CPE/CSC 101

Today

- Expression Evaluation
  - Numbers
  - Arithmetic Operators
  - Identifiers
- Testing Framework
- Boolean Data

Numbers

types int and float

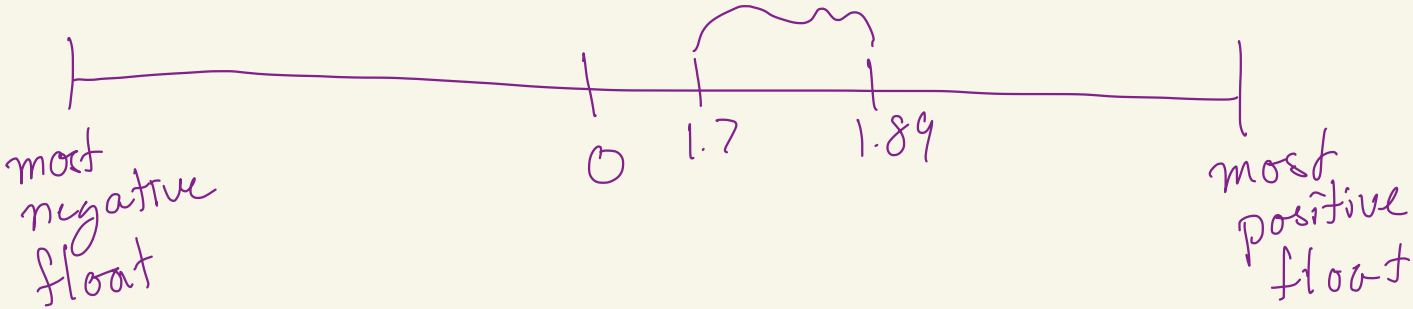
1 7 19 -4

2.9 -4.71

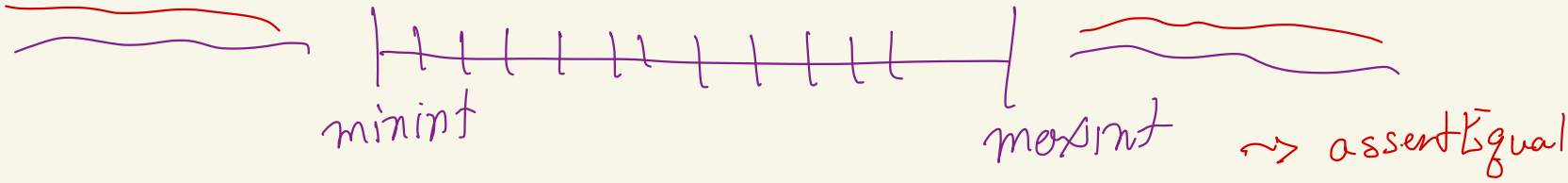
binary representation of numbers

64-bits

float are 64-bit values



floats are imprecise → assertAlmostEqual



Expression

- when evaluated/computed results in a value
  - data

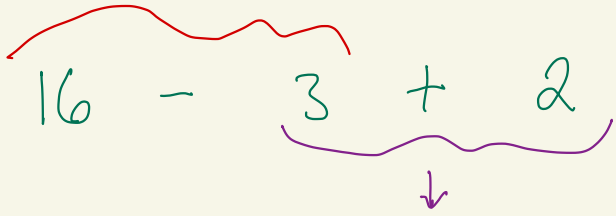
1 + 2

int int

→ 3 int of type?

1.0 + 2.0

→ 3.0 float



What is the next step of evaluation?

$16 - 5 = 11$

$13 + 2 = 15$

$$(16 - 3) + 2$$

$$16 - (3 + 2)$$

$$((16 - 3) + 2)$$

Expressions

- operator precedence
  PEMDAS
- associativity
  left-associative for most operators

$$16 - 3 + 2$$

$$13 + 2$$

$$15$$

Identifier

name for a value

```
age = 45

next_age = age + 1
```

assignment

```
age = 45
```

```
next_age = age + 1
```

⇓

```
next_age = 45 + 1
```

⇓

```
next_age = 46
```

Known values

age	45
next_age	46

- Expression concept
- Evaluation works in "steps"
  - trace steps
  - develop mental model

- precedence / associativity
- types int vs. float
- division
- identifiers