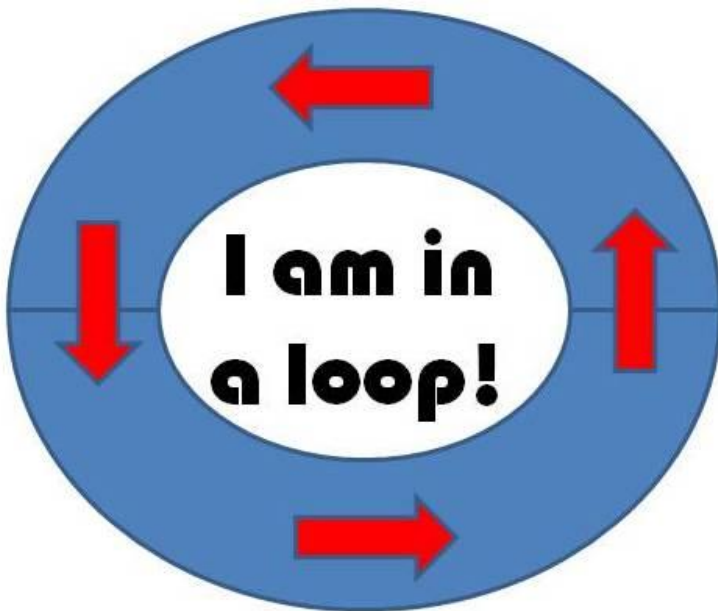


Using Waits, Loops and Switches



Waits, Loops and Switches Pre-Quiz

- 1. In programming, what is a loop?
When is a loop useful?**
- 2. How can you control the duration for
which a loop repeats?**
- 3. In programming, what is a switch?**

Waits, Loops and Switches Pre-Quiz

Answers

1. In programming, what is a loop? When is a loop useful?

A loop is an operator that allows us to repeat a set of commands indefinitely. Loops are useful when you need to repeat a set of commands multiple times.

2. How can you control the duration for which a loop repeats?

You can control how many times a loop repeats by clicking the dropdown arrow next to “Control” on the loop block and setting it to forever, time, sensor, count or logic.

3. In programming, what is a switch?

In programming, a switch is an object that gives different commands depending on the state it is in.

Wait Block Activity

Objective: Combine wait blocks, loops and switches to perform a task

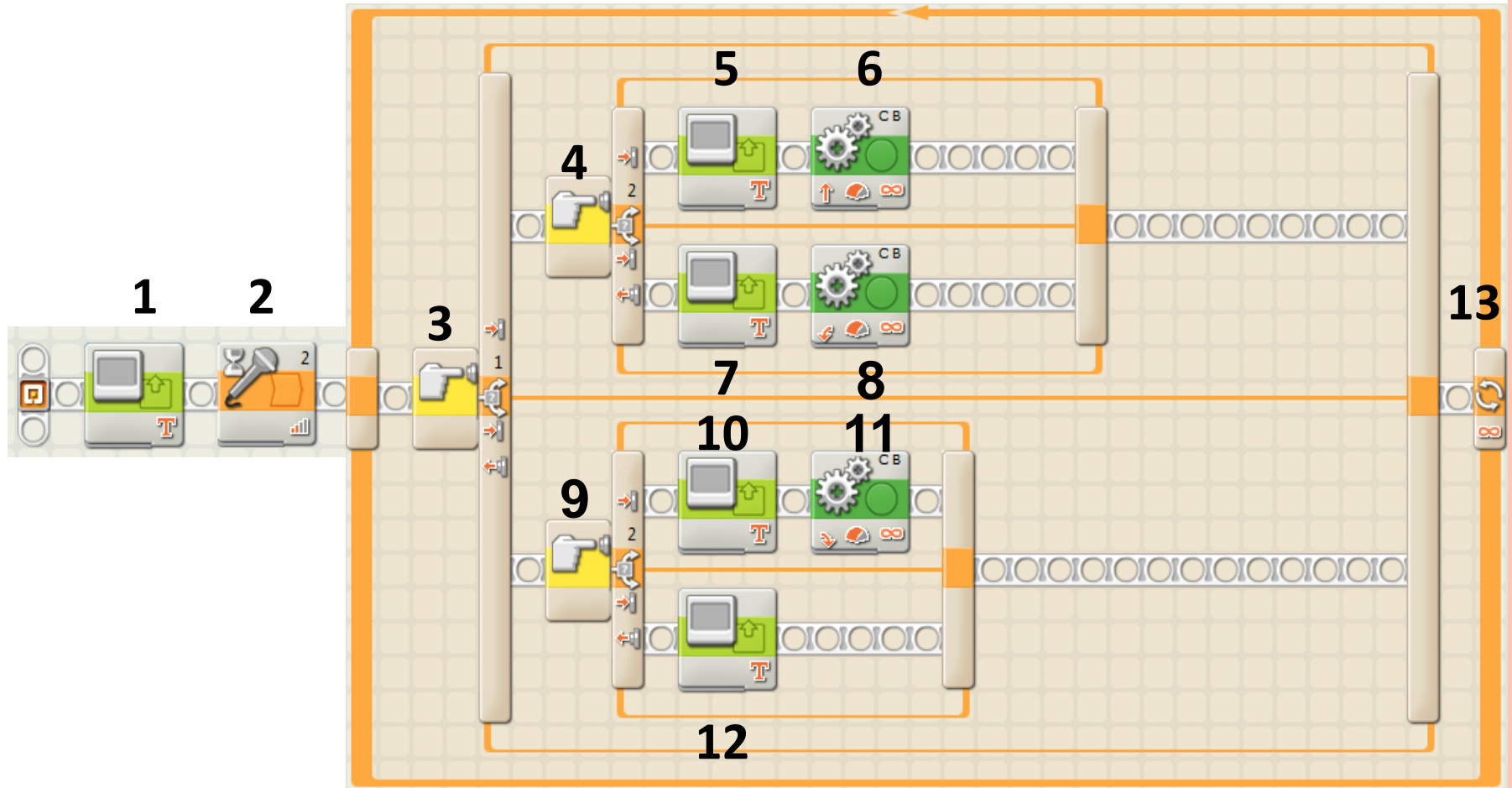
Do This: First, attach 2 touch sensors (name them A and B) and a sound sensor to your robot.

Then program the robot to perform the following task:

- Stay at rest and display “Ready” on the screen until detecting a loud noise. Once a loud noise is detected:
- Move left and display “Left” whenever touch sensor A is pressed.
- Move right and display “Right” whenever touch sensor B is pressed
- Move forward and display “Forward” whenever both touch sensors A and B are pressed.
- Stay at rest and display “Stop” when no buttons are pressed.

*****Hint:** Click on the  icon, drag the block into the program, and select “Text” from the dropdown menu to display text on screen.

Wait Block Activity Solution



Wait Block Activity Solution

various settings

1

A Scratch Display block with the following settings: Action: Text; Position: X: 8, Y: 32; Line: 4. The text 'Ready' is displayed on the screen.

2

A Scratch Wait block with the following settings: Control: Sensor; Port: 1; Sensor: Sound Sensor; Until: (slider); Sound: 50.

3

A Scratch Switch block with the following settings: Control: Sensor; Port: 1; Sensor: Touch Sensor; Action: Pressed; Display: Flat view.

4

A Scratch Switch block with the following settings: Control: Sensor; Port: 1; Sensor: Touch Sensor; Action: Pressed; Display: Flat view.

5

A Scratch Display block with the following settings: Action: Text; Position: X: 8, Y: 32; Line: 4. The text 'Forward' is displayed on the screen.

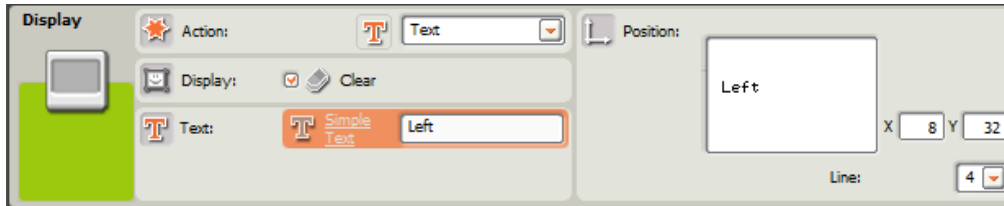
Wait Block Activity Solution

6



LEGO Mindstorms Move block configuration. Port: A, B, C. Direction: Up. Steering: C, B. Power: 75. Duration: 360, Unlimited. Next Action: Brake, Coast.

7



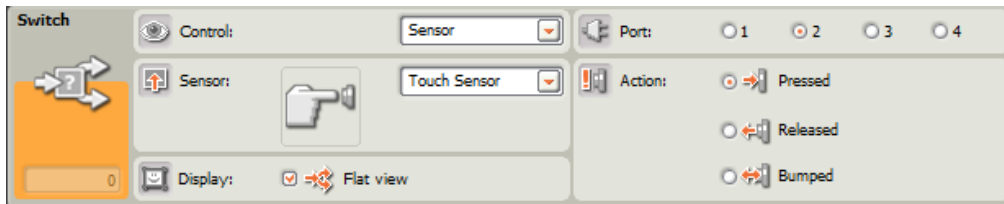
LEGO Mindstorms Display block configuration. Action: Text. Display: Clear. Text: Left. Position: X: 8, Y: 32. Line: 4.

8



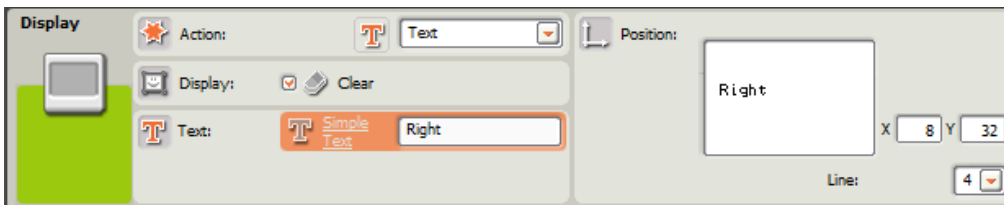
LEGO Mindstorms Move block configuration. Port: A, B, C. Direction: Up. Steering: C, B. Power: 75. Duration: 360, Unlimited. Next Action: Brake, Coast.

9



LEGO Mindstorms Switch block configuration. Control: Sensor. Port: 2. Sensor: Touch Sensor. Action: Pressed. Display: Flat view.

10



LEGO Mindstorms Display block configuration. Action: Text. Display: Clear. Text: Right. Position: X: 8, Y: 32. Line: 4.

various
settings
(continued)

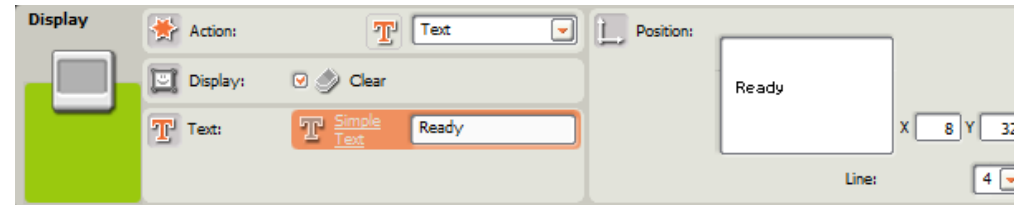
Wait Block Activity **Solution**

various settings (continued)

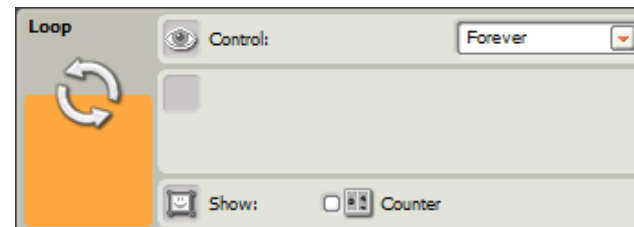
11



12



13



Waits, Loops and Switches Post-Quiz

- 1. In programming, what is a loop?
When is a loop useful?**
- 2. How can you control the duration for
which a loop repeats?**
- 3. In programming, what is a switch?**

Waits, Loops and Switches Post-Quiz

Answers

1. In programming, what is a loop? When is a loop useful?

A loop is an operator that allows us to repeat a set of commands indefinitely. Loops are useful when you need to repeat a set of commands multiple times.

2. How can you control the duration for which a loop repeats?

You can control how many times a loop repeats by clicking the dropdown arrow next to “Control” on the loop block and setting it to forever, time, sensor, count or logic.

3. In programming, what is a switch?

In programming, a switch is an object that gives different commands depending on the state it is in.

Vocabulary

brainstorming: Thinking of ideas as a group.

iteration: Doing something again, especially with the intent to make improvements.

loop: An operator that repeats a set of commands.

switch: In programming, a switch is an object that gives different commands, depending on the state it is in.

Images Sources

Slides 1: wall switch drawing; source: Microsoft® clipart: <http://office.microsoft.com/en-us/images/results.aspx?qu=light+switch&ex=1#ai:MC900441745>]

Device and programming images from LEGO MINDSTORM NXT User's Guide <http://goo.gl/wuhSUA>

Screen captures, diagrams and drawings by author