**Lesson created by the GMU-ODU CSforAll Team. For more information about**

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| **Unit 1 Lesson 5: Animate and Debug**  *3rd and 4th Grade* | | |
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| **Concept: Patterns and Sequencing** | | |
| **Vocabulary:**  • sequencing  • pattern  • Algorithm  • Commands  • Code  • Pair Programming  • Debugging | | |
| **Summary:**  In this lesson, students will plan and code their animation for their written instructions on making a drink. Students will also edit and debug their code and make sure their animation matches their writing and planning in CoCo level 2. | | |
| **Lesson Objectives (learning targets): I can…**  • Review Scratch Blocks and features of Coco Level 2  • Describe steps of debugging  • Set up all sections in Coco Level 2  • Code the animation for written instructions in Scratch  • Participate in pair programming to debug (run the code and use self-monitor check list) | | |
| **ELA Content Standard(s)** | **Computer Science Standard(s)** | |
| The student will   * Use organizational strategies to structure writing according to type. * Write a clear topic sentence focusing on main idea. * Elaborate writing by including supporting details. * Use transition words to vary sentence structure. * Revise writing for clarity of content using specific vocabulary and information. | The student will construct sets of step-by-step instructions (algorithms), both independently and collaboratively  a. using sequencing  b. using events | |

**this lesson and our CSforAll initiative, contact Dr. Amy Hutchison at** [achutchison1@ua.edu](mailto:achutchison1@ua.edu)

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| **Materials** |
| **Lesson materials:**   * Teacher [slide deck](https://www.dropbox.com/scl/fi/131ug57cflaj9ns79y516/Unit-1-Lesson-5-slides.pptx.pptx?dl=0&rlkey=y5lmpmxv9s7kcvpja32arwuw1#slide=id.p1) * Student [slide deck](https://www.dropbox.com/scl/fi/bn12yffbq1lg2s456tt49/Student-Copy-Unit-1-lessons-1-5-student-slide-deck.pptx?rlkey=cqy7wzoavtlfjn8gb9w7jnvfr&dl=0)   **Supplemental resources:** |

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| **Lesson Structure and Activities** |
| ***In the previous lesson, students should have begun working in Level 2 of CoCo on the “Unit 1 Drink Recipe” assignment. Please make sure all students still have access to this story and have saved their work so that column 1 is filled in.***  ***Students should use the same naming strategy for their final Scratch Project:***   * + *“Student Name + Unit # + Descriptor”, for example, “Johnny Unit 1 Drink Recipe”*   **(10 min) Warm-up & Introduction:**  **NOTE: All slides for this lesson are scripted so that, if needed, you can see exact definitions and instructions for teaching this lesson in the notes at the bottom of the teacher slide deck.**   1. (Optional) Introduce expectations and necessary resources (slides 1-3) 2. Review CoCo Level 2 briefly, highlighting the planning and self-monitor features (slides 4-5) 3. Ask students to turn to a partner (someone new from last lesson) and share their writing and ideas for their animations (No specifics yet, just some brainstorming) (slide 6) 4. Introduce today’s objectives (slide 7) |
| **(15-20 min) Direct Instruction & Guided Practice:**   1. Introduce Students to Debugging (slides 8-11) 2. Play [video](https://www.dropbox.com/s/pfe5k22akk2qjlg/How%20To%20Debug.mp4?dl=0) and share the steps to debugging (slide 12)    1. Describe your problem.    2. Hunt for bugs (what is it in your code causing the problem).    3. Try out some solutions and test.    4. Remember what you learned from the bug. 3. Remind students to use debugging as they work on planning and animating their writing 4. (Optional) If students finish early, they can work through these [optional debugging activities](https://www.dropbox.com/scl/fi/tqm5b6u81j0lqkj4hmb98/U3-Debugging-Activityv1.1.pptx.pptx?dl=0&rlkey=nz268pz6pozkfqhu0z7dovj51#slide=id.p3) and check their answer (Slide 13). |
| **(25 min) Independent Practice:**   1. Instruct students to open CoCo Level 2 project from last lesson (slides 15) 2. Play video for [using column 2 (“what I want to do”)](https://www.dropbox.com/s/3z94jj7yvmut0l7/Step%203_%20Choosing%20blocks%20in%20Scratch%20%281%29.webm?dl=0) to populate Scratch blocks on slide 16. 3. Students should finish setting up each section of CoCo Level 2 (Columns 2 &3) to prepare for Scratch (slide 17) 4. Before they begin to code, students should be mindful that their animation matches what they wrote and planned in CoCo. Use slides **18-24** to review tips to keep in mind before they begin coding in Scratch. As they work and when they finish, they should be looking for this consistency.    1. Remind students to always include a topic sentence to introduce their reader to the topic.    2. On slide 24, show students how to search for available backdrops in Scratch. If students can’t find the backdrop they’re looking for, you could also search the following websites for non-copyrighted images that students can upload to Scratch       1. Dribble: <https://dribbble.com/>       2. Library of Congress free to use and reuse: <https://loc.gov/free-to-use>       3. Flickr: <https://flickr.com/>       4. Unsplash: <https://unsplash.com/> 5. Share with them an examples and non-examples of Scratch project animating the hot chocolate recipe (slides 25-26). 6. Play video on [how to find the blocks shown in CoCo in Scratch](https://www.dropbox.com/s/o6jkkdj7j9sm9vg/Step%203a.webm?dl=0) (slide 27).    1. Practice moving between CoCo and Scratch by instructing students to find their first row of blocks in Scratch then pause. 7. Play video on [how to transfer the rest of your work from CoCo to Scratch and monitor progress](https://www.dropbox.com/s/286towan4c70kbp/Step%203b.webm?dl=0) (slide 28). 8. Instruct students to finish adding all their blocks to Scratch and coding their animation. As they finish each step, make sure students check off the self-monitoring checklist (slide 29). 9. In pairs (or independently), ask students to review and debug their code, making sure their animation matches what they planned and wrote in CoCo (slide 30).    1. Use the 4 steps of debugging 10. Instruct students to complete the self-evaluation in CoCo (slides 31-32) |
| **(5 min) Wrap up:**   1. Instruct students to share their complete animation in the teacher’ Scratch Studio (optional instructions in slide 34) 2. Have students share their final animation with a partner or group and receive and provide feedback. (slides 35-36) |
| **Assessment Strategy:**  Did the student…   * Review Scratch Blocks and features of Coco Level 2 * Describe steps of debugging * Set up all sections in Coco Level 2 * Code the animation for written instructions in Scratch * Participate in pair programming to debug (run the code and use self-monitor check list) |