

Companion to the course: *Coding and Computational Thinking with VIRTUAL SPIKE PRIME (3.0)*

Companion Index Version 6

([These videos are also available using a YouTube Playlist](#))

[Why was this “Companion” produced?](#)

[How to obtain www.DrG2.com membership \(if you need pre-release material\).](#)

Starting Out:

0.01) [Working through how to obtain a new CS2N Account.](#)

0.02) [Working through how to purchase a Virtual License.](#)

0) Learning to code with a “Virtual SPIKE Prime” using graphical blocks aligned to the 3.0 LEGO SPIKE Prime Programming App

0.1) Additional Resources

0.2) Certified Online Teacher Training for LEGO SPIKE Prime

0.3) Certified Onsite Teacher Training for LEGO SPIKE Prime

0.4) Standards **Alignment Guide**

1) Getting Started with Virtual SPIKE Prime (3.0)

1.1) A Letter to the Educator

1.2) Programming with Virtual SPIKE Prime

1.3) Role of the Programmer

2) Programming the Hub with Virtual SPIKE Prime (3.0)

2.1) Introduction: Roxie the Greeting Robot

2.2) Lesson: Light Commands [22A](#), [22B](#) & [22C](#)

2.3) [Mini-Challenge: Smile!](#)

2.4) [Lesson: Programming a Sequence](#)

2.5) [Challenge: Advertising](#)

3) Robot Movement with Virtual SPIKE Prime (3.0)

3.01) Introduction: Iris Rover

3.02) [Lesson: Moving Forward](#)

3.03) Mini-Lesson: Proportional Relationships

3.04) [Mini-Challenge: Sequential Movements](#)

3.05) [Lesson: Turning In Place](#)

3.06) [Mini-Challenge: Turn Around the Craters](#)

3.07) [Lesson: Swing Turns](#)

3.08) [Mini-Challenge: Steer Around the Crater](#)

3.09) Big Idea: Planning and Behaviors

3.10) Activity: Introduction to Pseudocode

3.11) Introduction: LoCoBot

3.12) [Lesson: Arm Movement](#)

3.13) [Mini-Challenge: Collecting Spilled Silverware](#)

3.14) [Challenge: Cleaning the Home](#)

3.15) [Mini-Lesson: My Blocks](#)

4) Wait Until & Sensors with Virtual SPIKE Prime (3.0)

4.01) Introduction: CHIMP

4.02) What's a Robot?

4.03) [Lesson: Wait Until Near](#)

- 4-04) Big Idea: SPPA
- 4.05) [Lesson: Move Until Near](#)
- 4.06) Activity: Pseudocode
- 4.07) [Mini-Challenge: Investigate the Collapsed Building](#)
- 4.08) [Lesson: Wait For Green](#)
- 4.09) [Lesson: Move Until Red](#)
- 4.10) [Mini-Challenge: Forward Until Stop Line](#)
- 4.11) [Lesson: Move Until Pressed](#)
- 4.12) [Mini-Challenge: Vacuum](#)
- 4.13) [Challenge: Exploring a Disaster Site](#)

5) Loops with Virtual SPIKE Prime (3.0)

- 5.1) Introduction: MoonRanger
- 5.2) [Lesson: Forever Loops](#)
- 5.3) [Mini-Challenge: Search for Ice Part 1](#)
- 5.4) [Lesson: Repeat Loops](#)
- 5.5) Mini-Lesson: My Blocks with Parameters [55A](#) & [55B](#)
- 5.6) [Mini-Challenge: Search for Ice Part 2](#)
- 5.7) [Lesson: Repeat Until](#)
- 5.8) [Mini-Challenge: Search for Ice Part 3](#)
- 5.9) [Challenge: Ice Sample Collection](#)

6) Discrete Decisions with Virtual SPIKE Prime (3.0)

- 6.01) Introduction: Unmanned Cargo Vehicle
- 6.02) [Lesson: Turn If Not Clear](#)
- 6.03) [Mini-Challenge: Washed Out Roadway](#)
- 6.04) [Lesson: Move If Clear](#)
- 6.05) [Mini-Lesson: Operators](#)
- 6.06) [Mini-Challenge: Detour Detection](#)
- 6.07) [Lesson: Looped Decisions](#)
- 6.08) [Mini-Challenge: Clearing the Road](#)
- 6.09) [Lesson: Nested Decisions](#)
- 6.10) Program Flow with Decisions
- 6.11) [Challenge: Investigating the Landslide](#)

7) Capstone: Subterranean Challenge with Virtual SPIKE Prime (3.0)

- 7.1) Introduction: Subterranean Challenge
- 7.2) Challenge Overview
- 7.3) [Phase 1A: Drop Wifi Module](#)
- 7.4) [Phase 1B: Drive Around](#)
- 7.5) [Phase 1C: Initiate Drone Mode](#)
- 7.6) [Phase 1D: Mapping](#)
- 7.7) [Phase 2: Subterranean Challenge](#)

8) Continuous Decisions with Virtual SPIKE Prime (3.0)

- 8.1) Introduction: CoBots
- 8.2) [Lesson: Obstacle Detection](#)
- 8.3) [Mini-Challenge: Cobot Assist](#)
- 8.4) [Lesson: Line Tracking](#)
- 8.5) [Mini-Challenge: Line Track Lap](#)
- 8.6) [Challenge: Obstacle Line Tracking](#)