Let's learn why Python is awesome.

First, we have iterators.

Lists are a basic Python object: https://www.w3schools.com/python/python_lists.asp (https://www.w3schools.com/python/python_lists.asp) Check out: https://www.w3schools.com/python/python_iterators.asp (https://www.w3schools.com/python/python_iterators.asp)

Here is how you loop in "c"

```c
for(int i=0; i<9; i+=2)
{
    print(i);
}
```

What will the output be? Can you figure it out?

Here is how you do it in python:

```python
for i in range(0, 9, 2):
    print(i)
```

```python
In [39]: for i in range(0, 9, 2):
             print(i)
```

```
0
2
4
6
8
```

Looping is fun and fast! Here are two more examples.

```python
In [40]: mytuple = ("apple", "banana", "cherry")

         for x in mytuple:
           print(x)
```

```
apple
banana
cherry
```

```
In [41]: mystr = "banana"

         for x in mystr:
           print(x)

b
a
n
a
n
a
```

The second cool idea is list comprehension.

List comprehension is a fast compact way of building for loops.

Check out: https://www.pythonforbeginners.com/basics/list-comprehensions-in-python (https://www.pythonforbeginners.com/basics/list-comprehensions-in-python)

Let's first solve a problem without list comprehension.
The following code generates the square of the integers from 0 to 10.
Notice the clean for-loop.

```
In [42]: L = []
         for n in range(11):
             L.append(n ** 2)
         L
```

Out[42]: [0, 1, 4, 9, 16, 25, 36, 49, 64, 81, 100]

Here is the Pythonic way of doing it via list comprehension.

```
In [43]: [n ** 2 for n in range(11)]
```

Out[43]: [0, 1, 4, 9, 16, 25, 36, 49, 64, 81, 100]

You can even condition on the iterator!
Here is code for computing the squares of the even numbers
and code for computing the squares of the odd numbers

```
In [44]: [n ** 2 for n in range(11) if n % 2 == 0]
```

Out[44]: [0, 4, 16, 36, 64, 100]

```
In [45]: [n ** 2 for n in range(11) if n % 2 > 0]
```

```
Out[45]: [1, 9, 25, 49, 81]
```

Let's look at one last example.

Problem: Suppose we want to remove vowels from a sentence.

```
In [54]: def for_soln(sentence):
             vowels = 'aeiou'
             filtered_list = []
             for l in sentence:
                 if l not in vowels:
                     filtered_list.append(l)
             return ''.join(filtered_list)
```

```
In [56]: sentence = 'My name is Mehul Motani!'
         print("Filtered result: " + for_soln(sentence))

         Filtered result: My nm s Mhl Mtn!
```

Homework: Solve the vowel removing problem with list comprehension

```
In [ ]:
```