

PROTOTYPE 2: Input + Processing + Output

PROJECT DURATION 1 week

DUE Pinup at 6:00 PM on 31 January 2006

FORMAT Your prototype and documentation of your project should be presented on one additional 17" x 17" panel. You should have a total of three panels for Prototype 1 and Prototype 2.

ASSIGNMENT In this week-long project, you will make your second prototype by adding the component of Input to your system from last week. Prototype 2 will have the three essential components of responsive kinetic architecture: Input, Processing, and Output. You should also begin thinking about a research topic.

MATERIALS All materials from last week
Infrared Sensor Kit (#28019)*

BUILDING THE PROTOTYPE Continue to work with your partner. You will have to use the same problem-solving techniques and resources you started in Prototype 1. Prototype 2 will essentially add elements to your functioning Prototype 1.

SENSOR 09: Revise microcontroller code

In the Basic Stamp Editor, create a new file with the following code and save it as "Prototype 1". Attach the microcontroller to your computer via the USB cable. Run the code to transfer it to the microcontroller.

```
{ $STAMP BS2 }  
{ $PBASIC 2.5 }
```

```
DIR0 = 1 'Sets pin 1 to input  
S1 VAR Bit 'Sets up a variable for the echo
```

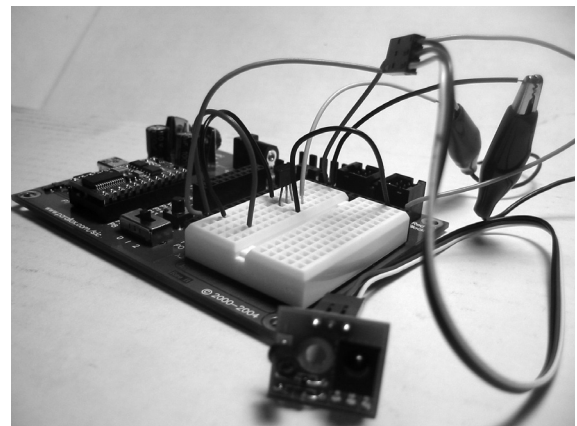
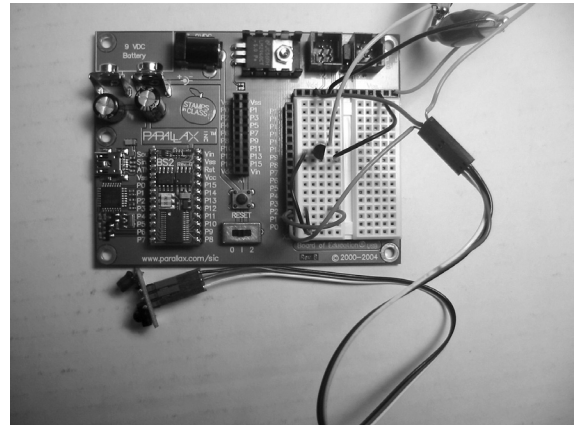
```
Start:  
  FREQOUT 1,1,38500 'Sends out a signal to IR LED  
  S1 = IN1 'Stores reply  
  DEBUG 1,"SENSOR0 = ",DEC S1,CR 'Displays results  
  IF S1 = 0 THEN  
    HIGH 2  
  ENDIF  
  PAUSE 1000  
  LOW 2  
  GOTO Start
```

10: Revise the circuit

On the microcontroller breadboard, add additional wiring to connect the sensor to the circuit. You should not change any of the wiring you already created for the actuator output. You are just adding new wiring for the input.

Use the instructions that come with the sensor to help with the assignment of the three sensor output pins to the right places on the breadboard.

See the two example photos at right.



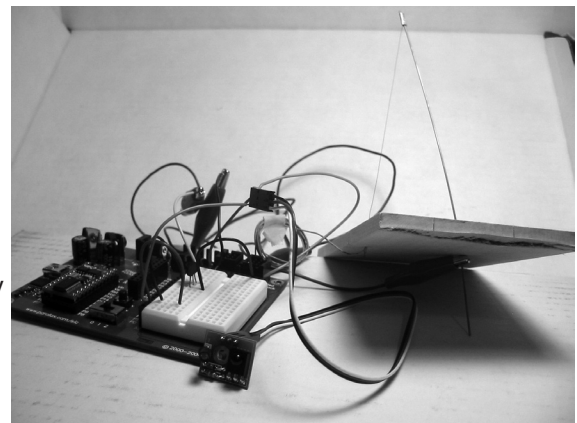
FINAL ASSEMBLY

11: Connect the full system

At this point, with the new code running on the microcontroller and the sensor integrated into the system, you should re-connect the signal and ground wires to the Flexinol actuator.

Your new system should respond to input from the sensor and correspondingly trigger the actuator.

This system now has Input, Processing, and Output.



12: Troubleshoot