Answer all the questions

1. *Calculate the mean, median and mode of the values 9, 11, 22, 34, 17, 22, 34, 22 and 40. Suppose the values included another 34. What problem might occur?*
2. *Calculate the product of a series of integers that are passed to the function product, which receives an arbitrary argument list. Test your function with several calls, each with a different number of arguments.*
3. *Implement a Fahrenheit function that returns the Fahrenheit equivalent of a Celsius temperature. Use the following formula:*

   ```
   F = (9 / 5) * C + 32
   ```

   Use this function to print a chart showing the Fahrenheit equivalents of all Celsius temperatures in the range 0–100 degrees. Use one digit of precision for the results. Print the outputs in a neat tabular format.

4. *What does the following mystery function do? Assume you pass the list [1, 2, 3, 4, 5] as an argument.*

   ```
   def mystery(x):
       y = 0
       for value in x:
           y += value ** 2
       return y
   ```

5. *What does the following function do, based on the sequence it receives as an argument?*

   ```
   def mystery(sequence):
       return sequence == sorted(sequence)
   ```

6. *Create a 2-by-3 list, then use a nested loop to:*
   a. *Set each element's value to an integer indicating the order in which it was processed by the nested loop.*
   b. *Display the elements in tabular format. Use the column indices as headings across the top, and the row indices to the left of each row.*

7. *(IPYTHON SESSION: SLICING) Create a string called alphabet containing 'abcdefghijklmnopqrstuvwxyz', then perform the following separate slice operations to obtain:*
   a. *The first half of the string using starting and ending indices.*
   b. *The first half of the string using only the ending index.*
   c. *The second half of the string using starting and ending indices.*
   d. *The second half of the string using only the starting index.*

e. *Every second letter in the string starting with 'a'.*

f. *The entire string in reverse.*

g. *Every third letter of the string in reverse starting with 'z'.*

8. *(IS A SEQUENCE SORTED?) Create a function is_ordered that receives a sequence and returns True if the elements are in sorted order. Test your function with sorted and unsorted lists, tuples and strings.*
9. *(FINDING THE PEOPLE WITH A SPECIFIED LAST NAME) Create a list of tuples containing first and last names. Use filter to locate the tuples containing the last name Jones. Ensure that several tuples in your list have that last name.*
10. *(FUNCTIONAL-STYLE PROGRAMMING: ORDER OF FILTER AND MAP CALLS) When combining filter and map operations, the order in which they're performed matters. Consider a list numbers containing 10, 3, 7, 1, 9, 4, 2, 8, 5, 6 and the following code:*

```
In [1]: numbers = [10, 3, 7, 1, 9, 4, 2, 8, 5, 6]

In [2]: list(map(lambda x: x * 2,
   ...:          filter(lambda x: x % 2 == 0, numbers)))
   ...:
Out[3]: [20, 8, 4, 16, 12]
Reorder this code to call map first and filter second. What
happens and why?
```