

CSCI 127: Joy and Beauty of Data

Snowmester 2020

Midterm Exam

Friday, December 18, 2020

Instructor: Reese Pearsall

Print your name: _____

Print your Net ID: _____

By submitting this exam, I make the following truthful statements:

- I have not received, I have not given, nor will I give or receive, any assistance to another student taking this exam, nor have I discussed this exam with past students of this course.
- I will not use any non-instructor approved materials to assist me on this exam.
- I will not plagiarize someone else's work and turn it in as my own.
- I understand that acts of academic dishonesty may be penalized to the full extent allowed by the Montana State University Student Code of Conduct, including receiving a failing grade for the exam and/or course. I recognize that I am responsible for understanding the provisions of the Montana State University Student Code of Conduct as they relate to this academic exercise.

Submission Instructions

This exam will be due to D2L by 11:59 PM MST on Friday, December 18th 2020. This is a **hard** deadline. Late submissions will receive an automatic 0 for this exam..

The first four pages (**This page and question 1**) will be submitted to the appropriate D2L dropbox as a PDF

- You may print out the exam, fill out the first four pages by hand, scan it/take a picture, and submit as a PDF.
- Or you may fill out the first four pages virtually (i.e. in Word, PDF editor, etc) and save your answers as a PDF.

Problems 2, 3, and 4 will be submitted to a separate D2L dropbox. You will develop a python solution for each of those problems. You may have one single .py file for your all your answers, or you may have a separate .py file for each of those problems.

Make sure you name your files accordingly and place your name at the top of each of your .py file in a comment.

You may use notes, lecture slides, in class examples, previous labs/programs, the textbook, lecture recordings, and your computer on this exam.

You CAN NOT use search engines to access external resources (Youtube, Stack Overflow, W3Schools, etc), GroupMe, or other students (previous or current).

Be sure to attempt every problem. Even if you cannot fully solve one of the programming problems, you should try to get as much done as you can. I will give out as much partial credit as I can.

Read each question carefully and make sure that you answer everything asked for.

Question 1 (Multiple Choice) (20 pts)

1.1) Which of the following is **not** a Python data type?

- a. String (str)
- b. List (list)
- c. Integer (int)
- d. File (file)

1.2) Consider the following Python statements. What will be the value of a at the end of the program?

```
a = 12 % 6  
a = a + 1  
a = a ** 2
```

- a. 0
- b. 1
- c. 2
- d. 3

1.3) What will be the output of the python program given below?

```
nums = ["5", "12", "7", "14"]  
if 12 in nums:  
    print("Success!")  
else:  
    print("Failure!")
```

- a. Success!
- b. Failure!
- c. True
- d. False

1.4) Suppose that you want to read from a file called info.txt. What is the correct Python statement for opening the file?

- a. file = open(info.txt)
- b. file = open("info.txt","w")
- c. file = open("info.txt","r")
- d. file = open(info.txt,"r")

1.5) The following code will produce an error. Why? (You can assume there are **no** indentation errors)

```
def my_function(num1, num2, num3):  
    print(num1, num2, num3)
```

```
my_function(22, 15, "Hello", 1.5)
```

- a. Because the function doesn't return anything.
- b. Because when the function is called, it passes the function too many input parameters/arguments.
- c. Because when the function is called, it passes different data types (two different integers, a string, and a float).
- d. All of the above are true

1.6) What will be the output of the python program given below?

```
a = [1, 2, 3]  
print(a[3])
```

- a. 3
- b. 0
- c. 1
- d. The program will not run due to an error

1.7) What will be the output of the python program given below?

```
foo = [22, 15, "9", 15, "25", "15"]  
print(foo.count(15))
```

- a. 15
- b. 3
- c. 6
- d. 2

1.8) True or False: The following code will produce an error:

```
x = 7  
if(x = 3 or x = 7):  
    print("Hello there!")
```

- a. True
- b. False

1.9) Which of the following Python **range ()** statements would produce the following sequence of numbers:

[0,3,6,9,12]

- a. range(0,15,3)
- b. range(0,12)
- c. range(0,12 ,3)
- d. range(12,0,3)

1.10) What will be the output of the python program given below?

```
s = "Computer"  
s[3] = "b"  
print(s)
```

- a. Computer
- b. Combuter
- c. b
- d. The program will not run due to an error

Question 2 (20 pts)

Pearsall's Pizzeria offers delivery in Bozeman. The total delivery cost is equal to the total cost of the food plus \$2 for every mile the employee drives to deliver the food. There is also a mandatory \$3 delivery fee that is added onto the total.

Write a Python function that will take in the cost of the food and how many miles away the delivery person needs to drive. The function should return the total delivery cost for the customer.

For example, if the cost of food is **\$30.75**, and the delivery person drives **1.5** miles. the total cost should be **\$36.75**

Your function will go above this comment. You should not modify anything below.

```
food_cost = float(input("What was the total cost of the food? "))
miles = float(input("How many miles does the delivery person need to drive? "))

answer = calculate_delivery_cost(food_cost,miles)
print("The total delivery cost is $", answer)
```

Question 3 (25 pts)

Write a Python program that will ask for the color of some snake. Your program will try to determine what kind of snake it is based off the color.

If the color is black, then your program should ask if the snake is also red. If it is also red, then your program should answer with **"Coral Snake"**. If it is black but not red, then your program should answer with **"Black Mamba"**.

If the color is brown, then your program should ask if the snake has a rattler. If it has a rattler and is brown, then your program should answer with **"Diamondback"**. If the color is brown, but it does not have a rattler, then your program should answer with **"Western Brown Snake"**.

Otherwise, your program should answer with **"Unknown"**

For the follow up questions (is it also red? is there a rattler?) The user will only respond with "yes" or "no"

Below are 5 different example outputs that may be produced

```
What is the color of the snake? black
Does it also have red? (yes/no) yes
Coral Snake
```

```
What is the color of the snake? brown
Does it also have a rattler? (yes/no) no
Western Brown Snake
```

```
What is the color of the snake? brown
Does it also have a rattler? (yes/no) yes
Diamondback
```

```
What is the color of the snake? purple
Unknown
```

```
What is the color of the snake? black
Does it also have red? (yes/no) no
Black Mamba
```

Question 4 (35 pts)

In CSCI 127, the **lowest** lab grade will be dropped at the end of the semester. Consider a nested list that contains information about a student's grade for each lab

For example, consider the following nested list: `[[80, "Lab 1"], [85, "Lab 2"], [75, "Lab 3"], [100, "Lab 4"]]`

80% was the score the student received for Lab 1, 85% for Lab 2, 75% for Lab 3, etc.

Write a python function that will take in a nested list of this information that will determine and print out which Lab Assignment will be dropped

Given the following starting code:

```
# Your function will go above this comment. You should not modify anything below.

# [ [lab1-score, lab1], [lab2-score, lab2], [lab3-score, lab3]... ]

labs = [[80, "Lab 1"], [85, "Lab 2"], [75, "Lab 3"], [100, "Lab 4"]]

find_lowest_grade(labs)
```

Your function should produce the following output:

```
At the end of the semester, Lab 3 will be dropped.
```

Important Note: Your function should work with **any** nested list of a similar format, not just the given list

For example, if `labs = [[100, "Lab 3"], [50, "Lab 1"], [75, "Lab 2"]]`

Then your same function should produce the following output:

```
At the end of the semester, Lab 1 will be dropped.
```