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Errata for What's a Microcontroller? Text v3.0 (#28123)

If you find what may be additional errata items not listed here, please email editor@parallax.com. We appreciate your sharp eyes!

Text errors are noted with ~~red strikethrough text~~, and corrections with blue text, in the sections below. Formatted PDF replacement pages for each correction are appended to this document.

Page 143

How the Potentiometer Circuit Works

The total resistance in your test circuit is 220 Ω plus the resistance between the A and W terminals of the potentiometer. The resistance between the A and W terminals increases as the knob is adjusted further ~~clockwise~~ counterclockwise, which in turn reduces the current through the LED, making it dimmer.

Pages 166-167

```
' What's a Microcontroller - Ch5Prj01 ControlServoWithPot.bs2
' Read potentiometer in RC-time circuit using RCTIME command.
' The time var ranges from 126 to 713, and an offset of 330 is needed.
' Use RCTIME result in time variable to control servo position.
' Bicolor LED on P12, P13 tells direction of servo rotation:
' green for CW, red for CCW, off when servo is holding position.
' {$STAMP BS2}
' {$PBASIC 2.5}

PAUSE 1000
DEBUG "Program Running!"

time            VAR     Word              ' time reading from pot
prevTime        VAR     Word              ' previous reading

DO

  prevTime = time                         ' Store previous time reading
  HIGH 7                                   ' Read pot using RCTIME
  PAUSE 10
  RCTIME 7, 1, time
  time = time + 350                        ' Scale pot, match servo range
  time = time */ 185                       ' Scale by 0.724 (X 256 for */).
  time = time + 500                        ' Offset by 500.
```

Page 204

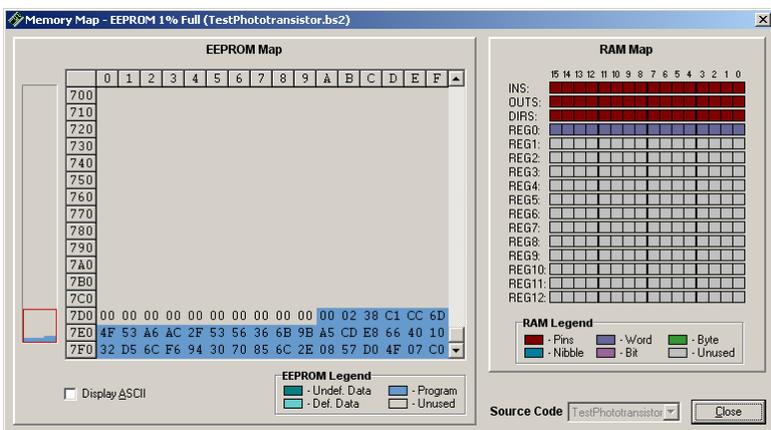The memory map does not match the one for the program in Activity #1. This is the correct memory map display.

Figure 0-1a
Memory Map

To view this window, click <u>Run</u>, and select <u>Memory Map</u>.

Page 208

In the printed program listing for StoreLightMeasurementsInEeprom.bs2, a comma is missing from the end of one line of code. The corrected listing is shown below, with a comment pointing out the changed line.

```
' What's a Microcontroller - StoreLightMeasurementsInEeprom.bs2
' Write light measurements to EEPROM.

' {$STAMP BS2}
' {$PBASIC 2.5}

time           VAR     Word
eepromAddress  VAR     Byte

PAUSE 1000
DEBUG "Starting measurements...", CR, CR, '<<< SECOND CR SHOULD BE FOLLOWED BY A COMMA
      "Measurement   Value", CR,
      "-----------   -----", CR
FOR eepromAddress = 0 TO 58 STEP 2
  HIGH 2
  PAUSE 5000
  RCTIME 2, 1, time
  DEBUG DEC2 eepromAddress,
      "              ", DEC time, CR
  WRITE eepromAddress, Word time
NEXT

DEBUG "All done.  Now, run:", CR,
      "ReadLightMeasurementsFromEeprom.bs2"
END
```

If your What's a Microcontroller v3.0 kit did not contain a 4.7 kΩ resistor, you can instead use two 10 kΩ resistors in parallel as shown in Figure 7-20a. The equivalent resistance of two 10 kΩ resistors in parallel is 5 kΩ. You can also use this approach with two 100 kΩ resistors in parallel for an equivalent resistance of 50 kΩ. (Since this is not a book error specifically, no replacement PDF page is provided.)

Figure 0-2a: Schematic and Wiring Diagram that Utilize two 10 kΩ Resistors in Parallel for an Equivalent Resistance of 5 kΩ.
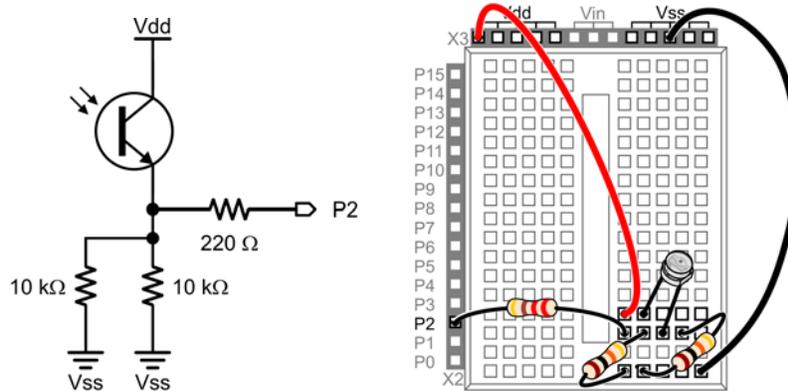
Equivalent Resistance for Series and Parallel Values.

When two or more resistors are connected in series, the equivalent resistance is:

$R_{EQ} = R_1 + R_2 + R_3…$ (Equivalent resistance for resistors in series)

When two or more resistors are connected in parallel, their equivalent resistance is:

$R_{EQ} = 1 ÷ (1/R_1 + 1/R_2 + 1/R_3…)$ (Equivalent resistance for resistors in parallel)

For two 10 kΩ resistors in parallel, that's $1 ÷ (1/10k + 1/10k) = 1 ÷ (2/10k) = 10k/2 = 5 k$. Two equal value resistors in parallel allow twice as much current through as one of them in its own would let through. So it stands to reason that the equivalent resistance for two equal value resistors in parallel would be one half of the value.

Equivalent Capacitance for Series and Parallel Values.

It's easiest to remember how to calculate equivalent capacitance if you think about it as the reverse of series and parallel resistor calculations. So, the equivalent capacitance for parallel capacitors adds up, and equivalent capacitance for series capacitors uses inverses.

$C_{EQ} = C_1 + C_2 + C_3…$ (Equivalent capacitance for capacitors in parallel)

In the previous activity, two capacitors were placed in parallel to double the capacitance. For two 0.01 μF capacitors, that's $C_{EQ} = 0.01 \text{ μF} + 0.01 \text{ μF} = 0.02 \text{ μF}$

When two or more capacitors are placed in series, their equivalent capacitance is:

$C_{EQ} = 1 / (1/C_1 + 1/C_2 + 1/C_3…)$ (Equivalent capacitance for capacitors in series)

<<<<<<END OF ERRATA LIST. FORMATTED CORRECTED PDF PAGES APPENDED>>>>>>