Practice Exam 2

Python

Answer the questions in the spaces provided. **Please note** that there are no intentional errors in the code provided except in questions asking you to correct said code. Your written code does not have to be 100% syntactically correct.

Name: ______________________________

Page	Points	Score
3	15	
4	20	
7	20	
8	30	
9	10	
10	5	
Total:	100	

Useful notes:

- The practice exam is longer and harder than the actual exam. It was originally created for a 2 hour exam.
- The points roughly correspond to the difficulty of the questions.
- The amount of space given for a problem **does not** correspond to the difficultly of the problem.
- You are allowed to clarify any answer you give.
- You are allowed to ask for clarification.
- Things are never as complicated as they appear, especially the math.
- Read this on the actual exam. You will find a hint for actually reading this.
- Never leave a question blank, even if you don't know the answer. We can't give partial credit to blanks.
- Extra credit is available for exceptional answers (up to five points).

Don't Panic

1 Short Answer

1. (2 points) The string value “Howl’s Moving Castle” is a valid string. Why isn’t it a problem that the single quote character in the word Howl’s isn’t escaped?

2. (2 points) What is the main difference between a dictionary and a list?

3. (3 points) If l is a list, what does the expression `l[::-1]` do?

4. (3 points) How can use slice notation to get the last 3 characters of a string?

5. (2 points) How can you simulate a coin flip in python?

6. (3 points) I have a coin that is slightly weighted in favor of heads; it will land on heads 55% of the time. How would you simulate this in python using the random module?

______________ 15 points

2 File Reading

7. (20 points) **From A Prior Exam** Suppose we had a file called `temperature.csv`, which contains the daily high and low temperatures recorded in Philadelphia. The file is composed of three fields per a line, containing the date, the high temperature, and the low temperature. Each field is separated commas. For example, the contents of the file might look like this:

```
11/11/19,   64,   40
11/12/19,   49,   21
11/13/19,   33,   22
...         ...   ...
```

Write a program that calculates or prints the following:

5pts The day with the hottest high temperature.

5pts The day with the coldest low temperature.

10pts The average high temperature of the entire file.

Your program on this page:

8. (0 points) **This question is extra practice.**

   Suppose you have a file named `numbers.csv` which contains a bunch of integers, five per line of text, separated by commas. Write code below that will open the file, read the numbers from it, and print the sum of all the **even numbers** in the file. For example, the file might look like this:

   ```
   353,213,5,12399421,1
   -4,3243,2323456,32186,4234
   123,1,2,3,4
   0,8,6,-3,2
   ```

3 Method Writing

9. (10 points) `unOrUn`: If the given String begins with "un", return a String with without the "un" in front. Otherwise, return the String with "un" added to the front of it. You may assume the String is at least 3 characters long.

```
# unOrUn("untied")    -> "tied"
# unOrUn("unable")    -> "able"
# unOrUn("necessary") -> "unnecessary"
def unOrUn(word):
```

10. (10 points) `maxMinDiff`: Given an list of integers, return the difference between the maximum element and the minimum element. You may assume the list will have 2 or more elements in it.

```
# [1,2,3,4,5]  -> 4
# [15,31,21,17,28] -> 16
# [-1,-100,12,2,100] -> 200
def maxMinDiff(numbers):
```

______________ 20 points

11. (10 points) `swapEnds`: Given a list of numbers, modify the list such that the first and last elements are swapped. You may assume will have 2 or more elements in it.

    ```
    # [1,2,3,4,5]  -> [5,2,3,4,1]
    # [15,31,21,17,28] -> [28,31,21,17,15]
    # [-1,-100,12,2,100] -> [100,-100,12,2,-1]
    def swapEnds(numbers):
    ```

12. (10 points) `firstHalf`: Given a list of things, return the first half of the list.

    ```
    # [1,2,3,4,5,6]  -> [1,2,3]
    # [15,31,21,17,28] -> [15,31]
    # ["a","b","c","d","e","f","g","h"] -> ["a","b","c","d"]
    def firstHalf(theList):
    ```

13. (10 points) Write a method called `hasWildcat`: Given an input String `word`, return true if `word` contains the String “cat” in it, but the middle ‘a’ can be any `char`.

    ```
    # hasWildcat("kitty")  -> false
    # hasWildcat("tomcat") -> true
    # hasWildcat("c4tn1P") -> true
    def hasWildcat(word): #  A-- would not buy again
    ```

14. (0 points) **Extra Practice** We'll say that a value is "everywhere" in an array if for every pair of adjacent elements in the array, at least one of the pair is that value. Return true if the given value is everywhere in the array.

```
# source: http://codingbat.com/prob/p110222
# isEverywhere([1, 2, 1, 3], 1) -> true
# isEverywhere([1, 2, 1, 3], 2) -> false
# isEverywhere([1, 2, 1, 3, 4], 1) -> false
def isEverywhere(nums, val):
```

15. (10 points) Given a string, return the sum of the digits 0-9 that appear in the string, ignoring all other characters. Return 0 if there are no digits in the string. (Note: `s.isdigit()` tests if a the string `s` is one of the characters ’`0’, ’1’, ...  ’9’.`)

```
# http://codingbat.com/prob/p197890
# sumStringDigits("aa1bc2d3") -> 6
# sumStringDigits("aa11b33") -> 8
# sumStringDigits("Chocolate") -> 0
def sumStringDigits(word):
```

16. (5 points) Given an integer, return the sum of the digits 0-9 of that integer.

```
# sumDigits(1234) -> 10
# sumDigits(1000) -> 1
# sumDigits(-581) -> 14
def sumDigits(num):
```

17. (0 points) **Extra Practice** Given a list of positive numbers, return a new list of length “count” containing the first even numbers from the original array. The original list will contain at least “count” even numbers.

```
#http://codingbat.com/prob/p134174
#copyEvens([3, 2, 4, 5, 8], 2) -> [2, 4]
#copyEvens([3, 2, 4, 5, 8], 3) -> [2, 4, 8]
#copyEvens([6, 1, 2, 4, 5, 8], 3) -> [6, 2, 4]
def copyEvens(nums, count):
```

______________ 5 points