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.

|  |  |  |  |
| --- | --- | --- | --- |
| 123 | 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.

|  |  |  |  |
| --- | --- | --- | --- |
| 123456 | rolls = [1, 4, 3, 6]count = 0for **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.

|  |  |  |  |
| --- | --- | --- | --- |
| 123456 | 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.

|  |  |
| --- | --- |
| 123 | from data import dictionarynb\_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.

**Tip**: Refer to Worked example 2 about counting the number of selected items in a list.

**Tip**: Use the len function to retrieve the length of each word in the dictionary.

|  |  |  |
| --- | --- | --- |
|  | len(string)e.g. len("deoxyribonucleic")e.g. len(name) | Returns the length (number of characters) of a string. |

|  |  |
| --- | --- |
| **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 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.

**Tip**: Refer to Worked example 3 about collecting selected items into a new list. Worked example 1 should help with displaying the contents of the new list.

**Tip**: Use the in operator to check if a word contains a piece of text.

|  |  |  |
| --- | --- | --- |
|  | string in stringe.g. "syn" in terme.g. letter in "aeiou"  | Evaluates to True if a string can be found within another, or to False otherwise. |

|  |  |
| --- | --- |
| **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 pythonissapythoness pythonistpythonic pythonizepythonical pythonoidpythonid pythonomorphpythonidae pythonomorphapythoniform pythonomorphicpythoninae pythonomorphouspythonine pythonspythonism |

 Task 3 . The longest word

**Open** the program below in your development environment ([ncce.io/py-words-3](https://replit.com/%40NCCE/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.

|  |  |
| --- | --- |
| 123456 | from data import dictionarylongest = ""for word in dictionary: if : longest = wordprint(longest) |

 Explorer task .

**Read** the Python program below:

|  |  |
| --- | --- |
| 123456 | 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.

This resource is licensed under the Open Government Licence, version 3. For more information on this licence, see [ncce.io/ogl](http://ncce.io/ogl).