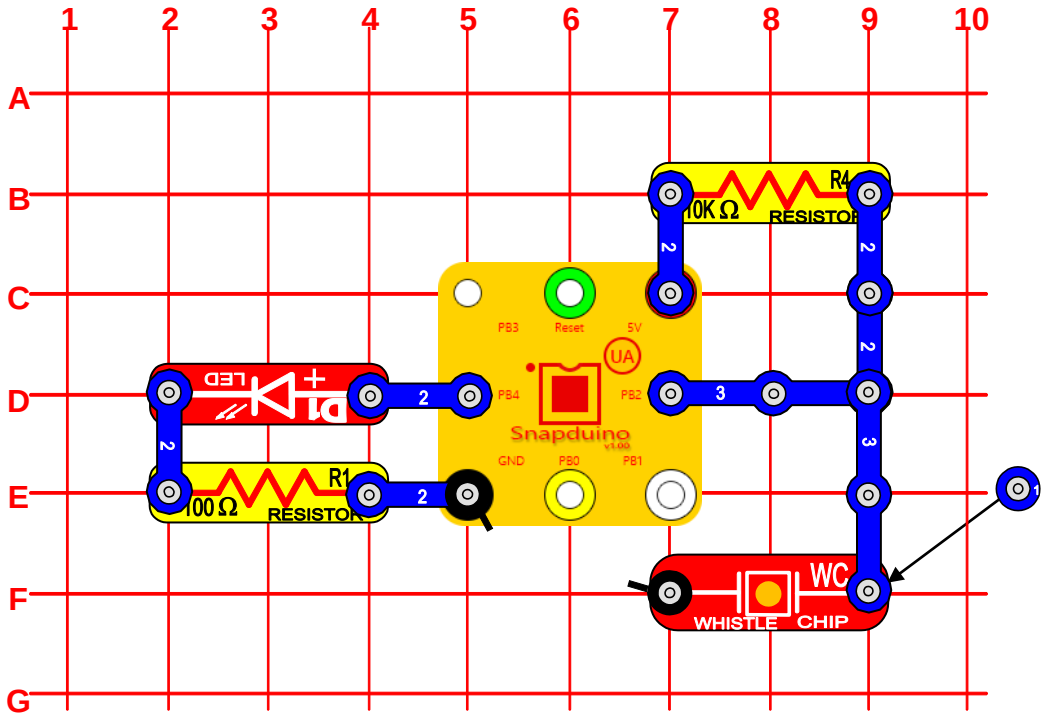

OBJECTIVE: This experiment will simulate a candle using an LED and allow you to blow it out using the whistle chip.

Parts List

Quantity	ID	Name	Part #
1		Base Grid Base Grid (11" x 7.7")	6SCBG
6	2	2-snap wire	6SC02
2	3	3-snap wire	6SC03
1	UA	Snapduino	
1		Snap-FTDI Cable	
1	D1	Red LED	6SCD1
1	R1	100 Ω Resistor	6SCR1
1	R4	10K Ω Resistor	6SCR4
1	WC	Whistle Chip	6SCWC
1		Jumper Wire (Black)	6SCJ1
1	D4	D4 instead of D1 (*optional*)	6SCD4
1		Egg LED Attachment for D1or D4 (*optional*)	6SCEGG
1	S2	Press Switch (*optional*)	6SCWS2

Step by Step Guide

1) Place the upper-left corner of the Snapduino at **C5**.
2) Snap component **D1** between position **D2** and **D4**.
3) Snap component **R1** between **E2** and **E4**.
4) Snap a 2-snap wire over the components between **D4** and **D5**.
5) Snap a 2-snap wire over the components between **D2** and **E2**.
6) Snap a 2-snap wire over the components between **E4** and **E5**.
7) Snap component **R4** between **B7** and **B9**.
8) Snap component **WC** between **F7** and **F9**.
9) Snap a 2-snap wire over the components between **B7** and **C7**.
10) Snap a 2-snap wire over the components between **C9** and **D9**.
11) Snap a 2-snap wire over the components between **B9** and **C9**.
12) Snap a 3-snap wire over the components between **D7** and **D9**.
13) Place a 1-snap wire on the component at **F9**.
14) Snap a 3-snap wire over the components between **D9** and F**9**.
15) Snap one end of the black jumper on the component at **F8**.
16) Snap the other end of the black jumper on the component at **E5**.
17) Connect the **black** lead of the FTDI cable to the **GND** snap marked with a black ring on the Snapduino (*snap it over the top of any components that may already be connected to this snap*).
18) Connect the **green** lead of the FTDI cable to the **Reset** snap marked with a green ring on the Snapduino (*snap it over the top of any components that may already be connected to this snap*).
19) Connect the **yellow** lead of the FTDI cable to the **PB0** snap marked with a yellow ring on the Snapduino (*snap it over the top of any components that may already be connected to this snap*).
20) Connect the **white** lead of the FTDI cable to the **PB1** snap marked with a white ring on the Snapduino (*snap it over the top of any components that may already be connected to this snap*).
21) Connect the **red** lead of the FTDI cable to the **5V** snap marked with a red ring on the Snapduino (*snap it over the top of any components that may already be connected to this snap*).
22) Open the sketch for this project in the Arduino IDE and upload it to the board.
23) When the upload has completed, the red LED will begin to glow and change like a candle.
24) Open the serial port monitor in the Arduino IDE to see the messages sent from the Snapduino.
25) Blow directly into the Whistle Chip to blow the candle out.
26) Now try to determine how to get the candle back on (hint: you do NOT need to reset the Snapduino).
27) Look at the code in the sketch and play with the parameters that control the glowing effect for the LED to what affect they have.
28) *Optional: If you have one of the Snap Circuits light sets, you may*

have a yellow LED labeled D4 and an egg that can be put on top. The egg helps diffuse the LED and makes the candle effect more apparent.

29) Try to determine the type of device the Whistle Chip represents. *Hint:* Try replacing the Whistle Chip WC with the Press Switch S2.