List comprehension

The list comprehension syntax is somewhat of a compressed ‘for’ loop.

Classic ‘for’ loop

Given a list of numbers, remove all odd numbers from the list:

```
numbers = [3,5,45,97,32,22,10,19,39,43]
result = []
for number in numbers:
  if number % 2 == 0:
    result.append(number)
print(result)
```

The list comprehension way

```
result = [number for number in numbers if number % 2 == 0]
print(result)
```

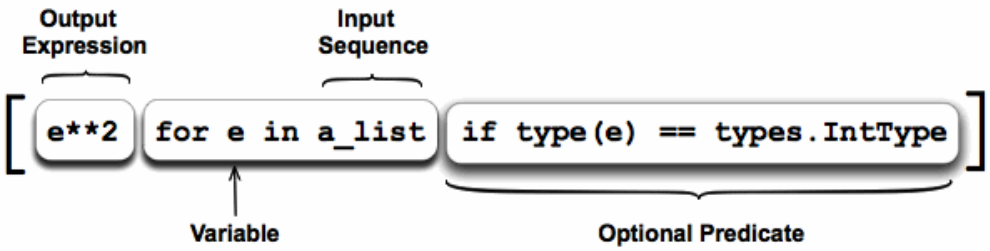
List comprehension syntax

A traditional for loop:

```
for (set of values to iterate):
  if (conditional filtering):
    output_expression()
```

Translated to list comprehension:

```
The same gets implemented in a simple LC construct in a single line as:
 [ output_expression() for(set of values to iterate) if(conditional filtering) ]
```



Examples

Given a list of numbers, remove floats (numbers with decimals)

```
original_list = [2,3.75,.04,59.354,6,7.7777,8,9]
only_ints = [number for number in original_list if type(number) == int]
print(only_ints)
```

Exercise

1	Using a list comprehension, create a new list called "newlist" out of the list "numbers", which contains only the positive numbers from the list, as integers. numbers = [34.6, -203.4, 44.9, 68.3, -12.2, 44.6, 12.7]
2	Create a list of integers which specify the length of each word in a “sentence”, but only if the word is not the word "the". sentence = "The python is a general-purpose programming language, which uses the interpreter for translation"
3	Using list comprehension, find all the numbers from 1-1000 that are divisible by 7.
4	Find all of the numbers from 1-1000 that have a 3 in them.
5	Count the number of spaces in a string.
6	Create a list of all the consonants in the string “Yellow Yaks like yelling and yawning and yesturday they yodled while eating yuky yams”
7	Find the common numbers in two lists (without using a tuple or set) list_a = 1, 2, 3, 4, list_b = 2, 3, 4, 5
8	Create a list of containing vowels in each word in a “sentence”. sentence = "The python is a general-purpose programming language, which uses the interpreter for translation"