Introduction to Logisim

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Overview

- Logisim example
  - 1-bit full adder
  - 2-bit full adder
- Logisim tips

Always Use Library Elements

- Do not build elements that already exist
- Remember most elements are customizable
  - Number of inputs
  - Bit depth

This big mess equals this element.

Do Not Use Constants

- Almost never necessary
- Use only when component has an unused input
- Optimize away using truth tables

Avoid Small Sub-circuits

- Make sub-circuits that have a useful meaning
- Why?
  - Lots of identical sub-circuit icons is confusing
  - Extra time spent naming sub-circuit I/O
  - Logisim performs poorly when many sub-circuits are nested

Do Not Use Controlled Buffers

- Has unexpected behavior
- Uses special tri-state logic
- Causes Logisim wires to have unknown values

controlled buffers
Label Splitters

- Just so the me and graders (and you) stay sane.

BAD

4-bit bus inputs

Select lower two bits

GOOD

Lower 2-bits selected for output

Think About Layout

Overall

- Organization is key
  - For you and for us
  - We must be able to understand your code easily
- Logisim simulation can be buggy
  - Too few sub-circuits or too many sub-circuits