
Python Programming Interview Questions

INSTRUCTIONS:

1. You can use internet and all the resources at your disposal.
2. Please use Python 2.7 to answer all the questions.
3. Please do Q1 & Q6 in individual python files. You can do all other questions in one python file.
4. To reformat or write your code please feel free to use any external library that can be pip installed.
5. Presentation and ease of deployment of your answers matter.
6. Please zip and mail or link to your GitHub repo.
7. Please do not share these questions on the internet

TIPS:

1. Consider scalability/code re-use
2. Questions are open-ended for a purpose, try to think how they could fit in a bigger picture

QUESTIONS:

1. Write a new class with following requirements
 - a. To store a list of items
 - b. A method to return all unique items from the list
 - c. A method to return all items and their frequency
 - d. Should be able to append/insert new items to the list
2. Write a function that takes string as input.
 - a. Output to be int/float/string depending if the string can be converted to float or integer type
 - b. Example:

```
def convert(a=''):
    ....
    return converted_value
>>> type(convert('1'))
<type 'int'>
>>> type(convert('1.0'))
<type 'float'>
>>> type(convert('asd'))
<type 'str'>
```

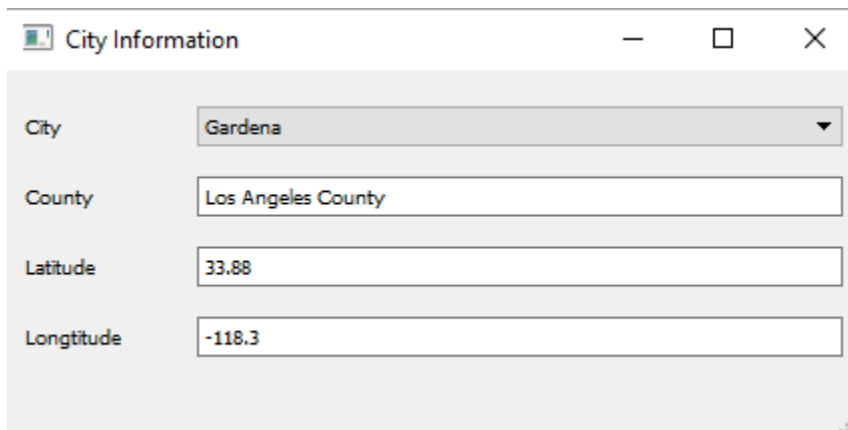
3. Reformat this code to be more elegant

```
abc = ['dog', 'Fido', 10]
animal = abc[0]
name = abc[1]
age = abc[2]
output = ('{name} the {animal} is {age} years old'.format(
    animal=animal, name=name, age=age))
```

4. Implement a method that takes 3 numbers as input and finds the minimum of the three without using the built-in min function
5. Reformat this code to be more elegant

```
def apply_operation(left_operand, right_operand, operator):  
    if operator == '+':  
        return left_operand + right_operand  
    elif operator == '-':  
        return left_operand - right_operand  
    elif operator == '*':  
        return left_operand * right_operand  
    elif operator == '/':  
        return left_operand / right_operand
```

6. Create a simple GUI of city information of California
 - See attached JSON file (ca.json), which contains information of all cities in California.
 - Use the data abstract from the JSON file to create a simple GUI for it
 - The GUI should have a filter function based on the selection of city name (selectable)
 - Display information of county full name, latitude, longitude
 - Sample GUI is shown below
 - Use any python library as needed



7. This is an architecture problem, please send solutions as an image (can be hand drawn) or a word art
- Please see the flow chart given below
 - Application 2 is a blocking process
 - Problem/Desired Solution:**
 - The **Application 1** has no information on how far **Application 2** has reached.
 - We need a solution in a way in which **Application 1** can track and display how far Application 2 has reached
 - Constraints:**
 - Application 1** and **Application 2** can't exchange variables/information directly once **Application 2** starts
 - Application 1** can exchange any number of variables when it is initializing **Application 2** and vice versa at the end when **Application 2** ends
 - We control what code goes in **Application 2** and do anything we want
 - Assumptions**
 - We can assume **Application 1** is a python GUI framework
 - Application 2** can be anything, like COM object, another python/C/C++/java application
 - Note:**
 - Please justify your solution and why you think it would be the best.
 - Also, please elaborate your solution sufficiently.

