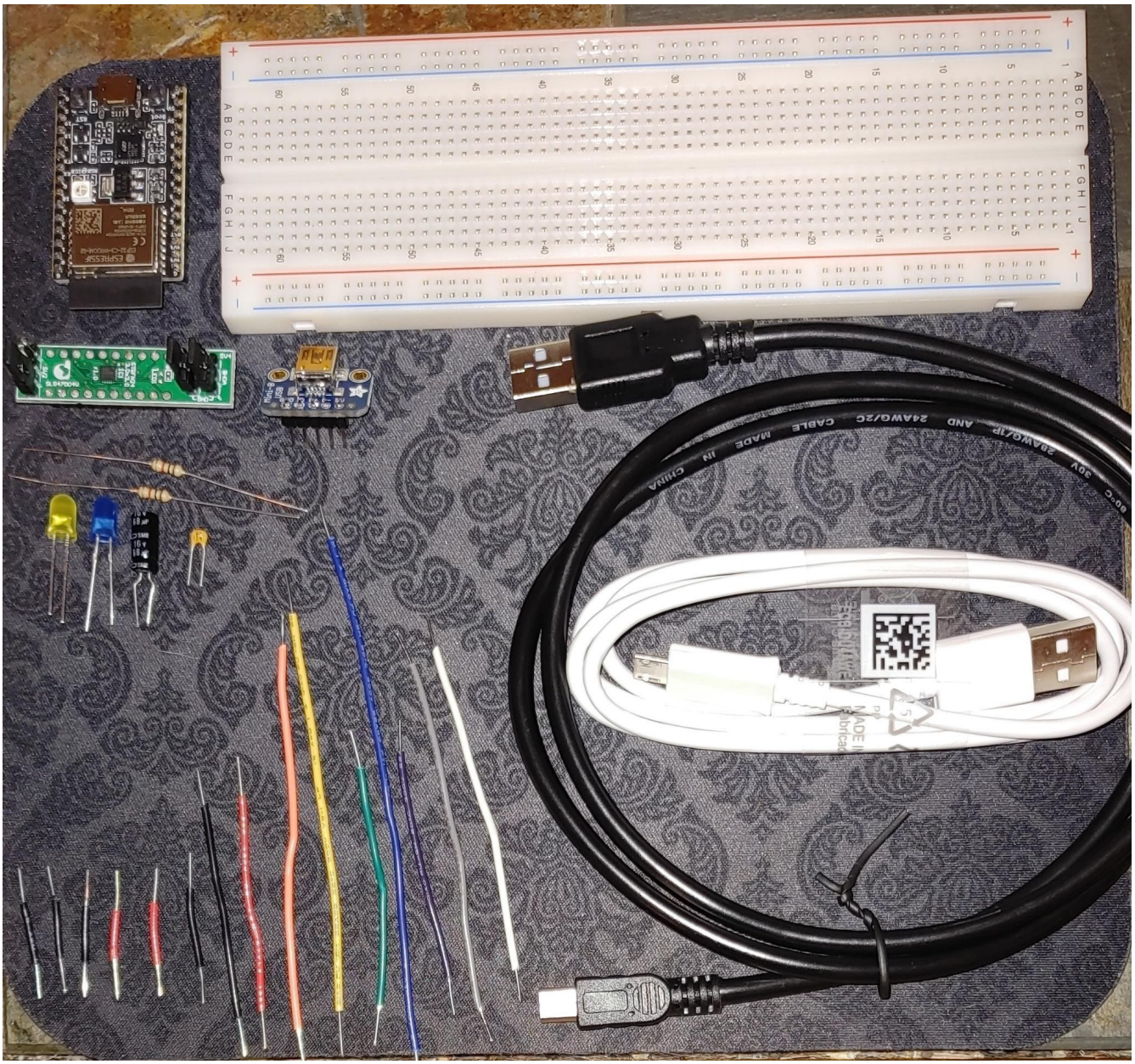
Edger “White Board” version 2 Assembly Instructions rev 0.59 11112022



Parts list:
Wires:

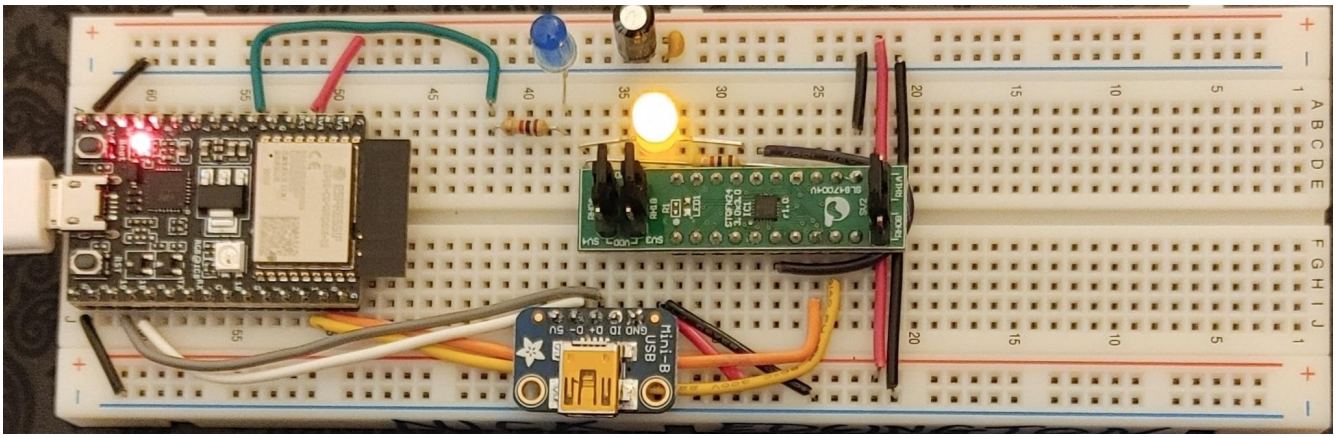
Length (cm)	Color	Count	Length	Color	Count
2.5	Blk	3	9.3	Ylw	1
3.0	Blk	1	8.3	Grn	1
5.8	Blk	1	11.5	Blu	1
2.5	Red	2	5.9	Vio	1
5.8	Red	1	8.3	Gry	1
8.7	Org	1	7.7	Wht	1

Other parts:

100nF	yellow	capacitor	1	
68uF	Blk	capacitor	1	"-" MUST be connected to blue ground rail: safety issue. Double check before power up.
	Ylw	LED	1	Longer lead is "+ anode", shorter "- cathode"
	Blu	LED	1	Longer lead is "+ anode", shorter "- cathode"
1000	ohm	resistor	2	
miniUSB		connector	1	Adafruit 1764
ESP32C3		board	1	Espressif ESP32C3-02
SLG47004V-DIP FPGA			1	Renesas ForgeFPGA
USB A to Mini-B cable			1	1 meter
USB A to Micro-B cable			1	1 meter

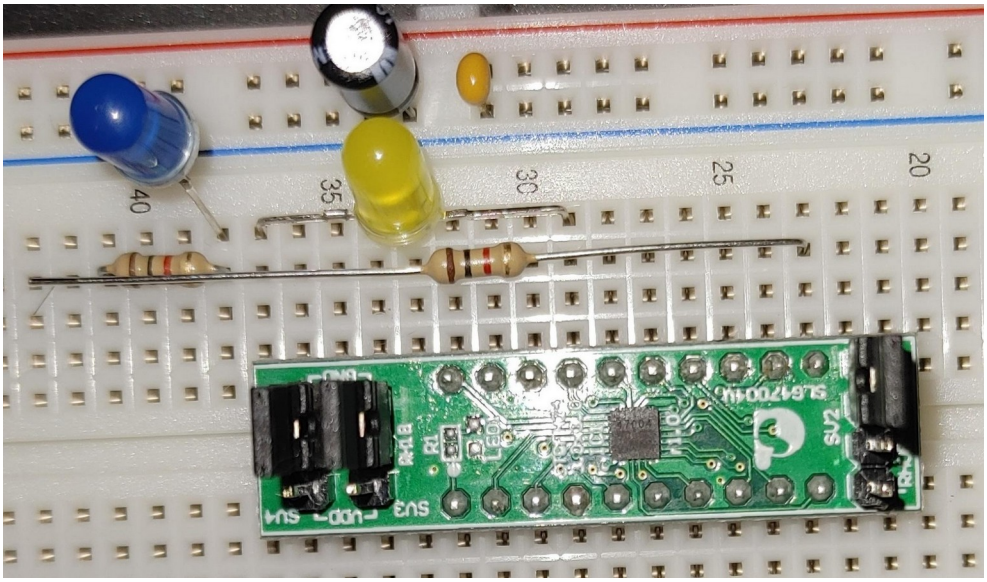
Examine all the photos first to understand part orientations. Notice how wires are dressed out away from the Espressif board on the left side so the unused breadboard positions can be accessed with jumper wires. The length of the bent exposed wire should be eight milimeters. This is 2 ½ holes between centers of the breadboard holes.

Completed board for reference:

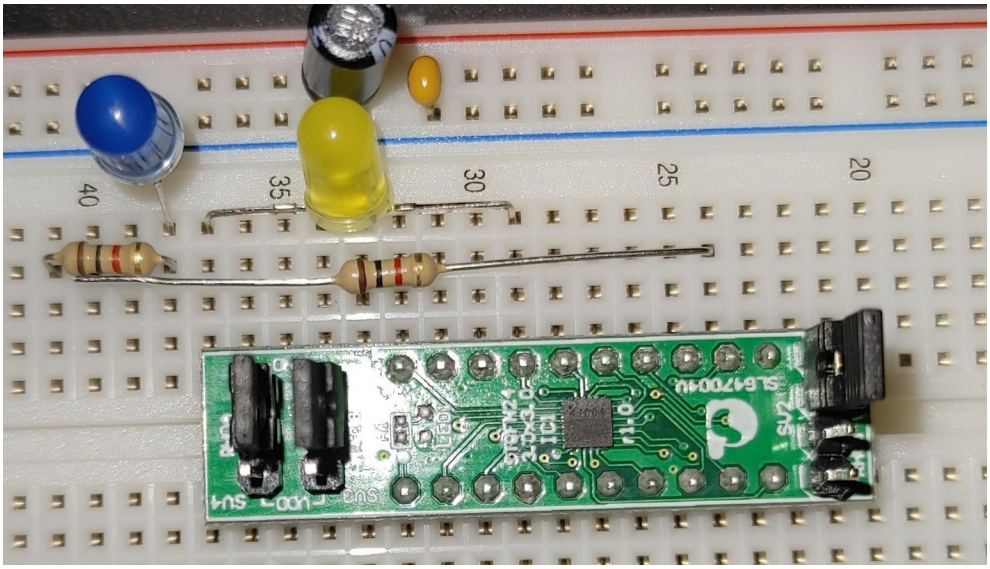


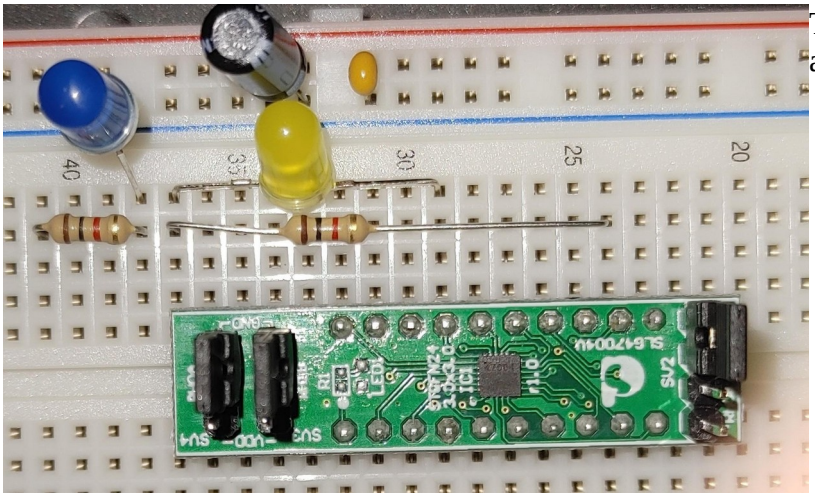
Special note for Yellow LED. The leads of the yellow LED cannot be held by the solderless breadboard if they are straight: they have to be bent in a special way to cause their effective width to be larger. The wide side of the lead goes perpendicular to the breadboard row. Here is a picture of one of the leads bent to fit into the solderless breadboard firmly. The shadow shows the bend clearly:

Step One: Parts placement.
The leads of the resistor along side the FPGA need to be trimmed on one end like this:



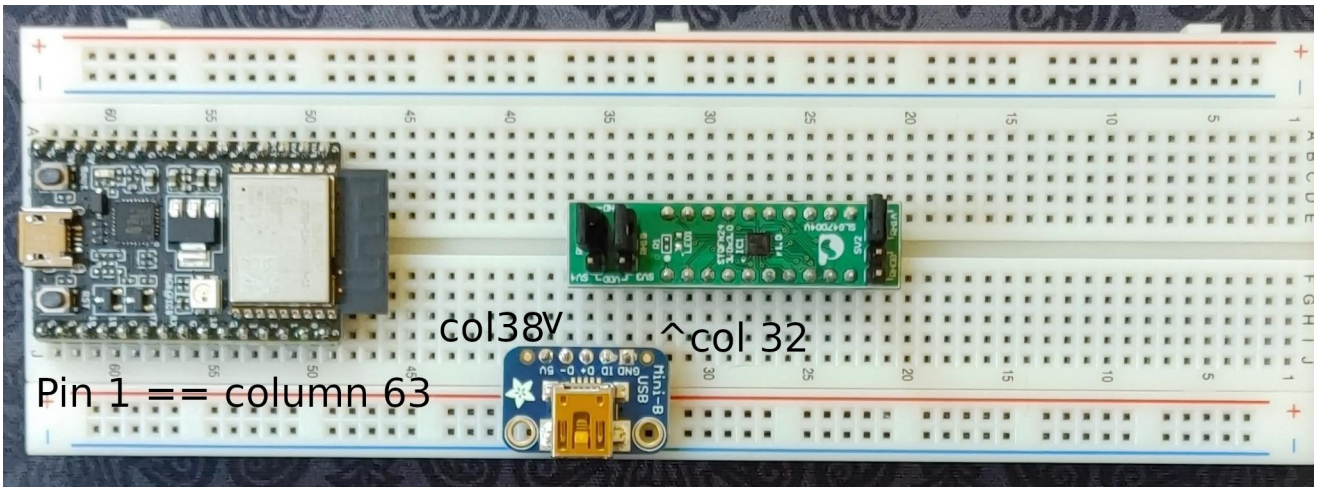
NOTE the long lead of the LED is on the right. This is the anode connected to FPGA pin 17.
The resistor lead has to be trimmed:



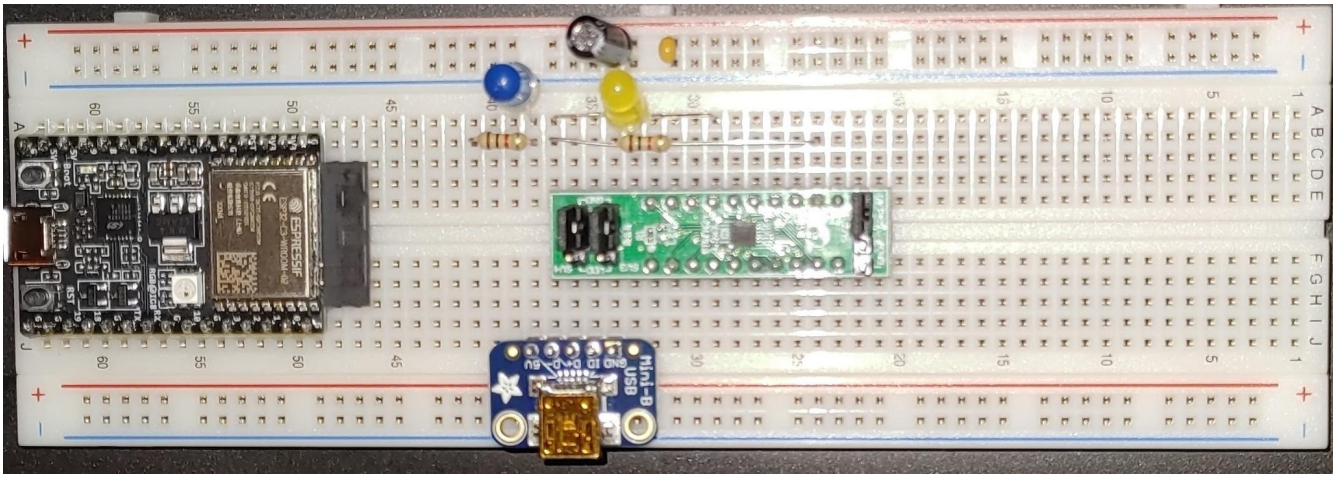


The left resistor lead is then bent down and put into position:

Here are the main components and their column positions:



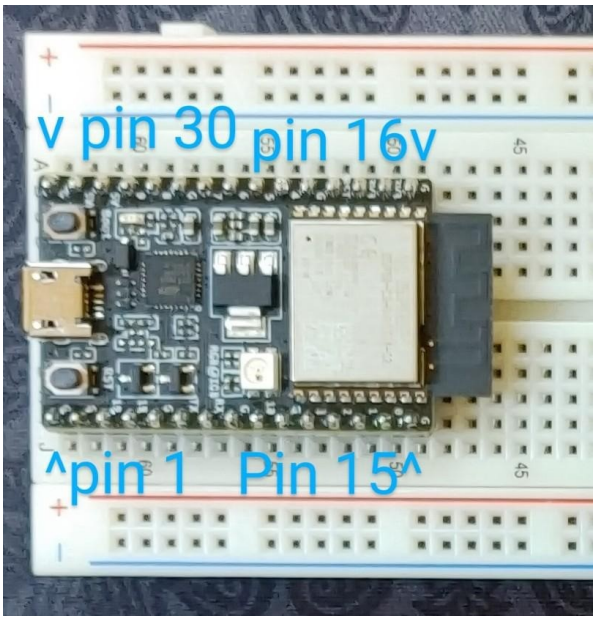
Here are all the components placed on the board. The longer blue LED anode lead is in column 38 directly above the “5V” pin of the USB connector. The shorter cathode lead is in the ground rail hole.



Parts Placement:

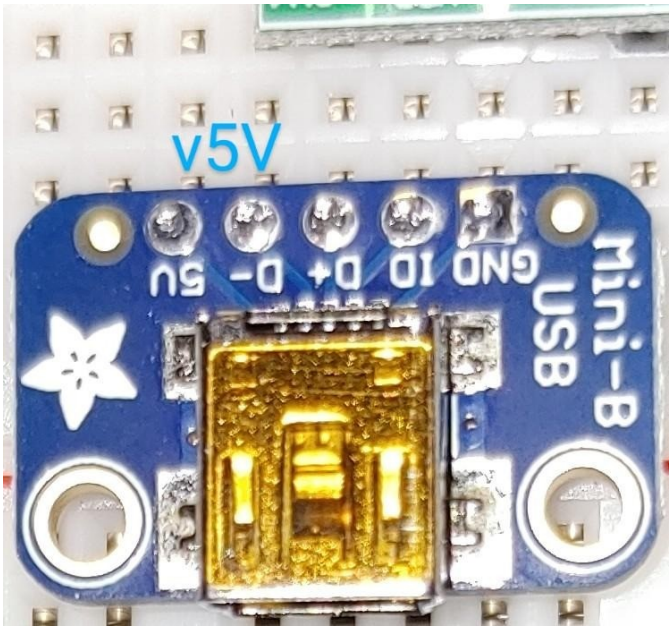
Breadboard column number	Device	Pin/lead number/name
63	Espressif ESP32-C3-DEVKITC-02	1
38	Adafruit 1764 JTAG USB breakout	“5V”
32	Renesas ForgeFPGA SLG47004V-DIP	1
38	Blue LED	Anode (long lead)
38	1k resistor	column 42
37	Yellow LED	Cathode (short lead)
37	1K resistor	-

Step two: Wiring related to Espressif ESP32-C3-DEVKITC-02 board PHYSICAL PINS:



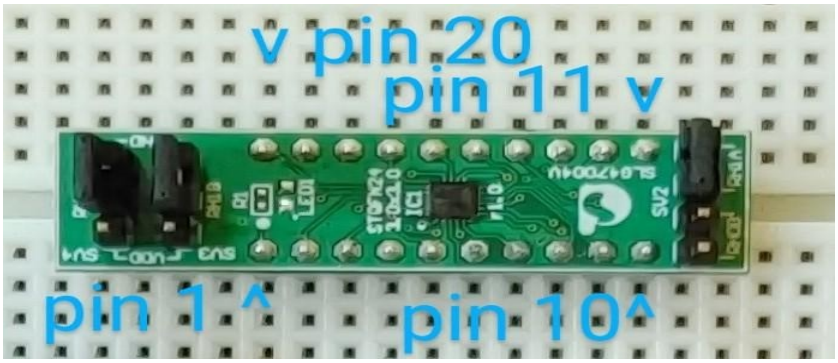
Length (cm)	Color	From	To
2.5	Blk	30 “G”	Breadboard ground rail (blue line)
2.5	Red	18 “3.3V”	Breadboard power rail (red line)
8.7	Org	14 “0”	FPGA physical pin 8 “SCL”
9.5	Ylw	13 “1”	FPGA physcial pin 9 “SDA”
7.7	Wht	4 “18” JTAG	JTAG USB “D-” (Adafruit breakout)
8.3	Gry	5 “19”	JTAG USB “D+” (Adafruit)
2.5	Blk	1 “G”	Ground rail (blue line)
6.3	Grn	21 “4”	Breadboard column 42
11.5	Blu	29 “5V”	JTAG USB “5V”

Step three: Wiring related to the Adafruit 1764 USB Breakout board:



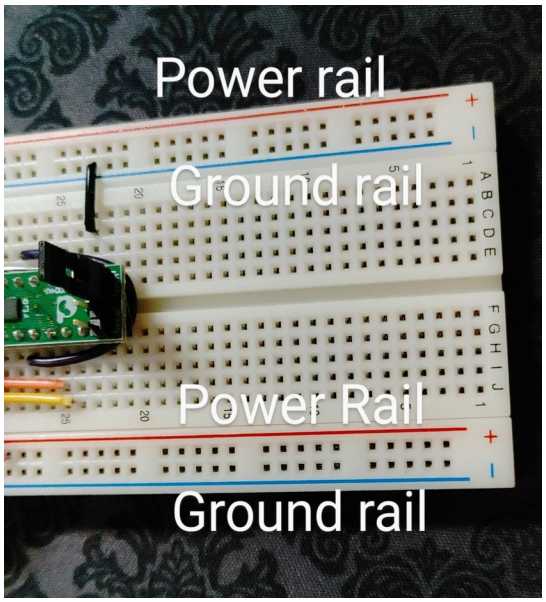
3.0	Blk	Ground rail (blue line) to JTAG USB Gnd

Step 4: Wiring related to Renesas ForgeFPGA SLG47004V-DIP PHYSICAL PINS:



2.5	Red	Power rail (red line) to FPGA pin 1 “VDD”
5.9	Vio	FPGA pin 6 “GPIO 15” to FPGA pin 16 “GPIO 16”
2.5	Blk	Ground rail (blue line) to FPGA pin 11 “GND”
-	resistor	FPGA pin 11 “GND” to breadboard column 37
-	ylw LED LONG	FPGA pin 17 “GPIO 18” to (short) breadboard column 37

Step 5: Wires related to solderless breadboard:



5.8	Red	Power rail 1 (red line)	to	Power rail 2 (red line)
5.8	Blk	Ground rail 1 (blue line)	to	Ground rail 2 (blue line)
-	Big black cap	Power rail 1	to	Ground rail 1 (“-” side of cap!)
-	Little ylw cap	Power rail 1	to	Ground rail 1
-	Blu LED LONG	breadboard column 38	to	Breadboard ground rail 1 (blue line)
-	resistor	breadboard column 38	to	Breadboard column 42