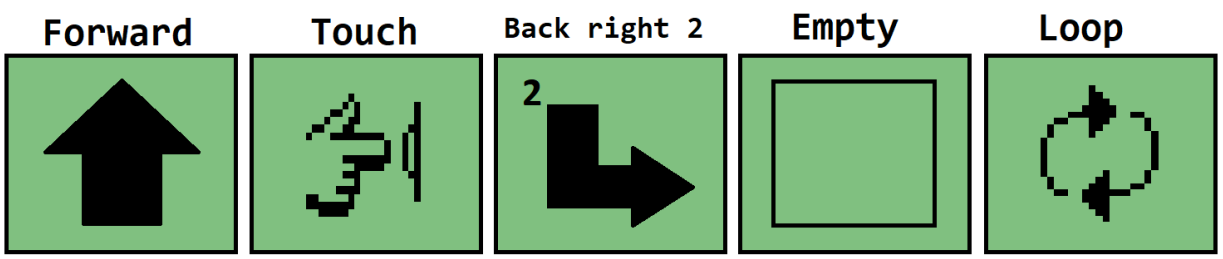
Lego NXT SPIN Club Instructional Notes

1. Meeting #1
    - Go through the Robotics 101 PowerPoint to teach the basic principles of Robotics. Explain what they will be doing, go over the timeline.
    - Build the NXT Express Bot with the provided instructions

2. Meeting #2
    - "Program A Friend" Activity
        - This activity introduces youth to programming an NXT Robot which they will put to use later on in this meeting.
        - Divide the students in groups of 2 to complete the activity.
        - Debrief after the activity to make sure they understand the idea that when you are programming a robot you must think about EVERY step it takes to do the task or get from place to place.
    - Start Programming the NXT Robot
        - Programming is housed under the "**NXT Programming"** function on the NXT Brick.
        - ***YOU DO NOT NEED A COMPUTER FOR THIS MEETING.**
        - Each box in the programming menu is a step for the robot to make the robot move.
            - Hint: Steps 2 and 4 are the sensor steps and will not be used yet.
        - Have the students start by doing simple tasks:
            - Go forward
            - Turn Right
            - Go Backwards
            - Turn Left

3. Meeting #3
    - Build and Program the Touch Sensor
        - By now the express bot will be built and in this meeting the students will assemble and attach the touch sensor to the express bot.
        - After attaching the Touch Sensor, they will program the touch sensor to turn the robot around and continue moving when it hits an object.
    - Follow the instructions in section 3 to build and attach the touch sensor
        - Touch sensor will be connected to Port 1
    - To program the Robot to complete the task the program screen should look like figure 1.0. (See next page)

Figure 1.0



4. Meeting #4
    - Follow instructions for building the ultra-sonic and attaching to the Express Bot found in section 4
        - *Hint: The High Center position for the Sensor placement works the best.
        - Ultra-Sonic sensor will be connected to Port 4
    - The activity the students will be completing using the Ultra-Sonic Sensor will be the "range" activity where the robot will follow the students at a specific distance. If they get too close the robot will stop and if they get to far away the robot will also stop.
    - ***YOU DO NEED A COMPUTER WITH NXT 2.0 SOFTWARE INSTALLED FOR THIS ACTIVITY.**
        - **Use the "range" step by step guide in the NXT Software**

5. Meeting #5
    - The students will program the robot to follow a line
        - Use electrical tape or a dark colored tape to make a path for the robot to follow.
            - *Hint: the surface below the tape has to be pure white. A large role of white paper works well.
    - Follow instructions for building the light sensor and attaching to the Express Bot found in section 5.
        - *Hint: Use the Light Sensor Downward position for the most accurate reading.
        - The Light Sensor will be connected to Port 3
    - ***YOU NEED A COMPUTER WITH NXT 2.0 SOFTWARE INSTALLED FOR THIS ACTIVITY.**
        - **Use the "light" step by step guide in the NXT Software**
6. Meeting #6
    - Culminating event