Worked example 1 . Iterating over items.

This program uses for to iterate over a list of dice rolls and print the value of each item in the list.

|  |  |  |  |
| --- | --- | --- | --- |
| 1  2  3 | rolls = [1, 4, 3, 6]  for **dice** in rolls:   |  |  | | --- | --- | | print(**dice**) | . | |

Worked example 2 . Counting selected items

This program uses for to iterate over a list of dice rolls and **count** the number of items with a value greater than 3.

|  |  |  |  |
| --- | --- | --- | --- |
| 1  2  3  4  5  6 | rolls = [1, 4, 3, 6]  count = 0  for **dice** in rolls:   |  |  | | --- | --- | | if **dice** > 3:  count = count + 1 | . |   print(count) |

Worked example 3 . Collecting selected items into a list

This program uses for to iterate over a list of dice rolls and **collect** the items with a value greater than 3 into a new list named selection.

|  |  |  |  |
| --- | --- | --- | --- |
| 1  2  3  4  5  6 | rolls = [1, 4, 3, 6]  selection = []  for **dice** in rolls:   |  |  | | --- | --- | | if **dice** > 3:  selection.append(dice) | . |   print(selection) |

**English words**

Task 1 .

**Step 1**

**Open** this program on Bourne to Code.

|  |  |
| --- | --- |
| 1  2  3 | from extra.data import dictionary  nb\_words = len(dictionary)  print(nb\_words, "english words in the list") |

Line 1 imports the dictionary, i.e. the list of words that the program will use. This is **not a standard Python component**. The list has been created specifically to allow you to perform these tasks.

**Step 2**

**Extend** the program so that it first prompts the user to enter a word length (number of characters), and then iterates over the dictionary, i.e. the list of words, and **counts** the number of words of this length.

1. Display a **print** message to the user that says “Length of words to search for:”
2. Capture the users **input** as an **integer** and assign it to the **variable** length. Use one of the lines below:
   1. length = str(input())
   2. length = int(input())
   3. length = ord(input())
3. Create a **variable** named **count** and **assign** it the value of **0** (zero)
4. Create a **for** loop to go through each **word** in **dictionary.** Check the length of each word and if it is equal to the length you choose add one to the variable count.   
     
   Below is the code to add but the **order** is **mixed up** and needs **indenting**

count = count + 1

if len(word) == length:

for word in dictionary:

1. Display a **print** message to the user that says ("There are", **count**, "words with", **length**, "letters"). **Count** and **length** are the **variables** you created.

|  |  |
| --- | --- |
| **Example** |  |
| Note: Use this example to check your program. This is the output your program should produce when searching for 12-letter words. | |
| The program displays a prompt and waits for keyboard input. | Length of words to search for: |
| The user types a reply. | 12 |
| The program displays the number of words of the given length. | There are 29126 words with 12 letters |

Task 2 .

**Open** this program on Bourne to Code.

|  |  |
| --- | --- |
| 1 | from extra.data import dictionary |

**Extend** the program so that it first prompts the user for a string (a piece of text) to search for, and then iterates over the list of words in the dictionary and **collects** the ones that contain this piece of text into a new list.

In the end, the program should display the collected words, one word per line.

1. Display a **print** message to the user that says “Text to search for:”
2. Create a variable named **sub**, then capture the users **input** to it (You don’t need to use **int** this time to make it an integer)
3. Create an empty **list** named **collection**. One of the below has the correct brackets for a list.
   1. collection = [ ]
   2. collection = { }
   3. collection = ( )
4. You now need to create the **for** loop. This will go through each **word** in the **dictionary**. If the **sub** **variable** **value** is **in** the **word** then use the **append** command to add it to the end of the **collection** **list**.   
     
   **Rearrange** the **code** **below** to get this working:

collection.append(word)

if sub in word:

for word in dictionary:

1. Last two lines, **for** each **word** in the **collection** list, **print** out the word. You will need another **for** loop and then a line to **display** each word.   
     
   Create a **for** loop line and then a **print** line.

|  |  |
| --- | --- |
| **Example** |  |
| Note: Use this example to check your program. This is the output your program should produce when searching for the words that contain the text "python". | |
| The program displays a prompt and waits for keyboard input. | Text to search for: |
| The user types a reply. | python |
| The program displays the words that contain the particular substring. | python pythonissa  pythoness pythonist  pythonic pythonize  pythonical pythonoid  pythonid pythonomorph  pythonidae pythonomorpha  pythoniform pythonomorphic  pythoninae pythonomorphous  pythonine pythons  pythonism |

Task 3 . The longest word

**Open** the program below in your development environment ([ncce.io/py-words-3](https://replit.com/@NCCE/prg5-words-3)) and **complete** the missing condition in line 4, so that the longest variable holds the longest word contained in the list.

**Tip**: Use the **len** function and compare the length of the current word to the length of the longest word encountered so far. If the **word** is **greater** **than** (>) the **longest** then longest becomes that word.

|  |  |
| --- | --- |
| 1  2  3  4  5  6 | from extra.data import dictionary  longest = ""  for word in dictionary:  if :  longest = word  print(longest) |

Explorer task .

**Read** the Python program below:

|  |  |
| --- | --- |
| 1  2  3  4  5  6 | words = ["pig", "hen", "ox", "cow", "duck"]  counts = [0, 0, 0, 0, 0]  for word in words:  length = len(word)  counts[length] = counts[length] + 1  print(counts) |

Verbally, this program could be described as:

For each word in the list of words:

* Compute the length of the current word
* Increase the counter that corresponds to that length by 1

When this program is executed, what do you expect its output to be?

|  |
| --- |
|  |

In your development environment, **open** and **run** [a version of this program](http://ncce.io/py-words-4) (ncce.io/py-words-4) that performs the same task on the complete list containing thousands of English words.

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