('Not spring')
else:
    print('Spring!')
else:
    print('Not spring')

6) Write a program that computes how much an employee earns in a week. The program should ask for the employee’s hourly pay rate and the number of hours they worked each day of the week.

rate = float(input('Hourly rate? '))
hours = 0
for day in ['Sun', 'Mon', 'Tues', 'Wed', 'Thurs', 'Fri', 'Sat']:
    daily_hours = int(input('Hours worked on ' + day + '? '))
    hours = hours + daily_hours
print('Weekly pay: $' + str(hours * rate))

7) Write a program that asks for a cylinder’s radius and height and computes its volume.

import math
radius = float(input('Radius? '))
height = float(input('Height? '))
volume = math.pi * radius ** 2 * height
print('Volume: ' + str(volume))