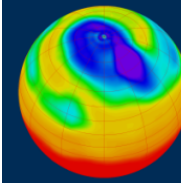




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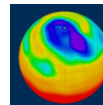


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**List comprehensions -
what are they?
They are useful!**



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List Comprehensions

Python supports a concept called "List Comprehensions". Imagine you want to create a list of square numbers from the list of numbers from 0 to 9. You would type:

```
>>> S = []  
>>> for x in range(10):  
...     S.append(x**2)  
  
>>> print S  
[0, 1, 4, 9, 16, 25, 36, 49, 64, 81]
```

Saving on lines of code

List Comprehensions allow you to do it on **one line**:

```
>>> S = [x**2 for x in range(10)]  
>>> print S  
[0, 1, 4, 9, 16, 25, 36, 49, 64, 81]
```

These can be used to construct lists in a natural and easy way.

It gets better - include conditions

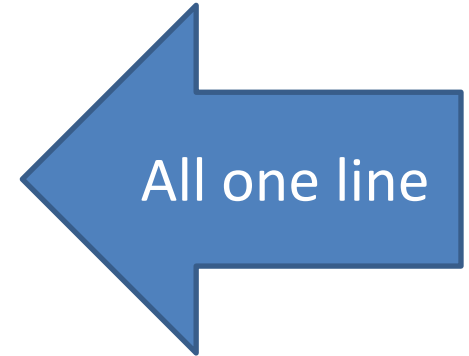
Imagine our previous example - but you only want to include values in the list where the result is an even number:

```
>>> S = []
>>> for x in range(10):
...     res = x**2
...     if res % 2 == 0:
...         S.append(res)
>>> print S
[0, 4, 16, 36, 64]
```

Can be simplified to...

```
>>> S =  
    [x**2 for x in range(10)  
      if x**2 % 2 == 0]
```

```
>>> print S  
[0, 4, 16, 36, 64]
```



See more info at:

<https://www.python.org/dev/peps/pep-0202/#examples>