# TYPES

An Introduction to Computer Science

Let's learn about Types.

## The Basic Types

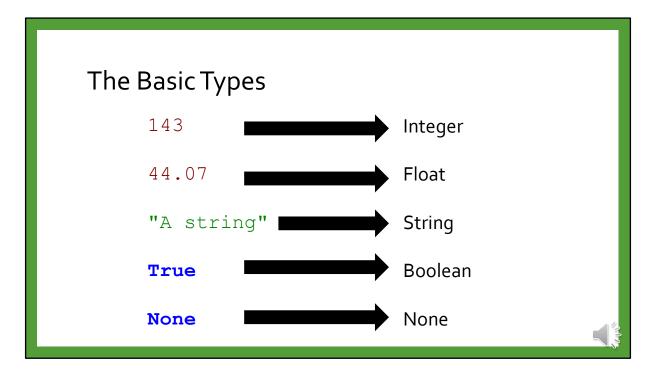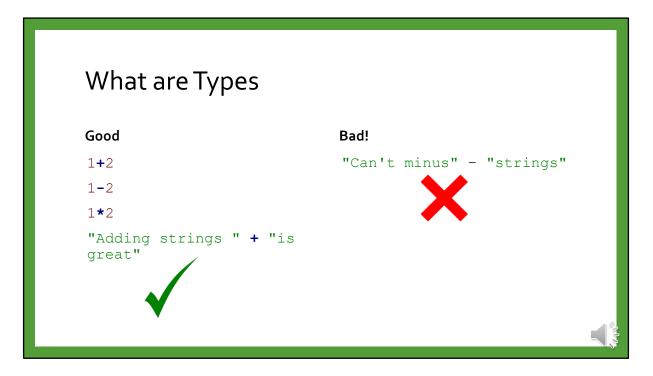| | | |
|---|---|---|
| 143 | ➡ | Integer |
| 44.07 | ➡ | Float |
| "A string" | ➡ | String |
| **True** | ➡ | Boolean |
| **None** | ➡ | None |

All values in Python have a type.
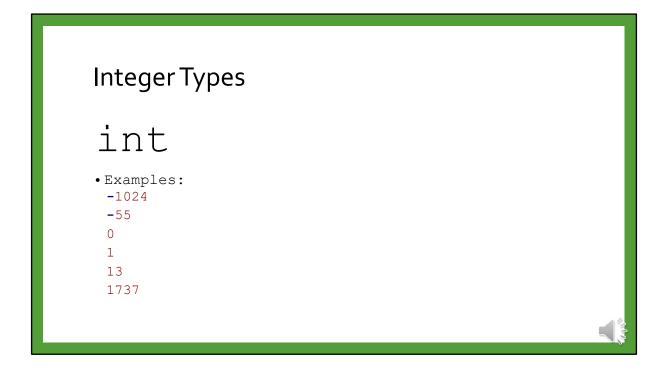The five basic types are: Integer, Float, String, Boolean, and None.
There are many other types you will learn about.

# What are Types

**Good**

```
1+2
1-2
1*2
"Adding strings " + "is great"
```

✔️

**Bad!**

```
"Can't minus" - "strings"
```

❌

Types control what you can and cannot do with things.
We know that a number is a number because we can add it to another number, or subtract it, or multiply it.
We can add two strings together, but we cannot subtract them - this is one reason why a string and a number are different.

# Integer Types

## `int`

- `Examples:`
  - `-1024`
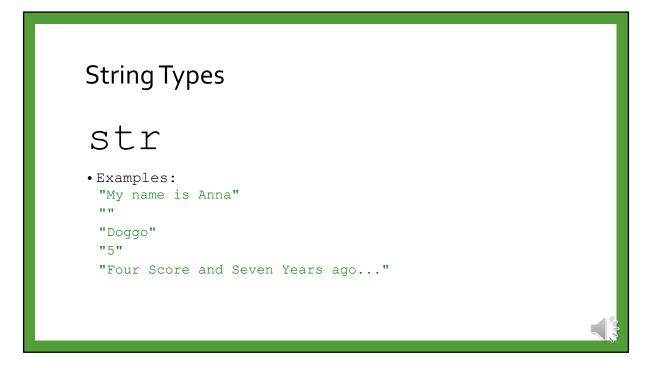  - `-55`
  - `0`
  - `1`
  - `13`
  - `1737`

Integer types are whole numbers.
They include both negative and positive numbers, so there are a lot of them.
Integer is often shortened to "Int" for convenience.

Float Types

## float

- Examples:
  -56.4
  -1.0
  .0
  0.5
  1.02
  100.

When numbers have decimals, we call them Float types.
The period is what distinguishes Floats and Integers.
Remember - if a number has a period in it, then it is a float!

## String Types

# str

- Examples:
  "My name is Anna"
  ""
  "Doggo"
  "5"
  "Four Score and Seven Years ago..."

Textual data is represented using String values.
The tricky thing about Strings is that *anything* can be stored as a String.
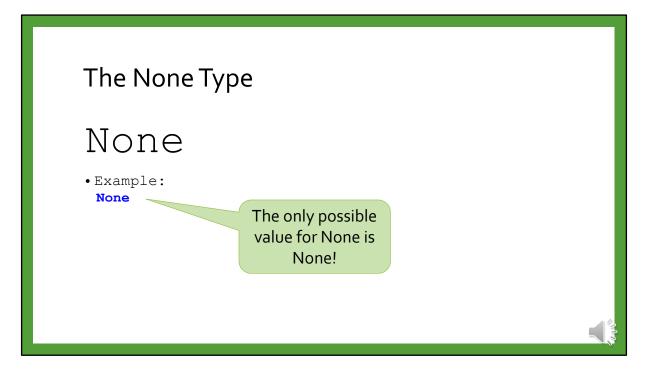The only thing that makes it a string is the quotes.
A special case is the "empty string", which is a pair of quotes with nothing inside.
String is often shorted to "Str" for convenience.

# Boolean Types

# bool

- Examples:
  **True**
  **False**

Surprisingly often in programming, we are faced with "yes or no" values; these are referred to as Boolean values.
Specifically, we have a `True` and a `False` value.
Note that the T and F are capitalized, and there are no quotes around the words.
Boolean is often shortened to "Bool" for convenience.

# The None Type

# None

- Example:
  **None**

  > The only possible value for None is None!

Sometimes, you need to represent the absence of value, which we call None.
The None type is a special type that has only one value, which is also named None.
The None type can be hard to wrap your head around, but it doesn't come up too often.
For now, just remember that it has a capital N, and no quotes.