Eclectronics Project 2 Discussion

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Introduction: The Great Project Pivot

After spending a lot of time on our initial schematic and footprints, our team realized that we may have been in over our head due to our lack of experience in PCB design. In order to avoid spending countless hours on the layout of a board we weren't convinced would be devoid of functionality-killing mistakes, we decided to pivot significantly and instead build a mimic of an Arduino Nano. We used the reference available here to design the board.

We are now using an ATMEGA328 and the Arduino IDE. We will program the board using a pre-made Arduino board and the in-system programmer using the six ISP pins.

We mainly followed the exact design linked above, but we did make a few changes:

1. We did not expect to use the Vin functionality since this was a development board for use in testing, so we removed the +5V Reg portion of the reference schematic since we can always power the board using the USB port. Reference material here.
2. We changed some of the bypass capacitors' values so that they would still be effective but would also already be in stock for the course.
3. We used individual resistors instead of a resistor array so that we could be more flexible with our routing.
4. Our layout is different than the Arduino Nano due to our desire to experiment with the layout tool on a more complicated board.

The Board

Our board will be two-layer, but will not follow the shape of the Arduino Nano. We are attempting to keep the board small so that we can learn about efficient routing and so that our final project can be smaller as well. We don't have anything extraneous built into the PCB, but we will use breakout boards to test its functionality.