Questions

Basics

1. What is an expression?
    a. An Expression is an syntactic entity that maybe evaluated to determine its value
2. What is a syntax error?
    a. An error that is related to the programming language's syntax. Usually the rules of the programming language is broken.
3. What is PEP8?
    a. PEP8 is a study guide for writing python programs. It shows the required syntaxes and writing conventions for python
4. What does a linter do?
    a. Linter is a static code analysis tool. It is used to flag coding errors, bugs, style errors, and other bad programming mistakes that the user do.
5. What is the result of this expression: "*" * 10 6. What is CPython?
    a. "*" * 10 will print "*" 10 times.
    b. CPython is the reference implementation of the Python programming language. It is written in C and Python and is the default and most widely used implementation of the language.
7. How is CPython different from Jython?
    a. CPython is written with C while Jython is written with Java and Python. Jython is an implementation of Python that can be run in a Java application.
8. How is CPython different from IronPython?
    a. CPython is written with C while Jython is written with Java and Python. IronPython is another implementation of Python that targets .NET framework and Mono.

Primitive Types

1. What is a variable?
    a. A variable is a an entity that holds a value
2. What are the primitive built-in types in Python?
    a. Integers, Float, Strings, Boolean.
3. When should we use """ (tripe quotes) to define strings?
    a. Triple quotes is used for long comments or strings that have new lines.
4. Assuming (name = "John Smith"), what does name[1] return?
    a. o
5. What about name[-2]?
    a. t
6. What about name[1:-1]?
    a. ohn Smit
7. How to get the length of name?
    a. Len(name)
8. What are the escape sequences in Python?

    a. You use '\' to escape a character in python. The most common uses of this character is when you use quotes inside your strings and also the character itself.
9. What is the result of f**"{2+2}+{10%3}"**?
    a. 4+1
10. Given (name = "john smith"), what will **name.title()** return?
    a. John Smith
11. What does name.**strip()** do?
    a. Strip will remove any leading and trailing empty spaces in the string.
12. What will **name.find("Smith")** return?
    a. It will return the index of the first character that matched "Smith" in this case it is 5
13. What will be the value of **name** after we call name.**replace("j", "k")**?
    a. Kohn Smith.
14. How can we check to see if **name** contains **"John"**?
    a. There is no contains method in strings in python but we can use name.find() to check if the string contains "John" the reason we can do this is because if find() cant find the word, it will return -1. So we can do name.find("John") != -1
15. What are the 3 types of numbers in Python?
    a. int, float, complex

Control Flow

1. What is the difference between **10 / 3** and **10 // 3**?
    a. 10/3 returns a float number, 10//3 returns a integer number the number is rounded.
2. What is the result of 10 ** 3?
    a. 1000, ** is another way to do power.
3. Given (**x = 1**), what will be the value of after we run (**x += 2**)?
    a. It will be 3
4. How can we round a number?
    a. We can use round() to round a number
5. What is the result of **float(1)**?
    a. It will be 1.0, the integer 1 is upcasted to a floating point number.
6. What is the result of **bool("False")**?
    a. It will be True, python will down cast the string value to a Boolean value.
7. What are the falsy values in Python?
    a. Falsy values in python are values that evaluate to a false
8. What is the result of **10 == "10"**?
    a. False, both are different types.
9. What is the result of **"bag" > "apple"**?
    a. True,
10. What is the result of **not(True or False)**?
    a. False
11. Under what circumstances does the expression **18 <= age < 65** evaluate to True**?**
    a. Age has to be in between 18 and 64 to evaluate to true

12. What does **range(1, 10, 2)** return?
    a. It will create a sequence of numbers from 1 to 10 of only odd numbers
13. Name 3 iterable objects in Python.
    a. List, Dictionaries, Sets

Functions

1. What is the difference between a parameter and an argument?
    a. Arguments are values that passed when a function is called.
    b. Parameters are the defined values at the time of the function prototype or definition
2. All functions in Python by default return …?
    a. Pass/void
3. What are keyword arguments and when should we use them?
    a. It is a way to "bypass" argument order in a function call
    b. We use keyword arguments to make our function calls more explicit
4. How can we make a parameter of a function optional?
    a. By giving the parameter a default value on function definition
5. What happens when we prefix a parameter with an asterisk (*)?
    a. It means that the parameter will accept unlimited amount of positional arguments by the function
6. What about two asterisks (**)?
    a. Its similar to * but it will capture any keyword arguments given to the function into a dictionary
7. What is scope?
    a. A scope is a region in the code where a variable can have existence and cannot be accessed by any other functions outside of this region.
8. What is the difference between local and global variables?
    a. Local variables are variables that only exists in their function scope. While global variables exist for the entire application to access.
9. Why is using the **global** statement a bad practice?

    a. Having a global statement can cause problems when we run our application in a multithreaded way. Also with a global statement, other functions will be able to have access and can accidentally make modifications to the data.

Coding Exercises

1. Write a function that returns the maximum of two numbers.
2. Write a function called **fizz_buzz** that takes a number.
    1. If the number is divisible by 3, it should return “Fizz”.
    2. If it is divisible by 5, it should return “Buzz”.
    3. If it is divisible by both 3 and 5, it should return “FizzBuzz”.
    4. Otherwise, it should return the same number.
3. Write a function for checking the speed of drivers. This function should have one parameter: speed.
    1. If speed is less than 70, it should print “Ok”.
    2. Otherwise, for every 5km above the speed limit (70), it should give the driver one demerit point and print the total number of demerit points. For example, if the speed is 80, it should print: “Points: 2”.
    3. If the driver gets more than 12 points, the function should print: “License suspended”
4. Write a function called **showNumbers** that takes a parameter called **limit.** It should print all the numbers between 0 and limit with a label to identify the even and odd numbers. For example, if the limit is 3, it should print:
    - 0 EVEN
    - 1 ODD
    - 2 EVEN
    - 3 ODD
5. Write a function that returns the sum of multiples of 3 and 5 between 0 and **limit** (parameter). For example, if limit is 20, it should return the sum of 3, 5, 6, 9, 10, 12, 15, 18, 20.
6. Write a function called **show_stars(rows).** If **rows** is 5, it should print the following: ○ * ○ ** ○ *** ○ **** ○ *****
7. Write a function that prints all the prime numbers between 0 and **limit** where limit is a parameter.