

## IT 211 – Midterm Exam

**April 25, 2018**

**Name** \_\_\_\_\_

**Part A: Multiple Choice Questions.** Circle the correct response for each question. Give an optional reason for each question. If you circle the correct response, the reason will not be considered. 5 points each.

1. What is the meaning of + in this expression?

```
gems = "diamond" + "emerald" + "ruby"
```

- a. addition                      b. concatenation                      c. logical and                      d. repetition

2. Which str method converts a string object to lower case?

- a. downcase                      b. lower                      c. to\_lower                      d. to\_lowercase

3. Which of these operators has the lowest precedence?

- a. +                      b. !=                      c. \*                      d. =

4. What are the possible outputs of this expression?

```
import random
n = 10 + 3 * random.randrange(0, 2)
if n == 10:
    print "A"
elif n == 11:
    print "B"
elif n == 12:
    print "C"
else:
    print "D"
```

- a. A                      b. A and C                      c. A and D                      d. B and D

5. How many total stars are printed?

```
for i in range(0, 1000):
    print("*", end="")
for i in range(1, 200):
    print("*", end="")
print("*")
```

- a. 1199                      b. 1200                      c. 1201                      d. 200,001

6. Which of these print statements outputs True?

- a. print(bool(""))                      b. print(bool(0))  
c. print(bool(False))                      d. print(bool("0"))

7. The volume of the sphere is given by the formula  $V = 4\pi r^3 / 3$ , where  $\pi = 3.14159265$  and  $r$  is the radius of the sphere. Which script correctly inputs the radius and prints the volume of the sphere with radius  $r$ , rounded to three digits after the decimal point.

- a. `pi = 3.14159265`  
`print(f"Volume: {volume}")`  
`radius = input("Enter the radius: ")`  
`volume = (4 * pi / 3) * radius ** 3`
- b. `pi = 3.14159265`  
`radius = input("Enter the radius: ")`  
`print(f"Volume: {volume}")`  
`volume = (4 * pi / 3) * radius ** 3`
- c. `print(f"Volume: {volume}")`  
`pi = 3.14159265`  
`radius = input("Enter the radius: ")`  
`volume = (4 * pi / 3) * radius ** 3`
- d. `radius = input("Enter the radius: ")`  
`volume = (4 * pi / 3) * radius ** 3`  
`pi = 3.14159265`  
`print(f"Volume: {volume}")`

8. Which for loop prints the same output as this while statement? Assume that the input file has already been opened with `fin = open("infile.txt", "r")`

```
n = 2
while n < 10:
    line = fin.readline()
    print(f"{n}. {line}")
    n += 1
```

- a. `for n in range(2, 10):`  
`line = fin.readline( )`  
`print(f"{n}. {line}")`
- b. `for n in range(2, 11):`  
`line = fin.readline( )`  
`print(f"{n}. {line}")`
- c. `for n in range(2, 10):`  
`print(f"{n}. {line}")`  
`line = fin.readline( )`
- c. `for n in range(2, 11):`  
`print(f"{n}. {line}")`  
`line = fin.readline( )`

9. What is the output?

```
x = 3.14159
print(type(x))
```

- a. <class 'bool'>      b. <class 'float'>      c. <class 'int'>      d. int

10. What is the output?

```
state = "mississippi"
print(state.count("ss"))
```

- a. False      b. True      c. 2      d. 4

**Part B. Predict the Output.** Construct the variable trace and predict the output. 10 points each.

1. 

```
amt1 = 10000.0
amt2 = 5000.0
amt1 *= 0.8
amt2 *= 0.9
tax = amt1 * 0.2 + amt2 * 0.1
total = amt1 + amt2 + tax
print(f"Total Cost: ${total}.")
```

amt1	amt2	tax	total

Output:

2. 

```
n = 100
m = 1

for i in range(1, 4):
    n = n // 5
    m += 3
    print(m, n, end=", ")
print(m + n)
```

i	n	m

Output:

**Part C. Correct Errors in Python Scripts.** Correct the errors in source code for the `yahtzee_count.py` and `findaveprice.py` scripts on Pages 4 and 5. Mark your corrections directly on the source code; do not recopy. Correcting a pair of ( ), [ ], { }, " ", or ' ' only counts as one error. 15 points each.

1. Print the number of Yahtzees that occur in 100,000 rolls. A Yahtzee occurs when all five dice show the same value. Correct the errors. There are at least 10 errors.

```
# Source code file: yahtzee_count.py
from random import randrange
yahtzee_count = 0
for i in range(1; 100000)
    die1 = randrange(1, 7)
    die2 = randrange(1, 7)
    die3 = randrange(1, 7)
    die4 = randrange(1, 6)
    die5 = randrange(1, 6)
    if die1 == die2 and die2 == die3 and \
        die3 == die4 and die4 == die5:

        yahtzee_count + = 1

print "Yahtzee Count: { yahtzee_count}"
```

2. Correct the errors. There are at least 10 errors.

```
# Source code file: findaveprice.py
sum = 0.0
count == 0

fin = file.open("autos.txt", r)

line = fin.readline
for line != ""
    fields = line.split(",")
    make = fields[0].strip( )
    price = fields[4].strip( )
    if make = Ford:
        sum += price
        count + 1

    line = fin.readline
    ave = count / sum

fin.close( )
print "Average price of Ford cars is {round(ave, 3)}")
```

First 7 lines of input file: autos.txt

```
Make:model:year:price
Mazda:Sport:2015:17799
Ford:Transit:2011:15999
Subaru:Forester:2013:12995
Honda:Civic:2014:16295
Cadillac:Luxary:2013:25900
Ford:Taurus:2017:19000
```