

Logisim

Overview

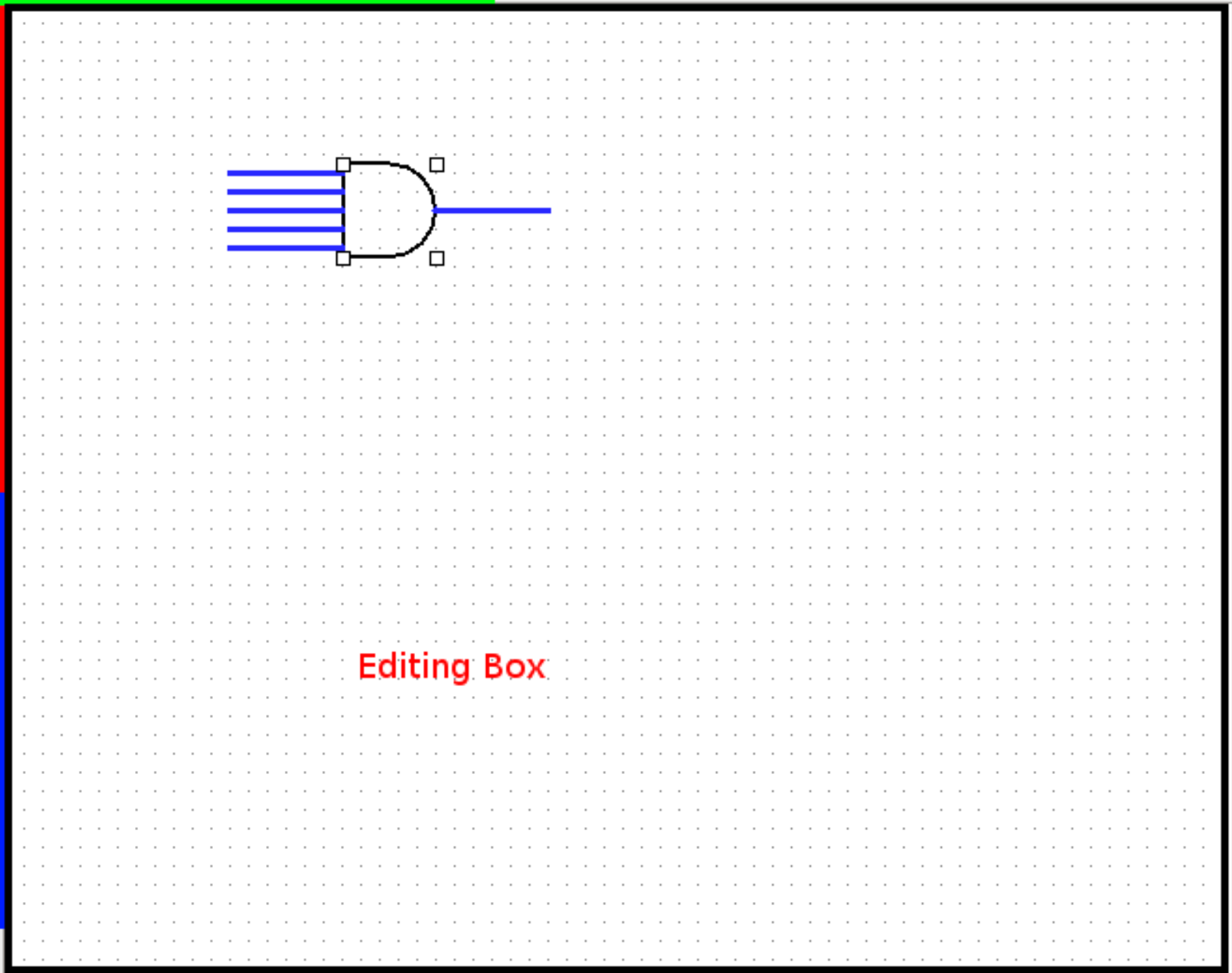
- Starting Logisim
- Drawing Simple Circuits
- Saving and Loading
- Running the Circuit
- Advanced Gates

Starting Logisim

- Logisim is
`/course/cs031/bin/logisim`
- Command to run is: `logisim`
(assuming paths set up correctly)
- A window should open (see picture on next slide)



- ▼ Untitled*
 - main
 - ▶ Base
 - ▶ Gates
 - ▶ Plexers
 - ▶ Arithmetic
 - ▶ Memory
 - ▶ Input/Output
- Component Box



Facing	East
Data Bits	1
Gate Size	Wide
Number Of Inp...	5

Attribute Box

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

Editing Box

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

Attribute Box

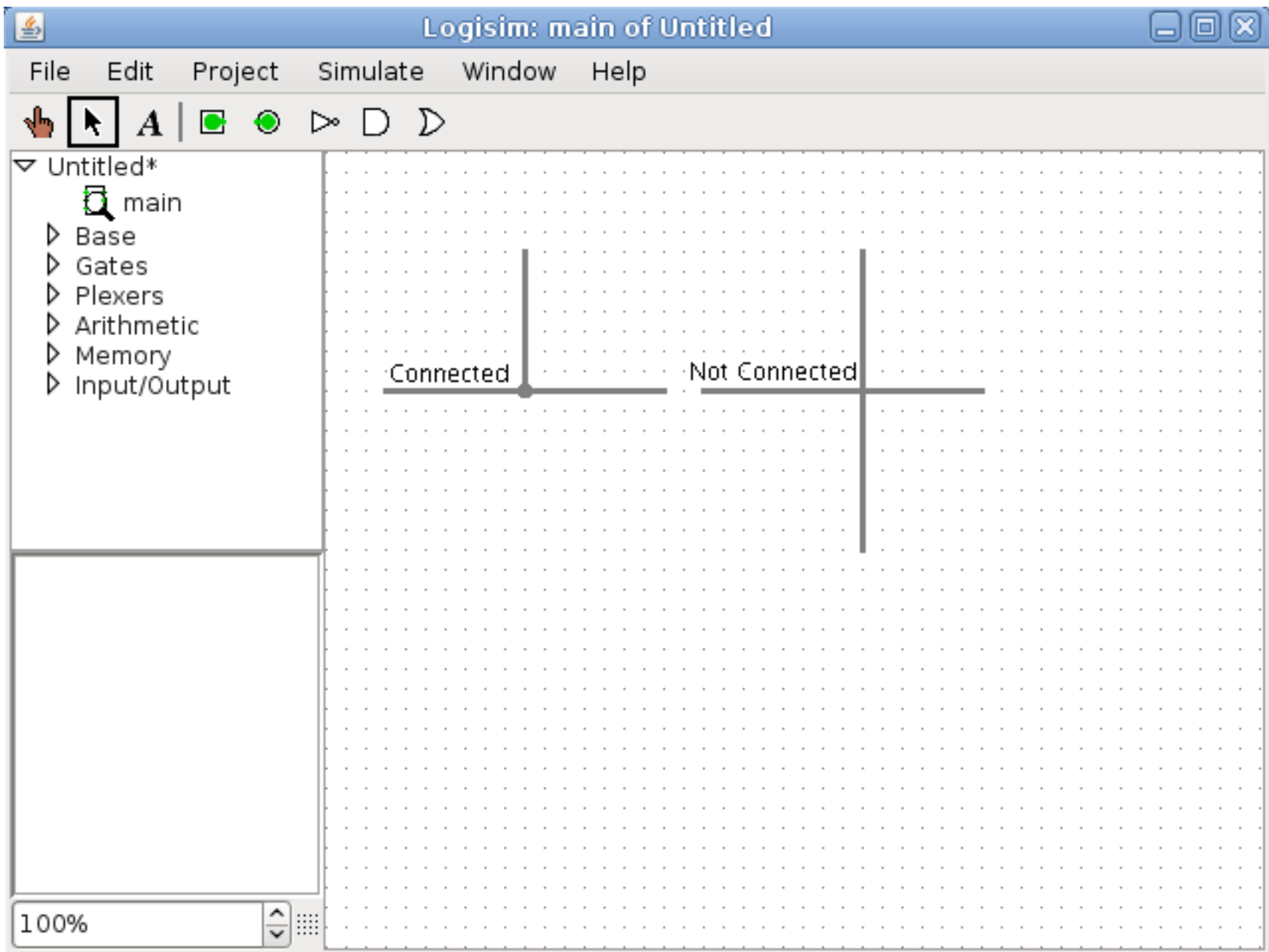
- The attribute box is below the component box
- The attribute box for a component should appear when you click that component in your circuit

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 the Base tools in the Component Box
- Click and drag to draw a wire
- Release the mouse button to finish drawing the wire
- If two wires cross, then by default they aren't connected
- To join two wires, put the endpoint of one wire onto the other wire (see picture on next slide)



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.
- See the Logisim Reference for details on how to do 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 the Plexers category
- The Adder is in the Arithmetic category
- The RAM/ROM and the Register and the Flip Flops are in the Memory category
(continued)

Gates

- The input switches (input pins) and the output LEDs (output pins) can be found on the toolbar or in the Base category of the Component Box
- You may not use any gates that are not present in Diglog

Advantages over Diglog

- You can actually undo in Logisim!
- You can bundle wires together so you only have to draw one wire to represent 8 wires
- The registers display the value they are storing so you don't have to add stupid hexadecimal displays
- The RAM/ROM display whatever is stored inside of it on the RAM itself so you don't have to edit the RAM externally