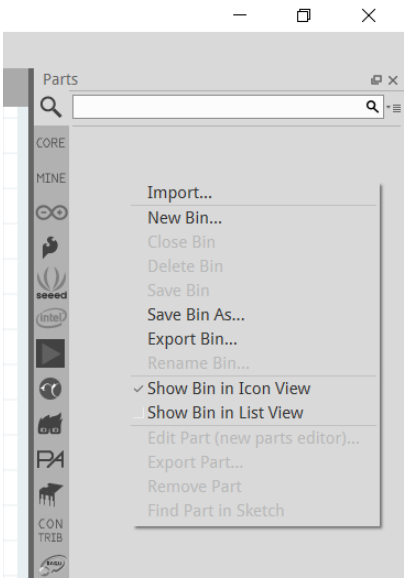
ECE 206 Lab – Fritzing and STEMTera

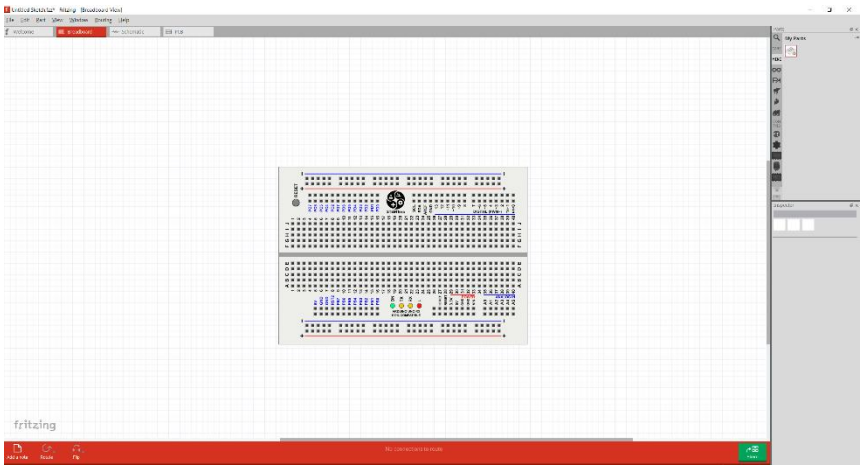
Challenge: Fritzing and STEMTera library

Since you will be working on your circuits at home, it is often not practical to share a video of your STEMTera board to get assistance from the TA. Since electronic components are usually small, and the density of breadboard wires are usually high, it is often impossible to figure out a circuit without a schematic. Fortunately, Fritzing is a FOSS (Free Open Source Software) program which lets you draw a breadboard layout and automatically generate a schematic. The goal of this portion of the lab is to install Fritzing and install the STEMTera library and use it for your Lab 1 report.

Challenge: Install Fritzing and the STEMTera library, use it to create a version of your STEMTera + NE555 circuit you created in Lab 1.1 to include with your lab report.



- Download the Fritzing installer for your platform (Windows or MAC OS) as well as the STEMTera library.
- Start Fritzing, in the top right where it is labeled “Parts” right click and select “Import…” from the menu. You will then point the application to the STEMTera library (STEMTera Breadboard.fzpz) wherever you downloaded it onto your computer.
- In the primary tabs (the main portion of the application window), select Breadboard. Notice that it will show by default a blank breadboard (students who were in ECE 205 lab in person will remember this as very similar to the breadboard used for ECE 205). Select this via the left mouse button and then press the DEL key to delete. Note that you will have to make sure to select the whole breadboard, rather than a column or row of pins (the breadboard should be outlined with a dotted line when selected).
- On the top right panel (Parts) select the third category labeled “MINE”. These are your custom parts, since you just imported the STEMTera library, the STEMTera should show up here. Click and drag the STEMTera into the main area where the breadboard used to be. Since we are using the STEMTera as our main breadboard, this will be our ‘default configuration’. Your screen should look like the following:



- You can save your sketch by going to File->Save As, that way you can start from this layout in the future (e.g. ECE_206_default.fzz).
- Now go to parts->CORE (the second icon), scroll down until you hit ICs, and select NE555. Drag to place this into the center channel just like you would on the physical STEMTera. Then continue to build the circuit that you physically built in Lab 1.1. Create wires by dragging between the connected points on the breadboard. Place the other components (resistors, capacitors, etc) as needed.
- When your circuit is virtually "built", switch to schematic view (the tab at the top). Because the schematic is automatically generated, though it will reflect your breadboard connections, the organization or the components and wires may be nonsense. Rearrange the components and wires as necessary until it resembles the schematic on the Lab 1.1 manual (or another logical and aesthetically pleasing schematic as you see fit). Correct any errors you may have made in your design.
- Save this design (e.g. ECE_206_Lab1.fzz, also you may export both the schematic and breadboard to use for your lab report. (File->Export->Image)

Resources required for this lab:

- Lab 1.1 (should be at least started)
- Fritzing and STEMTera libraries installed on your computer.

Prelab Deliverables:

- No prelab for Lab 1.
- Make sure you can use this software. It is essential to be able to ask for help with Fritzing in the future.

Required Deliverables:

- Both breadboard layout and schematic to include in your Lab 1 report.