

Problem statement

Develop a persistence-of-vision color wheel utilizing 8 RGB diodes and an Arduino UNO R3 board.

LED Wiring:

For the following steps refer to the schematics supplied by your team . Remember that the holes on the proto-board are connected 5 across in the middle areas, and in one straight line running the length of the board on the edges (+/-).

1. Place the resistors and LED's in the breadboard so that you can access all the pins. Each resistor should connect from the common pin of an LED to an empty row.
2. Use solid wire stripped about 3/8" of an inch to connect the color pins of each LED together in groups of 4 per the schematic. You may use the vertical bus wires for some of these, but you will need to "daisy-chain" some of them since there are only four buses and you need six groups.
3. Connect each group of four pins to the Arduino matching the color pin numbers specified by your group.
4. Connect each resistor to the Arduino matching the row pin numbers specified by your group.

Hall-effect sensor Wiring:

The Hall-effect sensor needs to be mounted close to, but not touching the handle so that it can sense the magnet rotating as the project board spins. It is most sensitive on the wide flat portion of the package.

5. Connect the Hall-effect sensor to Arduino using the male-female connectors provided in your kit. Refer to the specification sheet and note the orientation of the pins. One pin should be connected to +5V, one to GND and one to one of the analog inputs as specified by your group.
6. Thread the leads through an unused oval hole on the project board.
7. Bend the leads of the sensor so that the face of the sensor can be mounted close to where the magnet rotates as the handle turns around.
8. Use hot glue to secure the sensor and wires to the project board. Hot glue is a great insulator and can directly contact the wires.

Finishing up:

9. Work with your programmer to test that everything is wired correctly.
10. Take a picture of your board and upload it to your project workspace.
11. Discuss with your team any challenges that you encountered while building this project. Offer suggestions as to how the hardware could be improved in the future.
12. Work with your team leader to help on other aspects of the project.