Demo Lesson Plan

**Goal:** Introduction to the NXT brick and basic programming in NXT-G. Each group of two 89s students will spend a total of one hour mentoring a novice. Each individual is responsible for conducting a 30-minute session with the learner. This means one student will be responsible for teaching the first mini-lesson, and the other partner is responsible for following up with the second lesson, which will build on what was done in the first half-hour.

**First lesson:** In the first lesson, the 89s mentor will work through teaching a mock-mentee how to program a robot to drive forward until the robot reaches a black line.

**Second Lesson:** In the second lesson, the 89s mentor will build on the concepts and code introduced in the first session. This time, there will be two parallel lines separated by one to two feet of white space. The robot must move back and forth between the two black lines ad infinitum.

When an 89s mentor is not actively teaching the mock-mentee she should closely observe and take notes on what her partner is doing. These notes will be turned in as part of the write-up for this activity, and should include specific details, such as particularly impressive or lackluster teaching strategies.

89s mentors will have one hour to read this lesson plan and prepare to teach the mock-mentees.

**Materials Needed:** Assembled Full Car Model with light sensor. Computer with NXT-G
Part 1: Introducing the NXT Brick

The Lego NXT has 4 sensor ports, 3 motor ports, 4 buttons, and a screen. Discuss the difference between these and which of these are input and which are output. If they don’t know, provide examples of I/O with a computer: mouse and keyboard are input while monitor and speakers are output.

Discuss and point out the battery, the charger, the battery life indicator, and how to power the robot on and off.

Part 2: Introducing NXT-G

A. Moving Forward: You will need to work with the Move block.

Make sure to point out the block options at the bottom of the screen. Specifically, mention the ability to reverse directions, stop the motors, change which motors are being controlled, power level, and braking versus coasting.

B. Wait

We want the robot to stop at the black rather than going on forever. To control how long your robot moves, introduce the Wait block. It is important to remember that the wait for block can have two different controls: time, sensor. Which will we use?
C. **Loop**

There are many situations where we might want to repeat code. The best way to do that is with the loop. There are several controls for a loop, including sensor input, time, and counter.