ENGR/CS 101: Robotics
Lecture 7 – Line Following

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- References
  - http://csserver.evansville.edu/~hwang/
    - BASIC Stamp Software Downloads
      - BASIC Stamp Window Editor
    - Scribbler Software Downloads
      - PBASIC Programming Guide: Writing Programs
      - Hacker's Hints for the Scribbler Robot
    - BASIC Stamp Documentation Downloads
      - BASIC Stamp Syntax and Reference Manual

Lecture 7 – Line Following

Line Following Sensors

- There are two IR emitter/detector pairs on the bottom of the Scribbler. The IR emitters are both connected to same pin (PIN 3) and must be turned on/off simultaneously. The right detector is connected to pin 4 while the left is connected to pin 5.
- The detector pins return either a 1 (black surface) or a 0 (white surface). The following program illustrates reading the detectors.

```
HIGH LineOn
DO
  DEBUG CLS, HOME
  IF (LineRt = 1) THEN
    DEBUG "Right = black"
  ELSE
    DEBUG "Right = white"
  ENDIF
  DEBUG "Left = black"
  ELSE
    DEBUG "Left = white"
  ENDIF
  PAUSE 500
LOOP
END
```

- Notice that we do not modulate the emitted IR like we did with object avoidance. Just turn on the emitters and leave them on.
- The line sensors will see light colors as white and dark colors as black.
- Line following works best on a smooth, hard surface.

The Final Assignment

- Program the Scribbler to follow a light while staying confined to an area bounded by a black line and also avoiding obstacles.