Python Lists

INTRODUCTION TO PYTHON



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Python Data Types

- float real numbers
- int integer numbers
- str string, text
- bool True, False

```
height = 1.73
tall = True
```

• Each variable represents single value

Problem

- Data Science: many data points
- Height of entire family

```
height1 = 1.73
height2 = 1.68
height3 = 1.71
height4 = 1.89
```

Inconvenient

Python List

```
• [a, b, c]
```

```
[1.73, 1.68, 1.71, 1.89]
```

```
[1.73, 1.68, 1.71, 1.89]
```

```
fam = [1.73, 1.68, 1.71, 1.89]
fam
```

```
[1.73, 1.68, 1.71, 1.89]
```

- Name a collection of values
- Contain any type
- Contain different types

Python List

• [a, b, c]

```
fam = ["liz", 1.73, "emma", 1.68, "mom", 1.71, "dad", 1.89]
fam
```

```
['liz', 1.73, 'emma', 1.68, 'mom', 1.71, 'dad', 1.89]
```

```
[['liz', 1.73], ['emma', 1.68], ['mom', 1.71], ['dad', 1.89]]
```

List type

```
type(fam)
```

list

type(fam2)

list

- Specific functionality
- Specific behavior

Let's practice!

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Subsetting Lists

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Subsetting lists

```
fam = ["liz", 1.73, "emma", 1.68, "mom", 1.71, "dad", 1.89]
fam

['liz', 1.73, 'emma', 1.68, 'mom', 1.71, 'dad', 1.89]

fam[3]
1.68
```



Subsetting lists

```
['liz', 1.73, 'emma', 1.68, 'mom', 1.71, 'dad', 1.89]
fam[6]
'dad'
fam[-1]
1.89
fam[7]
1.89
```



Subsetting lists

```
['liz', 1.73, 'emma', 1.68, 'mom', 1.71, 'dad', 1.89]
fam[6]
'dad'
fam[-1] # <-
1.89
fam[7] # <-
1.89
```



List slicing

```
fam
['liz', 1.73, 'emma', 1.68, 'mom', 1.71, 'dad', 1.89]
fam[3:5]
[1.68, 'mom']
fam[1:4]
[1.73, 'emma', 1.68]
                          [ start : end ]
                            inclusive
                                        exclusive
```



List slicing

```
fam
['liz', 1.73, 'emma', 1.68, 'mom', 1.71, 'dad', 1.89]
fam[:4]
['liz', 1.73, 'emma', 1.68]
fam[5:]
[1.71, 'dad', 1.89]
```

Let's practice!

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Manipulating Lists

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List Manipulation

- Change list elements
- Add list elements
- Remove list elements

Changing list elements

```
fam = ["liz", 1.73, "emma", 1.68, "mom", 1.71, "dad", 1.89]
fam
 ['liz', 1.73, 'emma', 1.68, 'mom', 1.71, 'dad', 1.89]
fam[7] = 1.86
fam
 ['liz', 1.73, 'emma', 1.68, 'mom', 1.71, 'dad', 1.86]
fam[0:2] = ["lisa", 1.74]
fam
['lisa', 1.74, 'emma', 1.68, 'mom', 1.71, 'dad', 1.86]
```



Adding and removing elements

```
fam + ["me", 1.79]

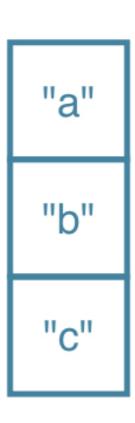
['lisa', 1.74, 'emma', 1.68, 'mom', 1.71, 'dad', 1.86, 'me', 1.79]

fam_ext = fam + ["me", 1.79]

del(fam[2])
fam

['lisa', 1.74, 1.68, 'mom', 1.71, 'dad', 1.86]
```

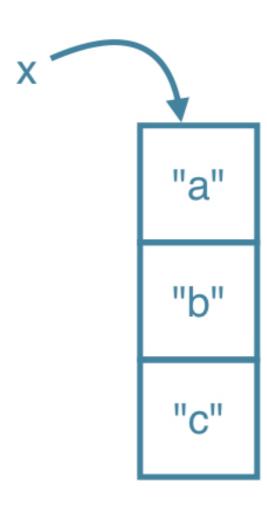




```
x = ["a", "b", "c"]
y = x
y[1] = "z"
y
```

```
['a', 'z', 'c']
```

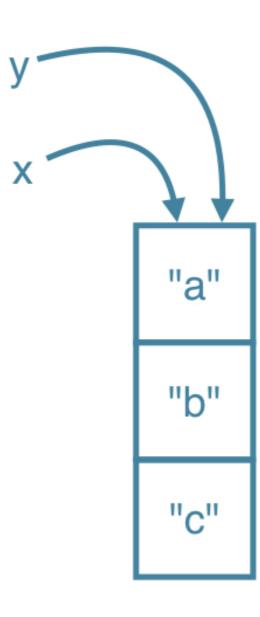
X



```
x = ["a", "b", "c"]
y = x
y[1] = "z"
y
```

```
['a', 'z', 'c']
```

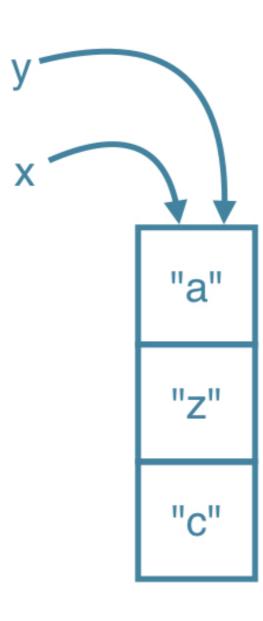
X

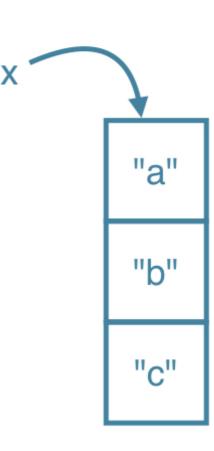


```
x = ["a", "b", "c"]
y = x
y[1] = "z"
y
```

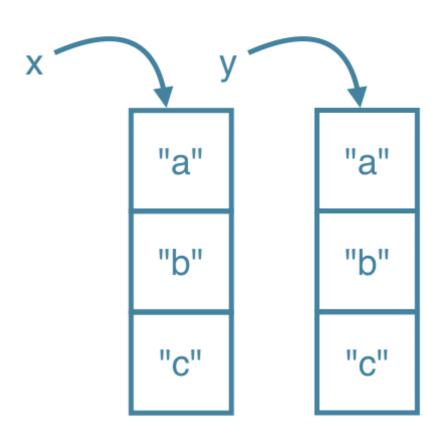
```
['a', 'z', 'c']
```

X



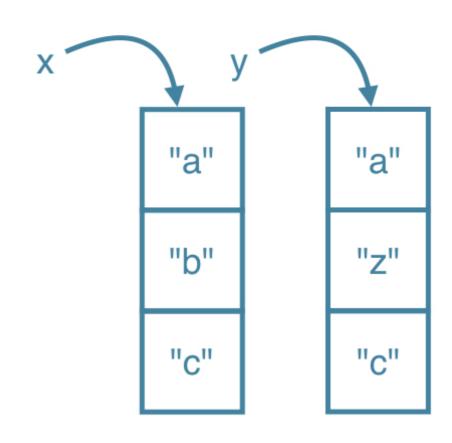


```
x = ["a", "b", "c"]
y = list(x)
y = x[:]
```



```
x = ["a", "b", "c"]
y = list(x)
y = x[:]
y[1] = "z"
x
```

```
['a', 'b', 'c']
```



Let's practice!

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