Midterm #1 - Sample Questions

1. Write out the result of this code. If there's output, write out what the code will output. If there's an error, write out why an error happened and how to fix it. (1 point)

```
distance = 150
time = 10
velocity = distance / time
print("The velocity is " + velocity)
```

2. What is the resulting Boolean value for the following expressions? (4 points)

    ```
    a) False or True and False
    ```
    a)_____

    ```
    b) True and not (9 < 5)
    ```
    b)_____

    ```
    c) 24 / 12 >= 2 and "hello" != "goodbye"
    ```
    c)_____

    ```
    d) answer = "yeah"
       answer == "yes" or answer == "yeah"
    ```
    d)_____

3. Some tricky ones. What is the resulting Boolean value for the following expressions? If there's an error, write error. (3 points)

    ```
    a) 55 != "hello"
    ```
    a)_____

    ```
    b) "2" == 2
    ```
    b)_____

    ```
    c) "hello" > 35
    ```
    d)_____

4. Fill in the blanks: 00001001 is _____ in decimal, and 38 is ____ ____ ____ ____ ____ ____ ____ ____ in binary. (1 point)

5. What's the difference between a compiled and an interpreted language (1 point)?

6. What is the output of this code if the user enters 5 (2 points)

```
n = int(input('Number please!\n'))
total = 0
for number in range(1, n + 1):
    total += number
print(total)
```

7. Create a **while** loop that prints out "Hi, how are you?" **forever**. (2 points)

    Example Output:

    ```
    Hi, how are you?
    .
    .
    Hi, how are you?
    ```

8. You've just been hired by a party planning partnership called Party People Plus (whew, that's a lot of p's). They would like you to **write a program that prints out numbers in a count down based on a value entered by the program's user**. (6 points)

The program should do the following:

a) ask the user for number (and store the number entered) by saying: "How long before the party!?"
b) print out: "Here's the count down!"
c) count down from the number entered to 1 by printing out each number
d) if the current number in the countdown is less than or equal to three, surround the number with asterisks
e) at the end of the countdown, print out: "Party Time!!!"
f) Example Output:

```
How long before the party!?
> 5
Here's the count down!
5
4
*3*
*2*
*1*
Party Time!!!
```

9. Write a program that prints out a daily budget for a vacation. (7 points)

a) **ask the user for the number of days** of their vacation, as well as their **destination**
b) based on the number of days the vacation is, **ask for how much they're spending on each day** (x is the day's number):
   `How much are you spending on day [x]?`
c) once you're done, **print out a report** with the **destination**, **total cost**, and **amount** per day
d) hint: how can the printing of the report be delayed until the end of the program?

Example Output:

```
How many days is your vacation?
> 2
Where are you going?
> Ottawa
How much are you spending on day 1?
> 100
How much are you spending on day 2?
> 200
Your vacation to Ottawa is $400
day 1 - $100
day 2 - $200
```

10. Define the following terms (1 and ½ points)

program:

function:

call (as in call a function):

11. Answer the questions in the right column about the condition snippet of code in the left column. (6 points)

Code	Question 1	Question 2

```answer = input("Type something plz: ")```
```while answer != "yes" and answer != "yeah":```
```   print("I'm in yr while loop")```
```   answer = input("Type something plz: ")```
	If a user types in "no", what – if anything – would this program output?	Write down all of the values that a user could input to prevent the while loop from running.

```answer = input("Type something plz: ")```
```another = input("Type another thing plz: ")```
 	
```if answer == "no" and another == "n":```
```   print("Ohhh no!")```
```elif answer == "yes" or another == "y":```
```   print("Yeaaahhhh")```
```else:```
```   print("Huh?")```
	If a user types in the word "yes" for the first question and "comfy-pants" for the second, what – if anything – would this program output?	What values must the user enter for this program to print "Ohhh no!"?

```def greet(name, num_exclamation_points):```
```   punctuation = '!' * num_exclamation_points```
```   print('Hi ' + name + punctuation)```
	How many parameters does the function, greet, take?	How would you call this function so that the output is "Hi Harriet!!!"?

12. Write a program that **continually asks for numbers until the user enters three consecutive numbers that are all the same**. Once three consecutive numbers that are equal are entered, the program will **print out 'Done!'**. Assume that the user only enters numbers.

Hints:
a) you will have to keep track of a previous value (but how will you initialize it?)
b) 3 consecutive numbers means that the 1st in the series wasn't equal to a previous, but the next two are

Example Output:
```
Please enter a number
> 5
Please enter a number
> 5
Please enter a number
> 7
Please enter a number
> 7
Please enter a number
> 7
Done!
```

13. Here is a partial implementation of a program that:

   a) **generates a series of numbers, each a random value** from 1 through 11
   b) **prints out** each generated number
   c) **keeps a running total of the generated numbers**
   d) **stops printing** the numbers when the **sum** of the numbers generated reaches **21 or over**

   Fill in the blanks to complete the implementation. Example output is provided on the left. (5 points)

Example Run 1:   Example Run 2:
7   2
10   8
5   10
                 6

```
import _____

total =  _____

while _____:

    random_value = _____

    print(random_value)

    total = total + _____
```

14. This chart describes the order in which types of operators are evaluated, along with examples of each. Fill in the blanks: (4 points)

Order Evaluated (1, 2, 3 or 4)	Type of Operator	Example Operator
	Comparison	
	Logical	
	Parentheses	
	Numeric and/or String Operators	

15. Use DeMorgan's law to write an equivalent if statement adjacent to the one shown below (1 point):

```
if not (age >= 21 and has_id == True):        if _____:
        print("Not allowed in the pub")               print("Not allowed in the pub")
```

   Use logical opposites to remove nots from you answer above (1 point):

```
if _____:
        print("Not allowed in the pub")
```

16. rite a program that asks for a length, width and height. It will calculate volume by multiplying all 3 values. It will output the volume and determine if the dimensions entered make the object larger, smaller or equal to a bread box -which we'll give an arbitrary value of 20. (5 points):

What is the object's length?   What is the object's length?   What is the object's length?
> 5   > 4   > 2
What is the object's width?   What is the object's width?   What is the object's width?
> 2   > 1   > 2
What is the object's height?   What is the object's height?   What is the object's height?
> 3   > 5   > 1
The objects volume is 30.   The objects volume is 20.   The objects volume is 4.
The object is bigger than a bread box. This must be a bread box!   The object is smaller than a bread box.