02.16-list-comprehension

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1

```
In [1]: values = [10, 21, 4, 7, 12]
        squares = []
        for x in values:
            squares.append(x**2)
        print (squares)
```

```
[100, 441, 16, 49, 144]
```

```
In [2]: values = [10, 21, 4, 7, 12]
        squares = [x**2 for x in values]
        print (squares)
```

```
[100, 441, 16, 49, 144]
```

```
   10
```

```
In [3]: values = [10, 21, 4, 7, 12]
        squares = [x**2 for x in values if x <= 10]
        print (squares)
```

```
[100, 16, 49]
```

```
In [4]: square_set = {x**2 for x in values if x <= 10}
        print(square_set)
        square_dict = {x: x**2 for x in values if x <= 10}
        print(square_dict)
```

```
{16, 49, 100}
{10: 100, 4: 16, 7: 49}
```

```
In [5]: total = sum([x**2 for x in values if x <= 10])
        print(total)
```

```
165
```

Python
xrange()**Python**

```
In [6]: total = sum(x**2 for x in values if x <= 10)
        print(total)
```

```
165
```

```
In [7]: x = range(1000000)
```

```
In [8]: %timeit total = sum([i**2 for i in x])
```

```
283 ms ś 10.2 ms per loop (mean ś std. dev. of 7 runs, 1 loop each)
```

```
In [9]: %timeit total = sum(i**2 for i in x)
```

```
269 ms ś 102 ţs per loop (mean ś std. dev. of 7 runs, 1 loop each)
```