

What's a Microcontroller? Activities using Boe-Bot Components

A very frequent question that we get from teachers is: "What activities can we do from *What's a Microcontroller?* using the parts included in *Robotics with the Boe-Bot?*" The answer is Quite a lot! While *Robotics with the Boe-Bot* is considered to be an entry-level, there are some core electronic and programming concepts missing that can be filled with just a few activities from *What's a Microcontroller?* Tables are given for versions 3.0 below and versions 2.2 on the next page.

Crossover activities for <i>What's a Microcontroller? v3.0</i> and <i>Robotics with the Boe-Bot v3.0</i>	
WAM Activity#	Title & Topics Introduced
Chapter 1	Getting Started (Download & install the software, write simple PBASIC programs.)
(All)	The activities are the same in both books, done through the BASIC Stamp Editor Help file (or equivalent PDF download).
Chapter 2	Lights On – Lights Off (Controlling LEDs, DO...LOOP, FOR...NEXT)
Activity #1	Building and Testing an LED Circuit
Activity #2	On/Off Control with the BASIC Stamp
Activity #3	Counting and Repeating
Activity #4	Building and Testing a Second LED Circuit
Chapter 3	Digital Input: Pushbuttons (Reading input states, IF...THEN)
Activity #1	Testing a Pushbutton with an LED Circuit
Activity #2	Reading a Pushbutton with the BASIC Stamp
Activity #3	Pushbutton Control of an LED
Activity #4	Two Pushbuttons Controlling Two LEDs
Chapter 7	Measuring Light (Phototransistor, data logging, hysteresis, READ, WRITE)
Activity #1	Building and Testing the Light Meter
Activity #2	Tracking Light Events
Activity #3	Graphing Light Measurements (Optional)
Activity #5	On/Off Phototransistor Output (Circuit from Activity #1, ignore 7-segment LED)
Activity #6	For Fun—Measure Outdoor Light with an LED
Chapter 8	Frequency & Sound (Piezospeaker, FREQOUT, LOOKUP, LOOKDOWN, SELECT...CASE)
Activity #1	Building and Testing the Speaker
Activity #2	Action Sounds
Activity #3	Musical Notes and Simple Songs
Activity #4	Microcontroller Music
Activity #5	Ringtones with RTTTL
Chapter 10	Prototyping Your Own Inventions (Subsystem testing and integration)
(#1–4, except...)	The first four activities could be accomplished with the addition of a 10 kΩ single-turn potentiometer (#152-01031). The remainder is worth reading.

Crossover activities for <i>What's a Microcontroller? v2.2</i> and <i>Robotics with the Boe-Bot v2.2</i>	
WAM Activity#	Title & Topics Introduced
Chapter 1	Getting Started (Download & install the software, write simple PBASIC programs.)
(All)	The activities are essentially the same in both books
Chapter 2	Lights On – Lights Off (Controlling LEDs, DO...LOOP, FOR...NEXT)
Activity #1	Building and Testing an LED Circuit
Activity #2	On/Off Control with the BASIC Stamp
Activity #3	Counting and Repeating
Activity #4	Building and Testing a Second LED Circuit
Chapter 3	Digital Input: Pushbuttons (Reading input states, IF...THEN)
Activity #1	Testing a Pushbutton with an LED Circuit
Activity #2	Reading a Pushbutton with the BASIC Stamp
Activity #3	Pushbutton Control of an LED
Activity #4	Two Pushbuttons Controlling Two LEDs
Chapter 7	Measuring Light (Photoresistor, data logging, READ, WRITE)
Activity #1	Building and Testing the Light Meter
Activity #2	Graphing Light Measurements
Activity #3	Tracking Light Events
Chapter 8	Frequency & Sound (Piezospeaker, FREQOUT, LOOKUP, LOOKDOWN, SELECT...CASE)
Activity #1	Building and Testing the Speaker
Activity #2	Action Sounds
Activity #3	Musical Notes and Simple Songs
Activity #4	Microcontroller Music
Activity #5	Cell Phone Ringtones
Chapter 10	Running the Whole Show (Subsystem testing and integration)
(All, except...)	All four activities could be accomplished with the addition of a 10 kΩ single-turn potentiometer (#152-01031).