Arduino Hardware Instructions

Before I begin explaining the connections, let’s establish what I mean when I say power rail, ground rail, clock rail, and data rail. Power rail is row 10 on the breadboard. Clock rail is row 15. Data rail is row 20. Ground rail is row 30. That is how I’ve always been connecting the hardware up until this point, but using any rail is fine, and it could be necessary to change the rail to make wires work well in the box.

Also, wires in the rails are color coded. Power is red, ground is black, clock is green, data is blue. This will make it easier to connect things.

Also, all the wires necessary to build this should already be in the box. Most are connected to the components, others are by themselves.

Also, note that there are two lone red wires (one longer and one shorter) and two lone black wires (one longer and one shorter) in the box. Keep that in mind when reading the instructions.

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**Lone Wires**

* Connect the longer lone red wire from Arduino 5V to power rail j.
* Connect the longer lone black wire from Arduino GND to ground rail j. (I usually use the GND closer to the Vin, but any ground is fine I think.)
* Connect the lone green wire from Arduino SCL (it’s on the right side of the Arduino) to clock rail j.
* Connect the lone orange wire from Arduino SDA to data rail j. (Color coding is not obeyed here; wire should be blue but I lost the blue wire. Maybe Abdulrahman took it by accident?)

**Rotary Encoder**

* Connect the red wire to power rail i.
* Connect the black wire to ground rail i.
* Connect the green wire to Arduino analog 3 (NOT the clock rail, even though it’s green).
* Connect the blue wire to Arduino analog 2 (NOT the data rail, even though it’s blue).
* Connect the yellow wire to Arduino digital 12 (this wire is for detecting presses on the rotary encoder).

**LCD Screen**

* Connect the red wire to power rail h.
* Connect the black wire to ground rail h.
* Connect the green wire to clock rail h (note that we skipped i; this is just for more space).
* Connect the blue wire to data rail h (note that we skipped i; this is just for more space).

**TEA5767 Radio Module**

* Connect the red wire to power rail g.
* Connect the black wire to ground rail g.
* Connect the green wire to clock rail f (note that we skipped g; this is just for more space).
* Connect the blue wire to data rail f (note that we skipped g; this is just for more space).

**More Lone Wires**

* Connect the shorter lone red wire from power rail f to power rail e.
* Connect the shorter lone black wire from ground rail f to ground rail e.

**Amplifier**

* Connect the red wire to power rail d (remember that the screw connectors are weak, so don’t yank too hard on the wires).
* Connect the black wire to ground rail d.
* Connect the speakers to the amplifier (if not already done).
* Connect the audio wire (the headphone type of wire) from the TEA5767 Radio Module (look underneath to find which port is the correct one; there is a speaker symbol indicating the right one) to the amplifier.

**Joystick**

* Connect the red wire to power rail c.
* Connect the black wire to ground rail c.
* Connect the middle yellow wire to Arduino analog 4.
* Connect the other yellow wire to Arduino analog 5.
* You can skip this next one: Connect the green wire to Arduino digital 11. (This wire is for detecting presses on the joystick; it can be skipped since we are no longer detecting joystick presses in the code. Also, even though the wire is green, it is not a clock wire).

Connect your Arduino to your computer or a battery and that’s it! The basic radio build should be complete! ☺