LIST COMPREHENSION

- List comprehension is an elegant way to define and create a list in Python
- Relies heavily on for loops
- Significantly reduces lines of code

In [2]:

```python
cosmos = []
for i in "universe":
    cosmos.append(i)
cosmos
```

Out[2]:

```
['u', 'n', 'i', 'v', 'e', 'r', 's', 'e']
```

In [3]:

```python
[u for u in "universe"]
```

Out[3]:

```
['u', 'n', 'i', 'v', 'e', 'r', 's', 'e']
```

In [4]:

```python
list("universe")
```

Out[4]:

```
['u', 'n', 'i', 'v', 'e', 'r', 's', 'e']
```

In [7]:

```python
norm = []
for n in range(0, 11):
    result = n**2
    norm.append(result)
norm
```

Out[7]:

```
[0, 1, 4, 9, 16, 25, 36, 49, 64, 81, 100]
```

In [9]:

```python
comp = [x**2 for x in range(0, 11)]
comp
```

Out[9]:

```
[0, 1, 4, 9, 16, 25, 36, 49, 64, 81, 100]
```

In [12]:

```python
pets = ["cat", "dog", "rabbit", "duck", "mouse","piglet"]
```

```
rad = []
for i in range(len(pets)):
    res = pets[i] + " is hungry!"
    rad.append(res)
rad
```

```
['cat is hungry!',
 'dog is hungry!',
 'rabbit is hungry!',
 'duck is hungry!',
 'mouse is hungry!',
 'piglet is hungry!']
```

In [13]:

```
[pets[i] + " is hungry!" for i in range(len(pets))]
```

Out[13]:

```
['cat is hungry!',
 'dog is hungry!',
 'rabbit is hungry!',
 'duck is hungry!',
 'mouse is hungry!',
 'piglet is hungry!']
```

In [18]:

```
[numbers**3 for numbers in range(0, 11) if numbers >=3 and numbers % 2 == 1]
```

Out[18]:

```
[27, 125, 343, 729]
```

In [19]:

```
count = []
for num in range(0,11):
    if num >= 3 and num %2 == 1:
        new = num**3
        count.append(new)
count
```

Out[19]:

```
[27, 125, 343, 729]
```

In [20]:

```
growth = []
for grow in range(0, 20):
    if grow % 2 == 0 and grow > 2:
        growth.append(grow)
growth
```

Out[20]:

```
[4, 6, 8, 10, 12, 14, 16, 18]
```

In [21]:

```
[g for g in range(0, 20) if g % 2==0 and g > 2]
```

```
Out[21]:
```

[4, 6, 8, 10, 12, 14, 16, 18]