

3.2) Data Types

Vitor Kamada

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Tables, Graphics, and Figures from

Computational and Inferential Thinking: The Foundations of Data Science

Adhikari & DeNero (2019): Ch 4. Data Types

<https://www.inferentialthinking.com/>

Integers (int) and Real Numbers (float)

```
type(3)
```

int

```
type(3 / 1)
```

float

```
x = 3  
type(x + 2.5)
```

float

A float only represents 15 or 16 digits

`2e306 * 10`

2e+307

`2e306 * 100`

inf

`2e-322 / 10`

2e-323

`2e-322 / 100`

0.0

float: last few digits may be incorrect

`0.6666666666666666 - 0.6666666666666666123456789`

`0.0`

`2 ** 0.5`

`1.4142135623730951`

`(2 ** 0.5) * (2 ** 0.5)`

`2.0000000000000004`

`(2 ** 0.5) * (2 ** 0.5) - 2`

`4.440892098500626e-16`

Piece of Text (string)

```
"This won't work with a single-quoted string!"
```

```
"This won't work with a single-quoted string!"
```

```
"That's " + str(1 + 1) + ' ' + str(True)
```

```
"That's 2 True"
```

```
"loud".upper()
```

```
'LOUD'
```

String Methods

```
'hitchhiker'.replace('hi', 'ma')
```

'matchmaker'

```
s = "train"  
t = s.replace('t', 'ing')  
u = t.replace('in', 'de')  
u
```

'degrade'

s

'train'

Comparisons: Return Boolean Values

```
x = 12  
y = 5  
min(x, y) <= (x+y)/2 <= max(x, y)
```

True

```
"Dog" > "Catastrophe" > "Cat"
```

True