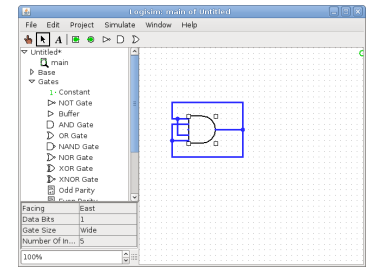# Logisim

Overview

- Starting Logisim
- Drawing Simple Circuits
- Saving and Loading
- Running the Circuit
- Gates

Starting Logisim

- Logisim is /contrib/bin/logisim

- Command to run is: logisim

   (assuming paths set up correctly)

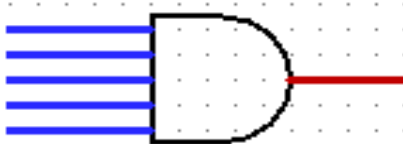- A window should open (see picture on next slide)

Logisim: main of Untitled

File Edit Project Simulate Window Help

Toolbar

Gates
Plexers
Arithmetic
Memory
Input/Output
Base

Component Box

Poke Tool
Edit Tool
Select Tool
Wiring Tool
Text Tool

Editing Box

Circuit: main

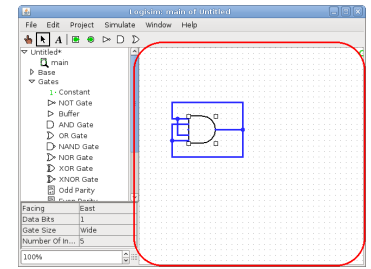| Circuit Name | main |
Shared Label	
Shared Lab...	East
Shared Lab...	SansSerif Pl...

Attribute Box

100%
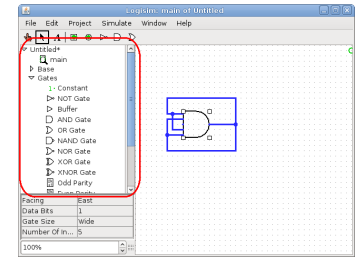
Component Box

- The component box is to the left
- It contains all the components you will need to put into your circuit sorted by categories. For instance, the wire tool is in the Base category (not the Wiring category!)
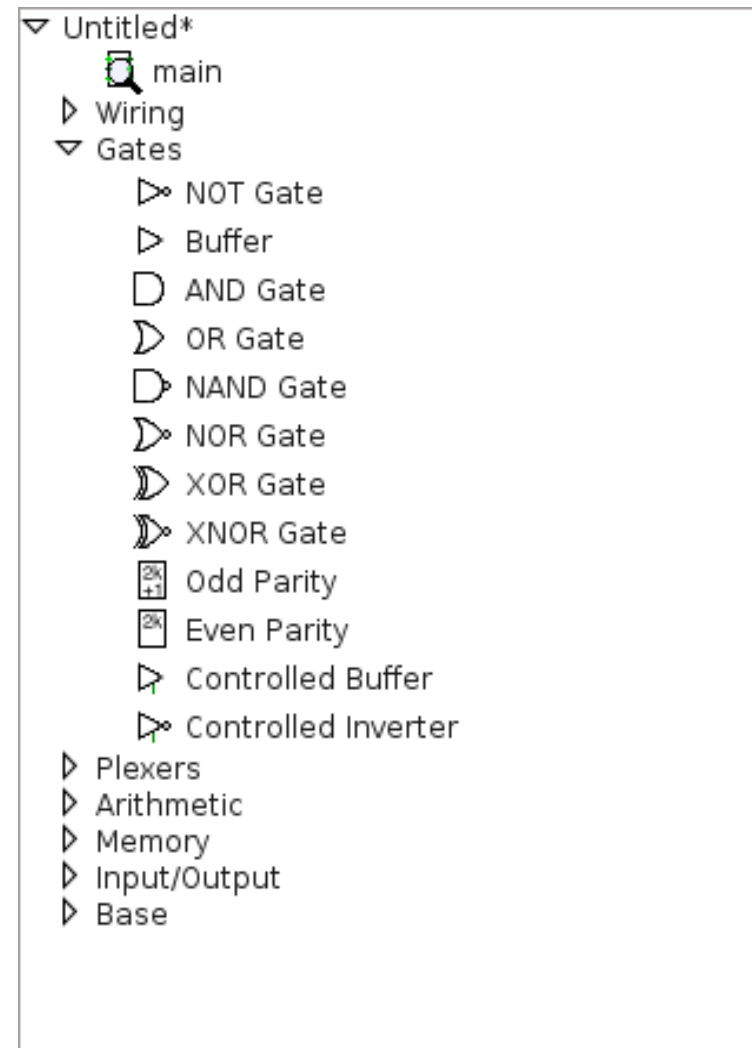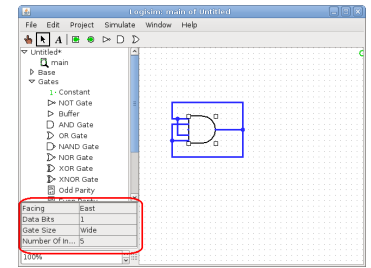
Editing Box

- The editing box looks like a grid
- This is the box you will use to draw your circuits
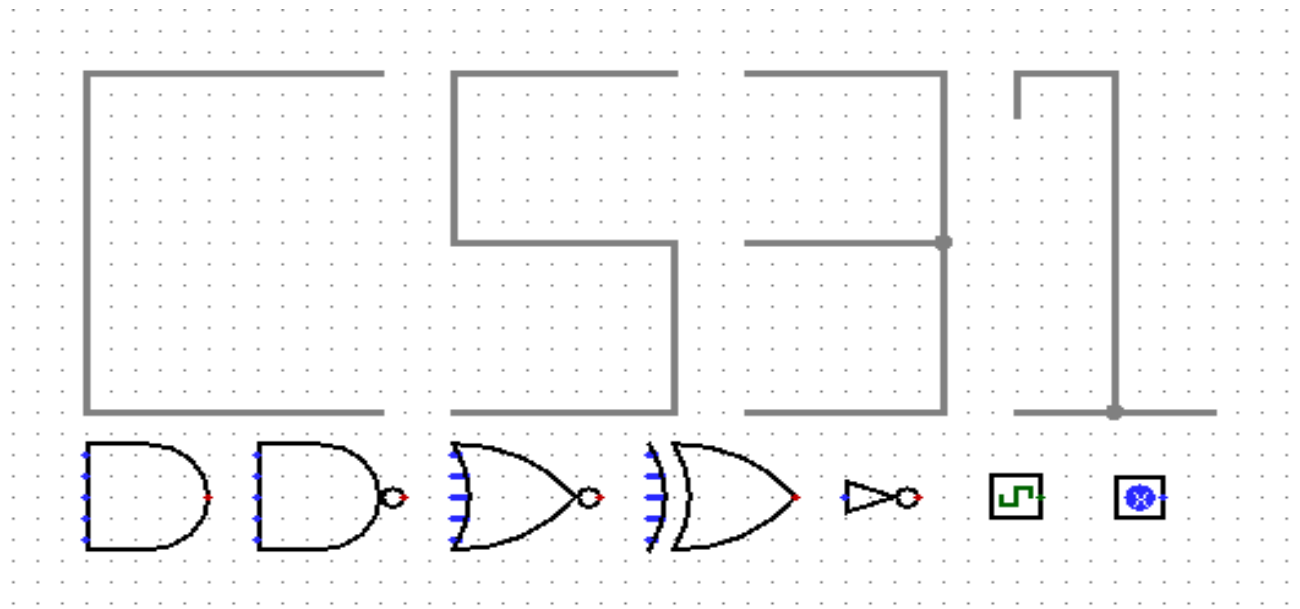
Attribute Box

- The attribute box is below the component box
- The attribute box for a component should appear when you click that component in your circuit

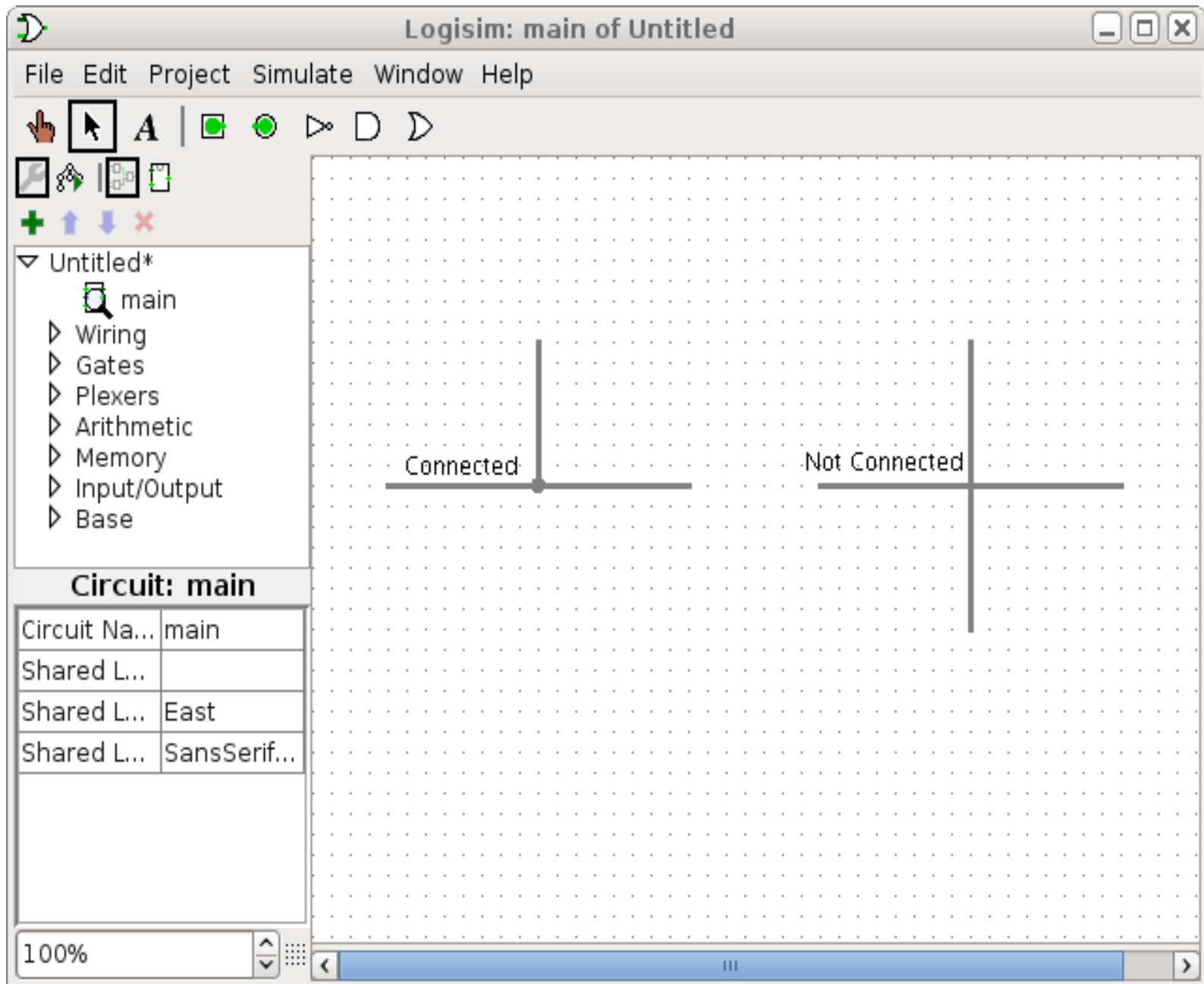| Selection: AND Gate	
Facing	East
Data Bits	1
Gate Size	Medium
Number Of Inputs	5
Output Value	0/1
Label	
Label Font	SansSerif Plain 12
Negate 1 (Top)	No
Negate 2	No
Negate 3	No
Negate 4	No
Negate 5 (Bottom)	No

Selecting Components

- Select the arrow tool from the toolbar and click on the component to select
- You can then drag, cut, copy, paste or delete the component using the edit menu or the standard shortcuts

Drawing Wires
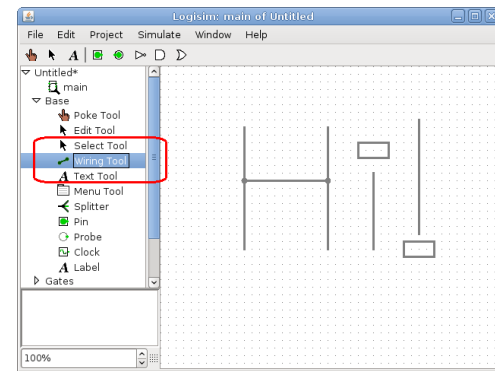
- Select the Wiring tool from Base tools.
- Click and drag to draw a wire.
- Release the mouse button to finish drawing.
- Red wires have errors, dark green wires have value 0, light green wires have value 1, blue wires have high impedance, and black wires have are actually bundles of multiple wires.
- If two wires cross, then by default the aren't connected
- To join two wires, put the endpoint of one wire onto the other wire (see next slide).

Logisim: main of Untitled

File Edit Project Simulate Window Help

▽ Untitled*
   🔍 main
   ▷ Wiring
   ▷ Gates
   ▷ Plexers
   ▷ Arithmetic
   ▷ Memory
   ▷ Input/Output
   ▷ Base

Circuit: main

| Circuit Na...	main
Shared L...	
Shared L...	East
Shared L...	SansSerif...

100%

Connected

Not Connected

Bundling Wires

- In simple Logisim circuits, most wires carry only one bit; but Logisim also allows you to create wires that bundle together multiple bits.

- Splitters (in the Wiring category of the component box) can be useful for this.

Adding Gates

- Select the gate you want to add from the Component box. For example, if you want to add the AND gate, double-click on Gates in the Component Box and select AND gate

- Click on the place in your circuit where you want to add the gate
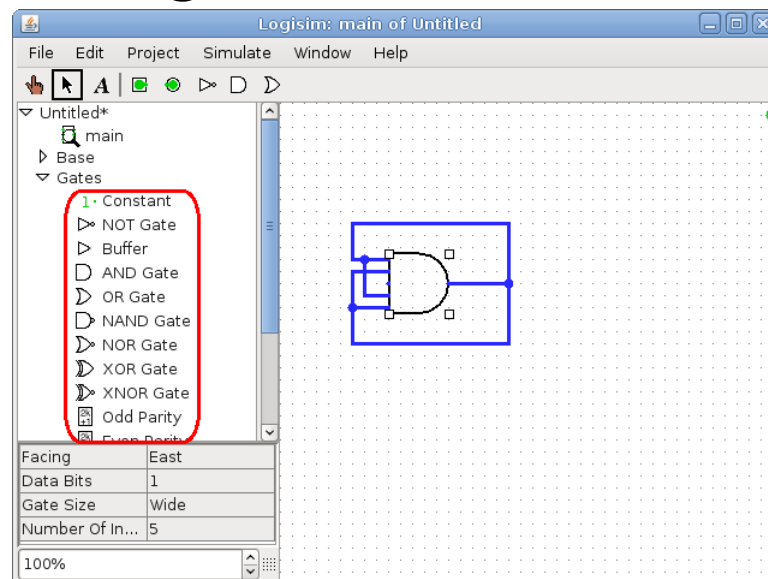
Rotating Components

- Select the component you want to rotate and change the "facing" attribute in the attribute box for that gate. For instance if you want the output of the component to face north, then select north in the attribute box.

- You cannot rotate the memory components
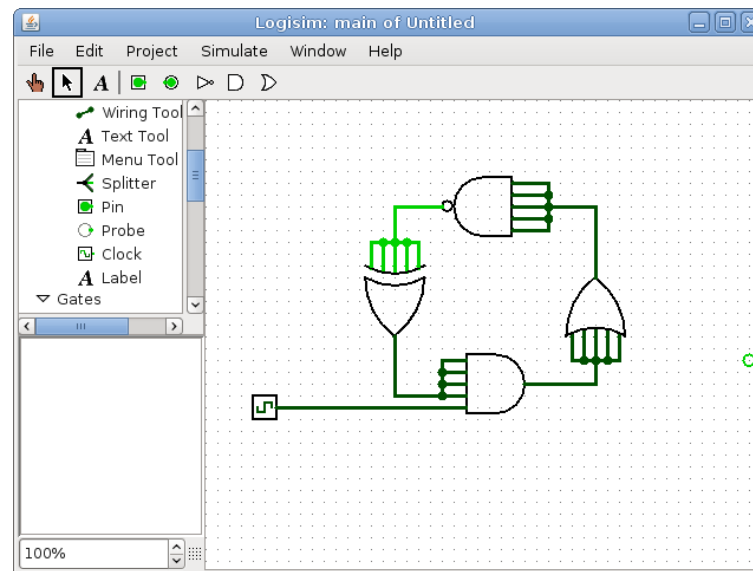
Running a Circuit

- Make sure that the "Simulation Enabled" checkbox is selected in the "Simulate" Menu
- Use the Poke tool (the Hand tool) to change the input values (in the switches) and the output changes accordingly
- To enable the clock, select the "Ticks Enabled" button in the "Simulate" Menu

Gates

- The basic gates (AND, OR, etc.) are in the Gates category of the component box. You can change the number of inputs to gates using the attribute box.
- Multiplexers and Decoders are in Plexers.
- The Adder is in Arithmetic.
- The RAM/ROM and the Register and the Flip Flops are in Memory.
- The pins used for input and output (be sure to set the Output property correctly!) can be found on the toolbar or in Wiring.