**Exercise 6.6**

(Objectives 6.8)

*1)*  \_\_\_\_\_\_\_\_\_\_ is a simple but incomplete version of a function.

 A. A stub

 B. A function

 C. A function developed using botton-up approach

 D. A function developed using top-down approach

2) Assume you are given a program **CountLettersInList.py** that counts the occurrences of each letter in a list of characters.

**a) Mark all function calls in red**

**b) Let us reverse the software development process, please draw a system design diagram by reading the program**

Sample Run

The lowercase letters are:

l z b y s k f u s i t n k b m h h e e h

r g a c l p g j s c d y u o j y g q f o

d l o j c k v k p z t m q e u r s r h c

h c m d s q j r w k u y r g i x t w m l

x c o x v k g k n d d y z q z i g x j o

The occurrences of each letter are:

1 a 2 b 6 c 5 d 3 e 2 f 6 g 5 h 3 i 5 j

7 k 4 l 4 m 2 n 5 o 2 p 4 q 5 r 5 s 3 t

4 u 2 v 2 w 4 x 5 y 4 z

|  |
| --- |
| **CountLettersInList.py** |
| import RandomCharacter # Defined in Listing 6.9  **def main():**  # Create a list of characters  chars = createList()    # Display the list  print("The lowercase letters are:")  displayList(chars)    # Count the occurrences of each letter  counts = countLetters(chars)    # Display counts  print("The occurrences of each letter are:")  displayCounts(counts)    # Create a list of characters  **def createList():**  # Create an empty list  chars = []    # Create lowercase letters randomly and add them to the list  for i in range(100):  chars.append(RandomCharacter.getRandomLowerCaseLetter())    # Return the list  return chars    # Display the list of characters  **def displayList(chars):**  # Display the characters in the list 20 on each line  for i in range(len(chars)):  if (i + 1) % 20 == 0:  print(chars[i])  else:  print(chars[i], end = ' ')    # Count the occurrences of each letter  **def countLetters(chars):**  # Create a list of 26 integers with initial value 0  counts = 26 \* [0]  # For each lowercase letter in the list, count it  for i in range(len(chars)):  counts[ord(chars[i]) - ord('a')] += 1  return counts  # Display counts  **def displayCounts(counts):**  for i in range(len(counts)):  if (i + 1) % 10 == 0:  print(counts[i], chr(i + ord('a')))  else:  print(counts[i], chr(i + ord('a')), end = ' ')  **main()** # Call the main function |