Slides - 5/23

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High Level Idea

Pitch

- Compile C to a unsafe subset of Rust (“RustLight”)

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- Run RustLight through the Rust compiler

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- Run RustLight through the Rust compiler
- RustLight operational semantics serve as a "Rust Spec"
- Improve on C2Rust

Translation Intuition (C2Rust)

Translation Intuition

- Run through examples from C2Rust

Existing Work

Work	Supports NLL	Supports TPB	Is Source Level	Strictness wrt BC	Models Unsafe
RustBelt	Mostly	No	No	Not Strict Enough	Yes
Oxide	No	No	Yes	Too strict	No
KRust	No	No	Yes	Too strict	No
Stack Borrows	Yes	Yes	Yes	Too Strict	Yes
Tree Borrows	Yes	Yes	Yes	Slightly Too Strict	Yes

Two-phase borrow (Case 1)

```
// pub fn push(&mut self, value: T)
fn main() {
}
```

(Credit: Rustc dev)

Two-phase borrow (Case 2)

(Credit: Rustc dev)

Tree Borrows

Each pointer is a state machine that is either:

- Reserved
- Active
- Disabled
- Frozen