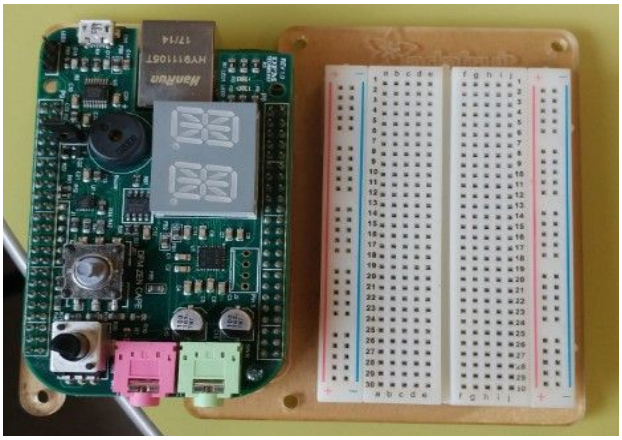
How-To-Guide

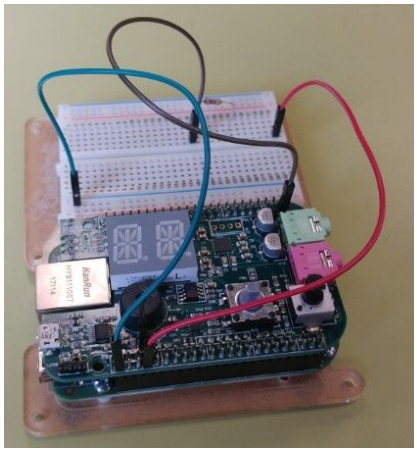
Wiring a fan and the relay to control by GPIO

- For our group, controlling the fan's On/Off with GPIO is a challenging part. To do this:

1. Unplug power (micro-USB) from the BeagleBone

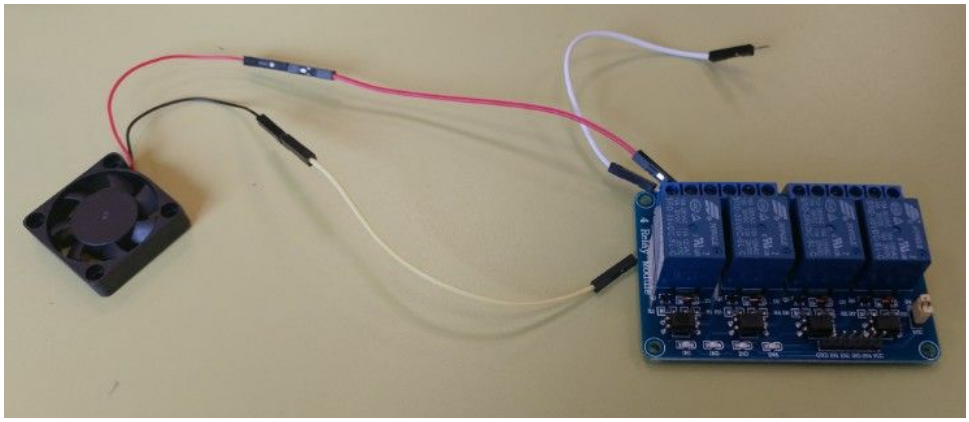


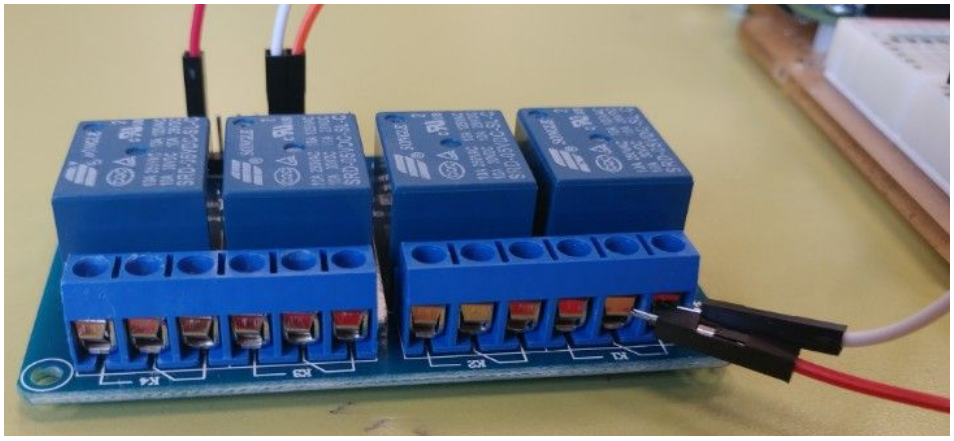
2. Wiring
    a. Beaglebone and breadboard



i. Connect BBG's power pin P9_7 that is SYS_5V to f30 of your breadboard
ii. Connect BBG's Ground pin P9_1 that is DGND to - rail of the board
iii. Connect BBG's GPIO 70 pin P9_1 to f18 of the board
iv. Insert 470 ohm resistor to g18 and g23 of the board (direction doesn't matter)

b. Relay and fan



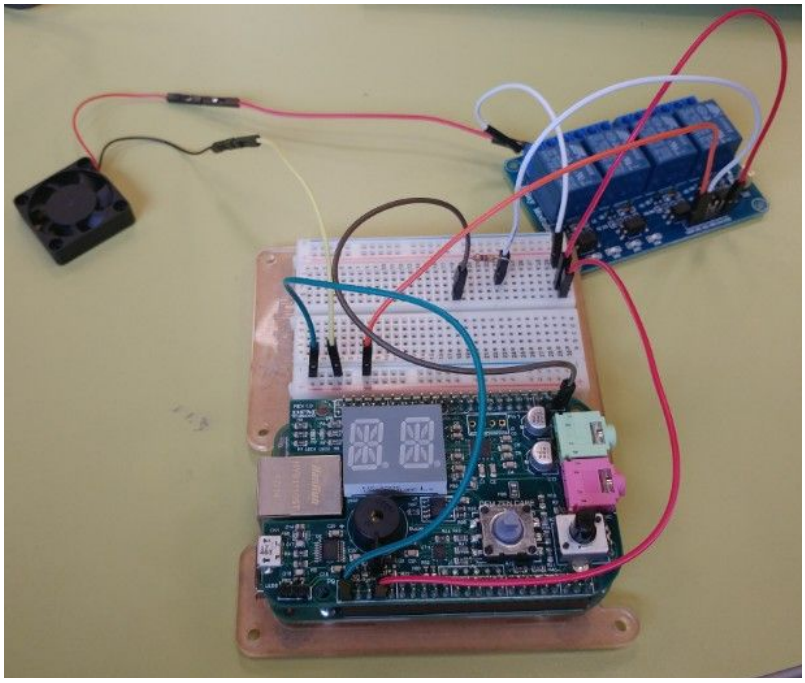


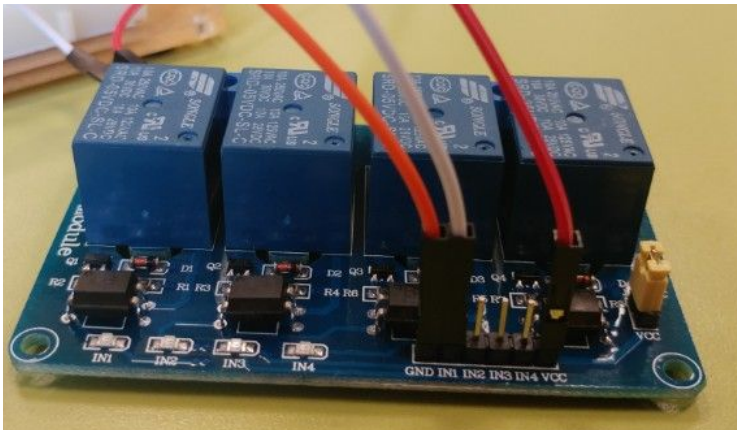
i. Connect fan’s power cable (red) to relay’s common terminal (terminal in the middle)

ii. Connect a male to male cable to relay’s normally open terminal (terminal in the left)

iii. Connect a male to male cable to fan’s Ground cable (black)

c. Connect remaining components

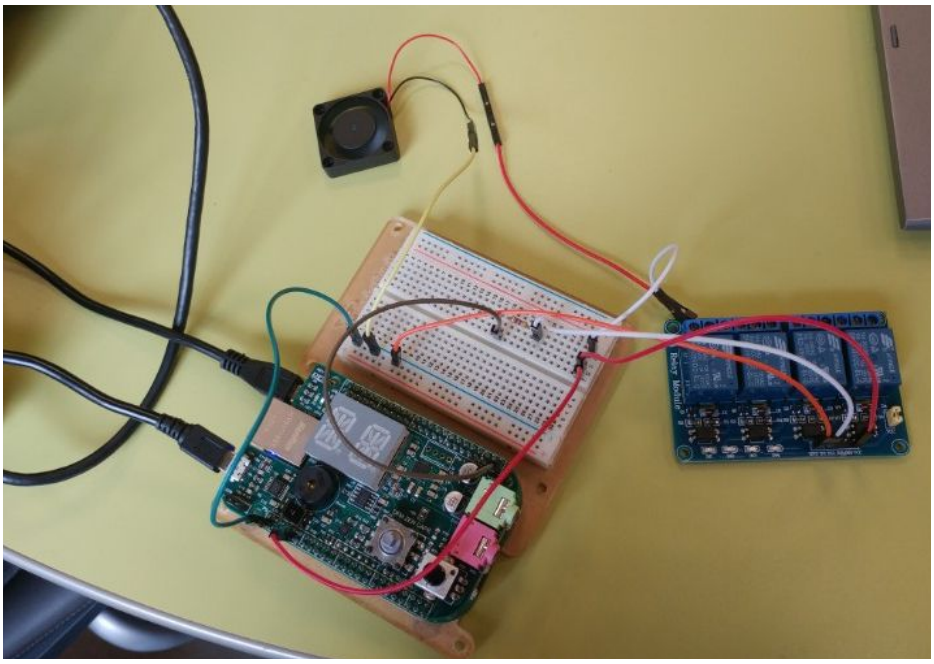




i. Connect relay's VCC pin to board's g30 using male to female cable
ii. Connect relay's IN1 pin to board's h23 using male to female cable
iii. Connect relay's GND pin to - rail of the board (same rail used on a.ii)
iv. Connect fan's ground pin to - rail of the board (same rail used on a.ii and c.iii)

3. Drive Fan via GPIO

a. Boot your BeagleBone.

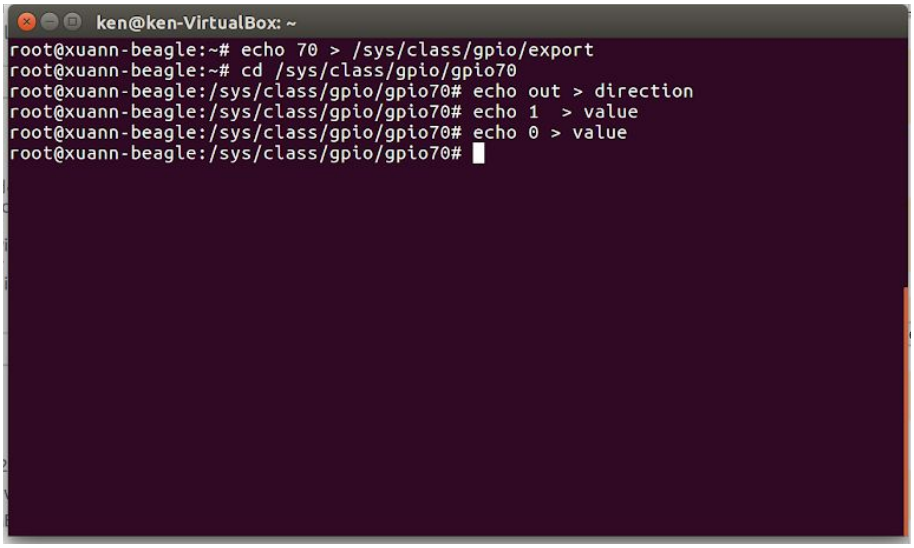


b. Enable the pin for GPIO:
   # echo 70 > /sys/class/gpio/export

c. Change to folder:
   # cd /sys/class/gpio/gpio70

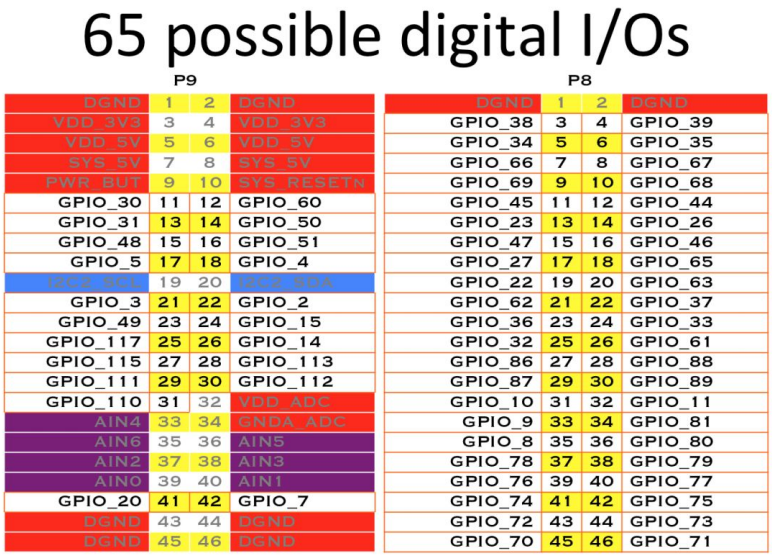
d. Set direction:
   # echo out > direction

e. Turn on/off: It is active low, so turn on with:
   # echo 1 > value
   And turn off with:
   # echo 0 > value



<Troubleshooting>

1. Double check your wiring circuit before power up.
2. See the below figure to make sure which GPIO pin to export for the fan.



3. If wiring more hardware, connect to same - rail of the board that is used.

<Reference>

Brian Fraser's "Wiring an LED Guide" is refered which can be found in "http://www.cs.sfu.ca/CourseCentral/433/bfraser/other/WiringAnLEDGuide.pdf"