

# COMP6991 23T1

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Ownership & Borrowing

# Owned vs Copy

...somewhat recapped

- > What does it mean to be an "owned" type
- > What types are Copy?
- > Can I make a new Copy type?

# Cascading ownership

If X owns Y and Y owns Z...

> **Example: Student name**

# Ownership sucks!

(for legal reasons this is a joke)

> **Example: `pain.rs`**

# The perils of *shared mutability*

(we're going to spend a lot of time here)

Otherwise known as:

*"Shared mutable state gonna  
hurt you!" ~jashankj*

# Shared borrows

> Example: `shared.rs`

# Shared borrows

## Superpowers:

- > Can be shared infinitely many times
- > Very cheap to pass to fns

## Limitations:

- > Cannot mutate data: read-only.
- > Cannot take any exclusive borrows during its lifetime

# Exclusive borrows

> Example: `exclusive.rs`



# Exclusive borrows

## Superpowers:

- > Can mutate data without taking ownership
- > Very cheap to pass to fns

## Limitations:

- > Cannot take any further exclusive borrows during its lifetime
- > Cannot take any shared borrows during its lifetime

# Dangling references

> Example: `dangling.rs`

# Slices

(we definitely won't have time)

> Example: `slice.rs`