

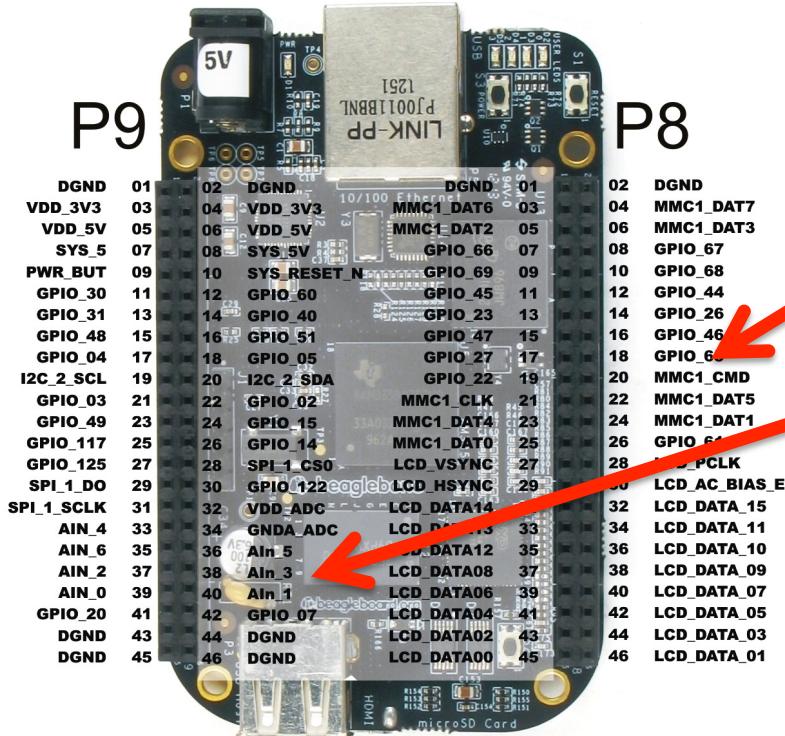
Physical Computing 101: Part 2

Control of Mobile Robots: Hardware Lecture #6



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BeagleBone Black Pin Out



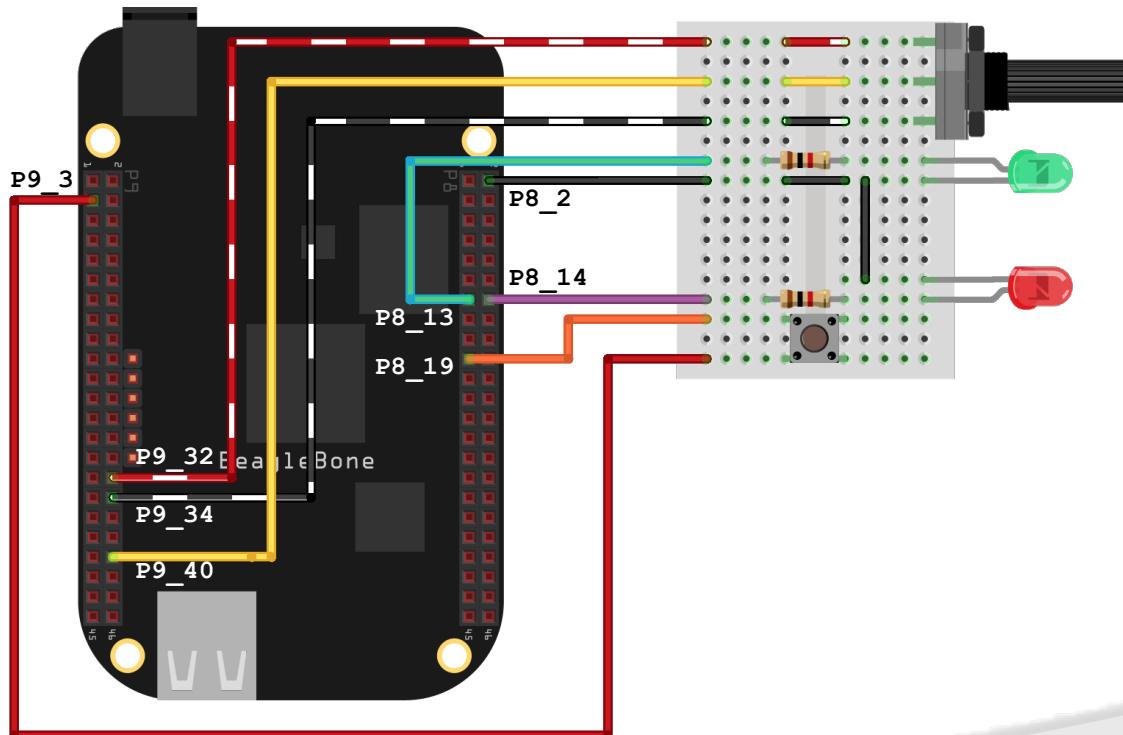
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Caution:

GPIO Pins operate at 3.3V

ADC Pins operate at 1.8V

Circuit Diagram



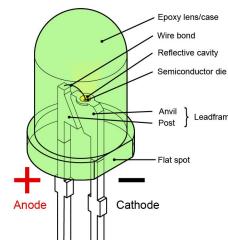
Circuit Components



Potentiometer

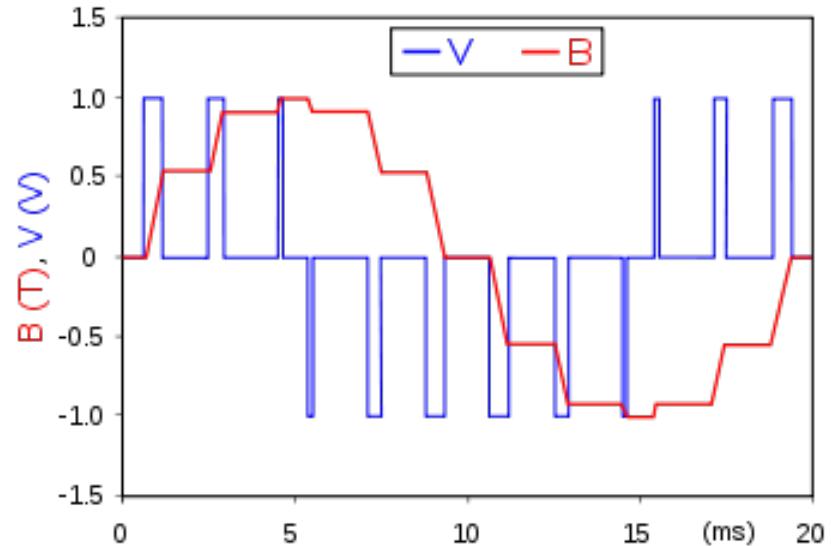
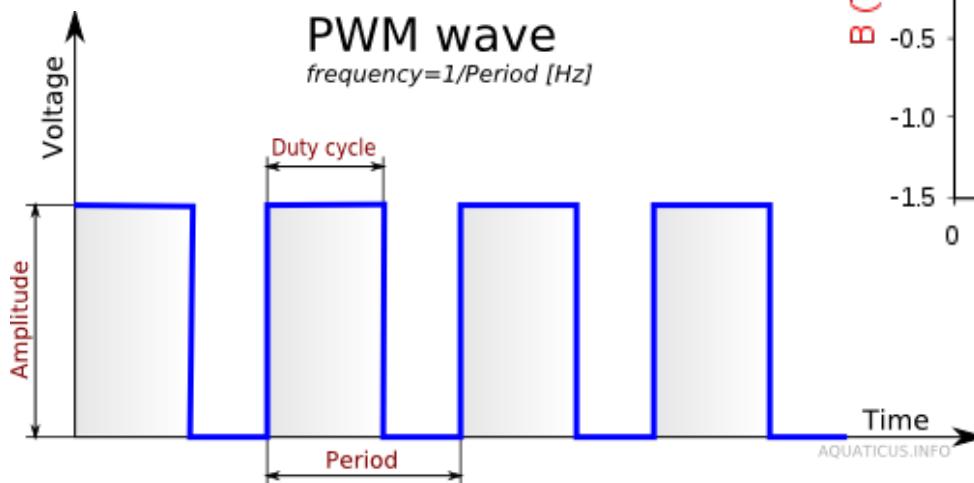


Push Button



LEDs

Analog Out With PWM



BBB GPIO Demo

The screenshot shows a Cloud9 IDE interface running on a Mac OS X system. The title bar reads "cloud9 - Cloud9" and the address bar shows "192.168.7.2:3000". The menu bar includes "File", "Edit", "View", "Windows", "Help", and "Preview". The toolbar has icons for "run" and "Preview". The left sidebar has "Project Files" with a tree view showing "cloud9", "attic", "auturn", "demo", "extras", and "working" folder containing "GPIODemo.js", "LICENSE", and "README.md". The main editor window displays the code for "GPIODemo.js". The code uses the "bonescript" module to control GPIO pins P8_13, P8_14, and P8_19, and a potentiometer connected to P9_40. It also handles button presses and logs values to the console. The bottom panel shows the "Console" tab with output from the script running.

```

1 var b = require('bonescript');
2
3 var ledPinA = "P8_13";
4 var ledPinD = "P8_14";
5 var buttonPin = "P8_19";
6 var potPin = "P9_40";
7 var buttonValue = 0;
8 var potValue = 0;
9 var runFlag = true;
10
11 b.pinMode(ledPinD, b.OUTPUT);
12 b.pinMode(buttonPin, b.INPUT);
13 b.pinMode(ledPinA, b.OUTPUT);
14
15 setTimeout(stop, 20000);
16
17 loop();
18
19 function loop() {
20   potValue = b.analogRead(potPin);
21   buttonValue = b.digitalRead(buttonPin);
22   b.analogWrite(ledPinA, potValue);
23   b.digitalWrite(ledPinD, buttonValue);
24   console.log('Button Value = ' + buttonValue + ' Pot Value = ' + potValue);
25   if (runFlag) {
26     setTimeout(loop, 1);
27   } else {
28     console.log('Bye Bye');
29   }
30 }
31
32 function stop() {
33   runFlag = false;
34 }

```

Console Output:

Button Value = 0 Pot Value = 0.565
 Bye Bye

More Info

- <http://beagleboard.org/Support/bone101/>
- <http://beagleboard.org/Support/BoneScript>