Welcome to this Rust tutorial!

Systems Programming Before Rust…

Photo credit: Giorgio Monteforti


Hack without fear!

Hello, world!

Hello, world!

```
fn main() {
  println!(“Hello, world!”);
}
```

Exercise: **hello world**

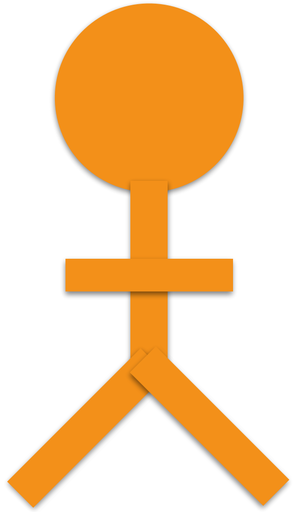
http://rust-tutorials.com/exercises/

Cheat sheet:

```
let name = “foo”;          // make a variable
println!(“{}”, name);      // format string
```


Principles of Compiler Design
Alfred V. Aho
Jeffrey D. Ullman

Ownership

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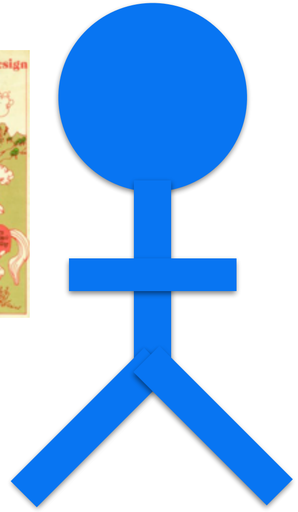

Ownership

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fn main() {
    let name = format!("…");
    helper(name);
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}
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fn helper(name: String) {
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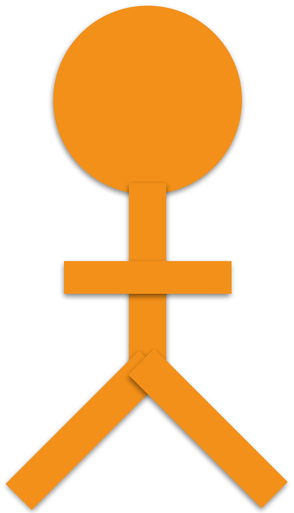

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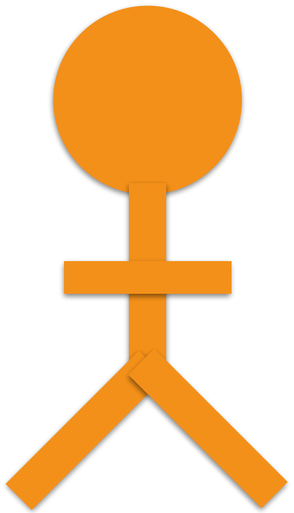

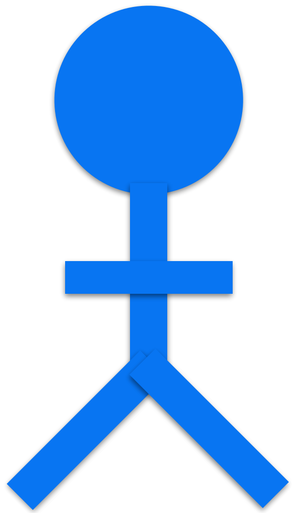

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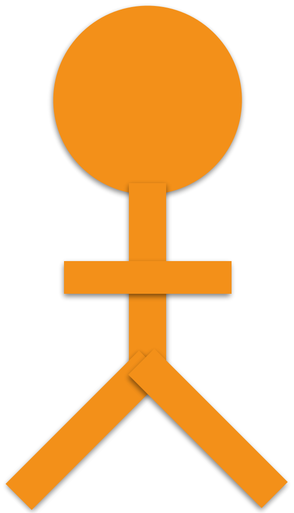
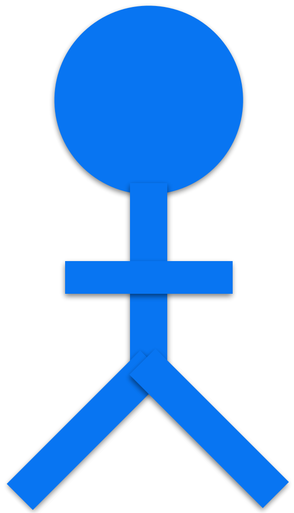
Take ownership of a String





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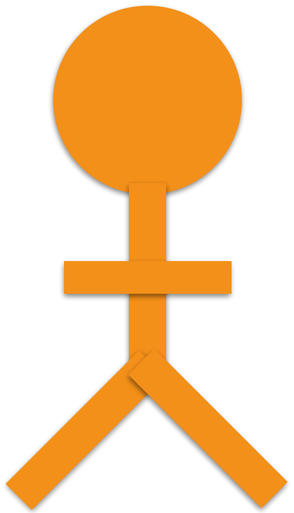

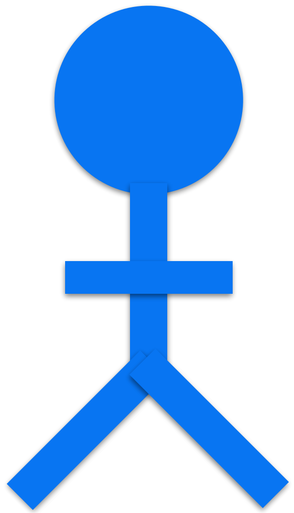

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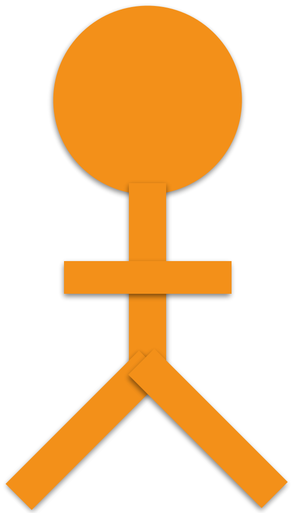

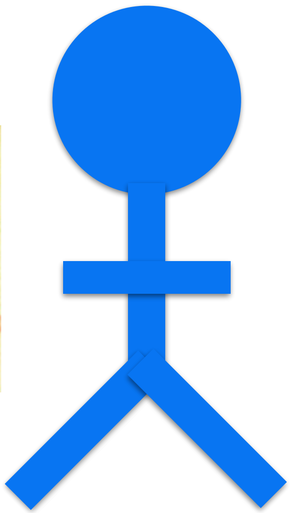

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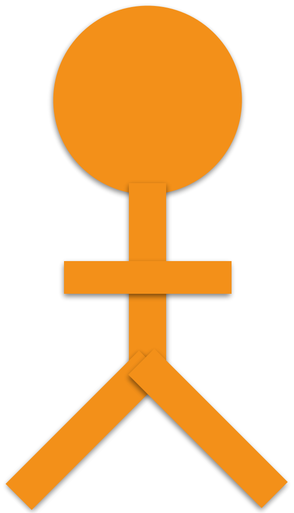

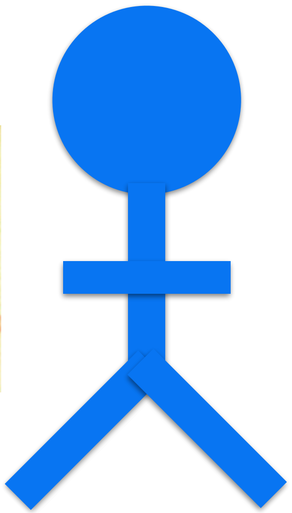

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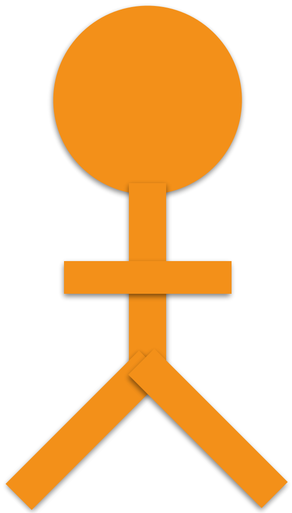

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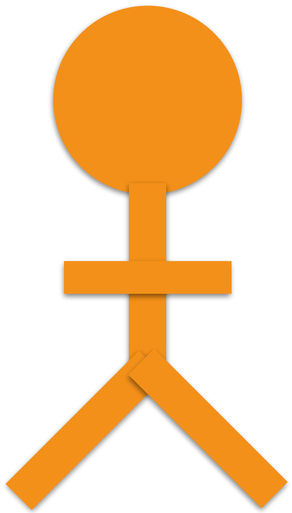

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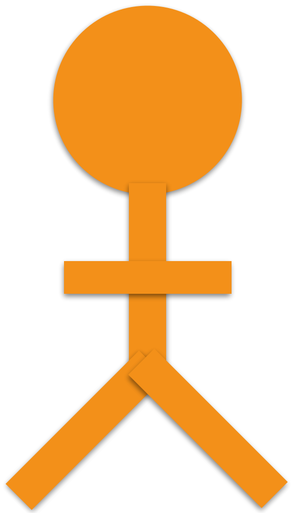

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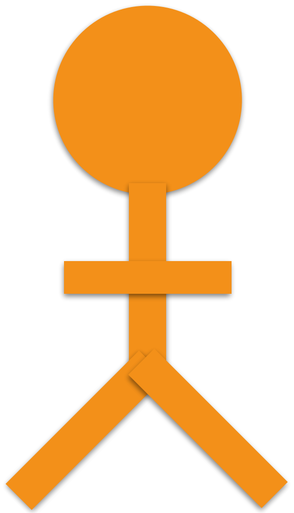
Error: use of moved value: `name`



Ownership

```
void main() {
  Vector name = …;
  helper(name);
  helper(name);
}
```

```
void helper(Vector name) {
  …
}
```

“Ownership” in Java

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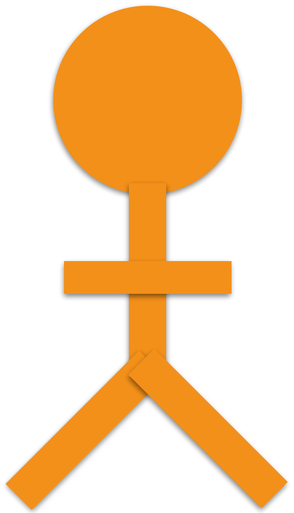

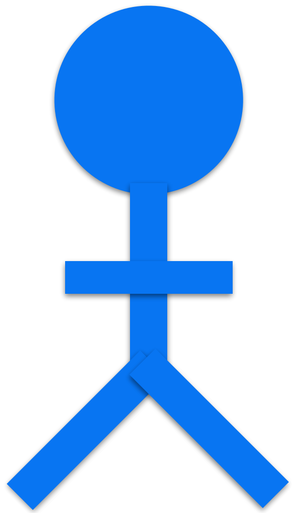

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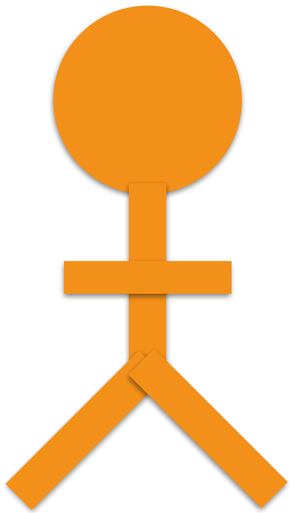
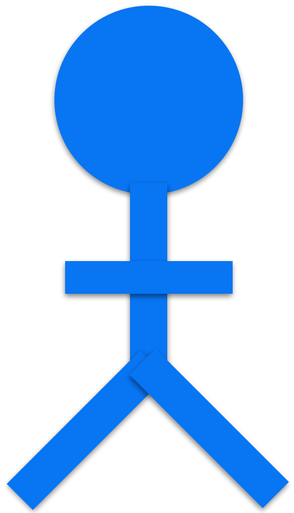
Take **reference** to Vector





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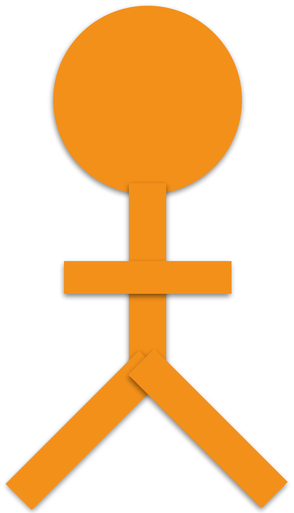

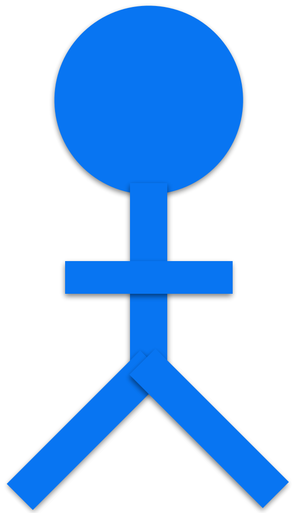

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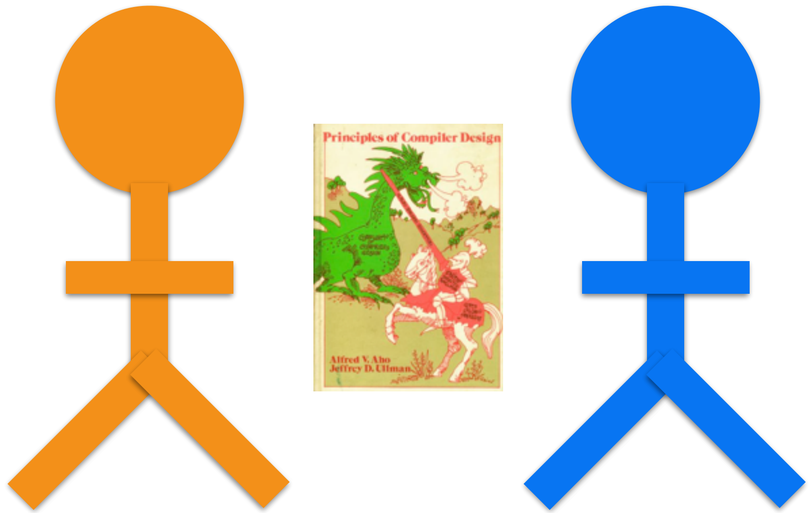

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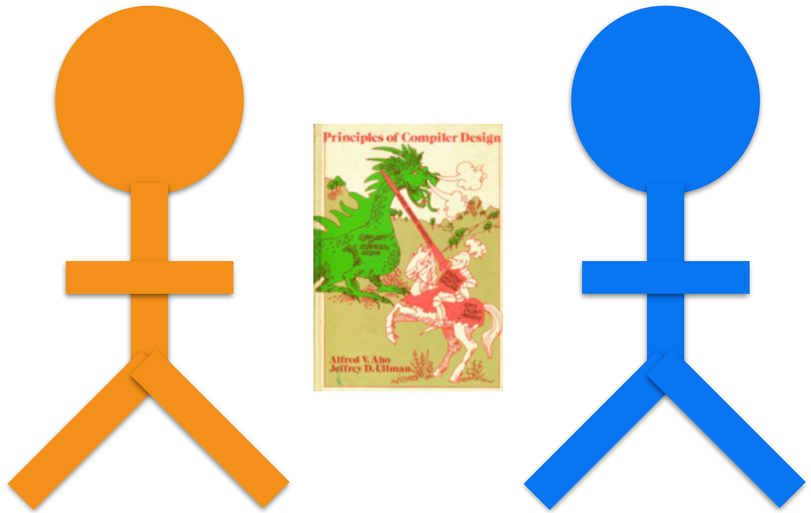

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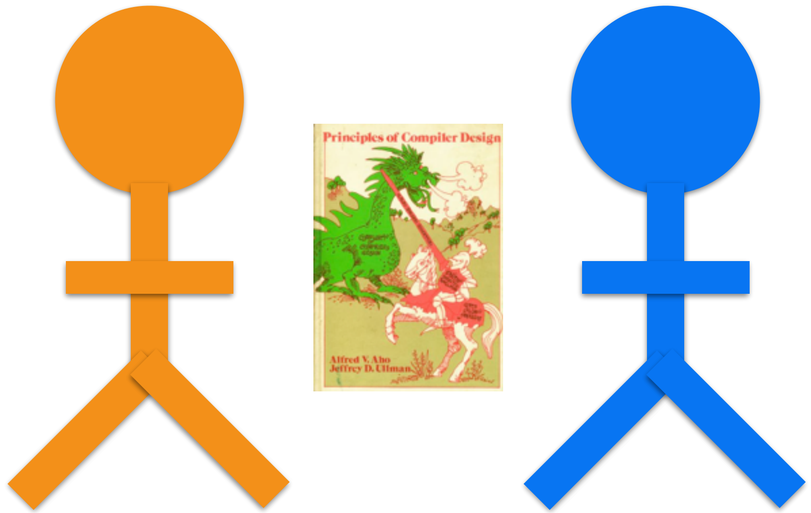

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“Ownership” in Java

Clone

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  helper(name.clone());
  helper(name);
}
```

```
fn helper(name: String) {
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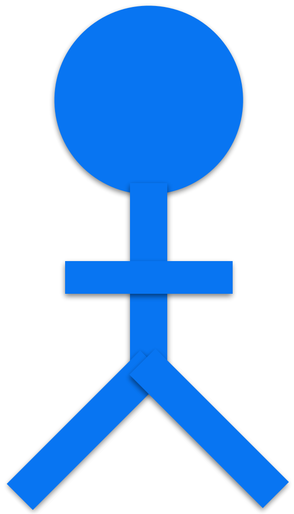

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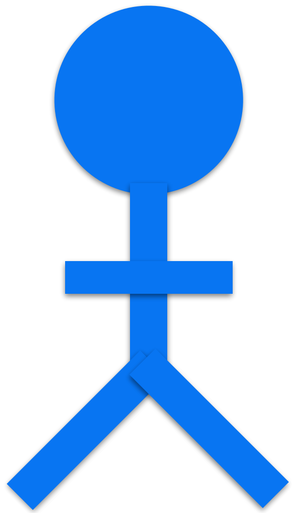

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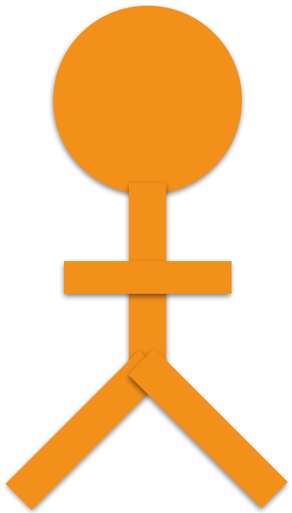

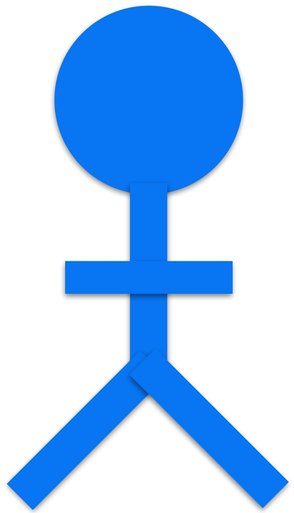

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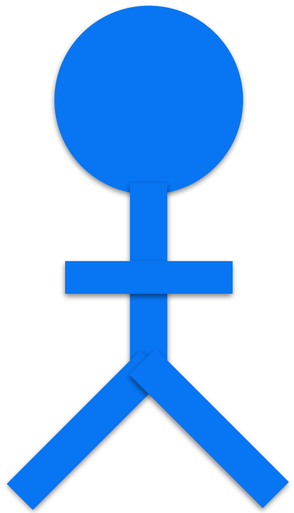

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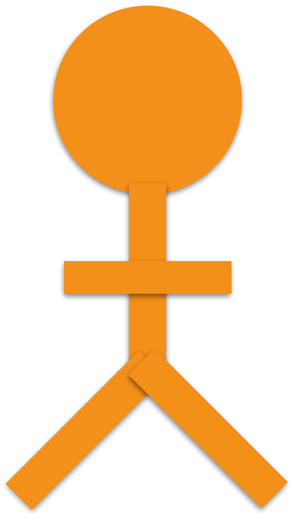

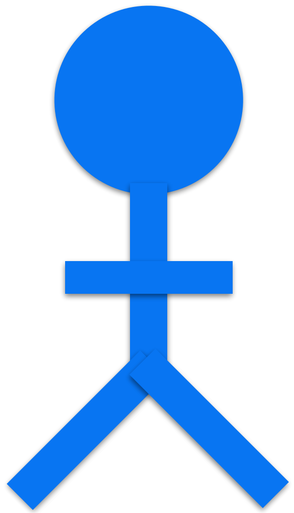

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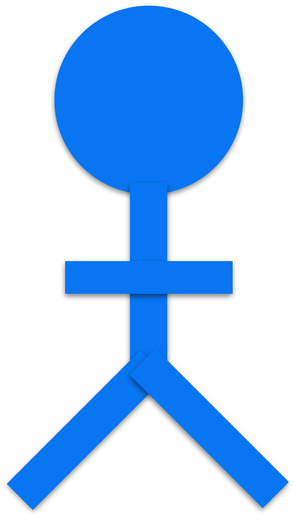

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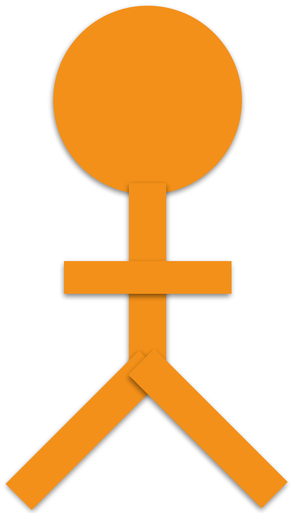

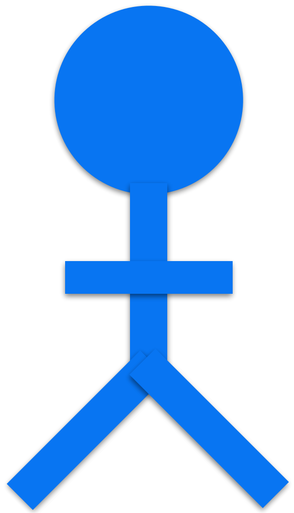

Copy (auto-Clone)

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fn main() {
    let count = 22;
    helper(count);
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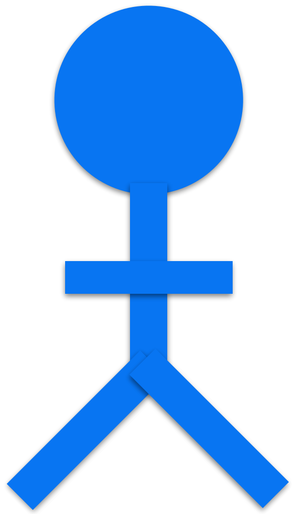
}
```

```
fn helper(count: i32) {
    println!(..);
}
```



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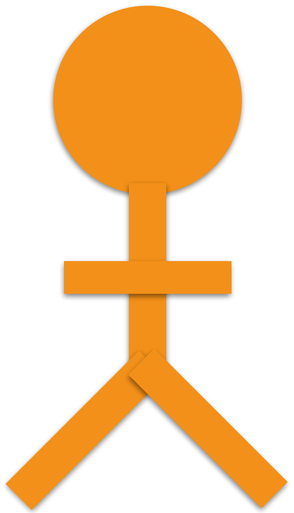

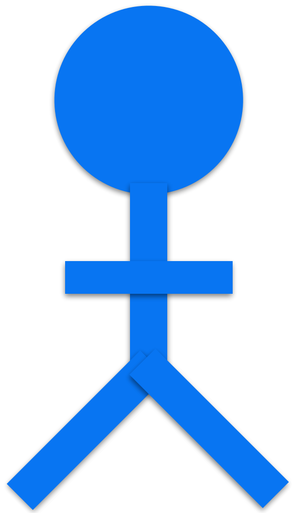

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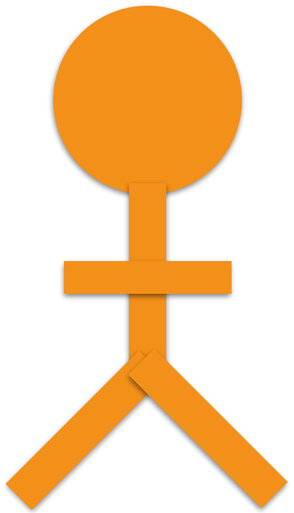

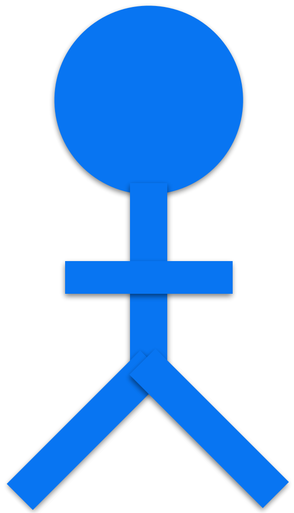

Copy (auto-Clone)

```
fn main() {
    let count = 22;
    helper(count);
    helper(count);
}
```

```
fn helper(count: i32) {
    println!(..);
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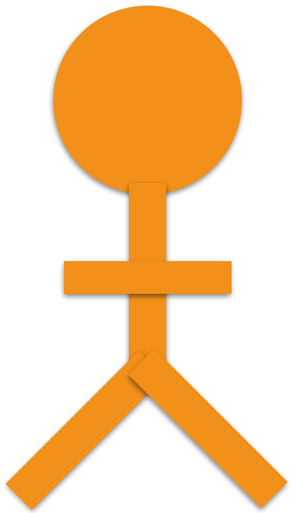

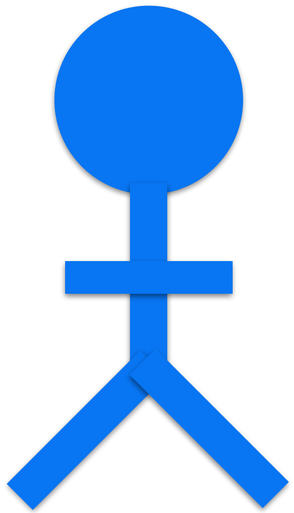

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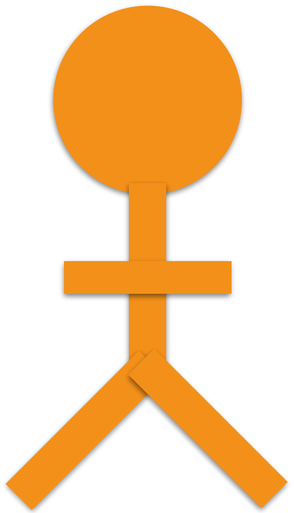

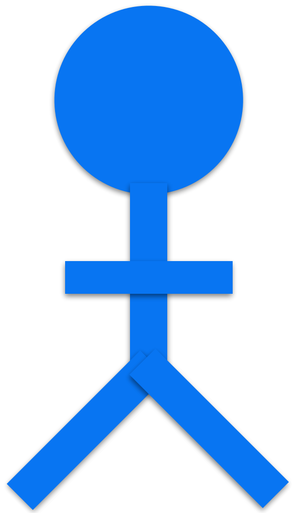

Non-copyable: Values **move** from place to place.

Example: *money*

Clone: Run custom code to make a copy.

Example: *strings*

Copy: Type is implicitly copied when referenced.

Example: *integers or floating-point numbers*

Exercise: **ownership**

http://rust-tutorials.com/RustConf17

Cheat sheet:

```
fn helper(name: String) // takes ownership

string.clone()          // clone the string
```

http://doc.rust-lang.org/std