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

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| **Unit 1 Lesson 1: Introduction to Patterns, Sequencing, and Coding**  *3rd and 4th Grade* | | |
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| **Concept: Patterns and Sequencing** | | |
| **Vocabulary:**   * sequencing * pattern * algorithm * commands * program * Code * Pair programming (Optional-[Video Link Here](https://www.dropbox.com/scl/fi/mbqb1i88iulbi5pbl18ih/Pair-Programming-1080p.mp4?rlkey=bdnmsj9rwfu2p81qsxwg9n2vw&st=jipkhrl3&dl=0)) | | |
| **Summary:**  In this lesson, students will be introduced to the basic commands of Scratch and sequencing a code. | | |
| **Lesson Objectives (learning targets): I can…**  • Review familiar patterns and sequences  • Review Scratch objects and blocks  • Identify and use the start block, speak block, think block  • Select and drag Scratch blocks to sequence a code (unplugged) | | |
| **Content Standard(s)** | **Computer Science Standard(s)** | |
| The student will use effective communication skills in group activities.  a) Listen attentively by making eye contact, facing the speaker, asking questions, and summarizing what is said.  b) Ask and respond to questions from teachers and other group members.  c) Explain what has been learned.  d) Use language appropriate for context.  e) Increase listening and speaking vocabularies. | The student will construct sets of step-by-step instructions (algorithms), both independently and collaboratively  a) using sequencing  b) using events | |

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| **Materials** |
| **Lesson materials:**   * [Teacher slide deck](https://drive.google.com/file/d/1lFVn3d5uaM6jNrilYzNNMvB8-nP2FBjg/view?usp=drive_link) * [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) * Scratch blocks ([hard copy](https://www.dropbox.com/scl/fi/8xu9xbrwuu8oelwgvu33x/Lesson-1-Printable-Scratch-Blocks.docx?dl=0&rlkey=tqn6d0vrh2cfzz2ob20me45k6) or [digital student copy](https://www.dropbox.com/s/pa9dopmem0qshyw/%28Student%20Copy%29%20Unit%201%20slides%20%281%29.pptx?dl=0)) * [Coding Activity - Sequences & Scratch Blocks](https://www.dropbox.com/scl/fi/kg68grx79webbgz81kpzo/U1D2Unplugged-Activity2.pptx.pptx?dl=0&rlkey=owayduqmso0favrx9ghj1f8yf#slide=id.p1) * Teachers-Remember you need to create a new Scratch Studio for CoCo projects!   **Supplemental resources:** |

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| **Lesson Structure and Activities** |
| **(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 lesson expectations and lesson resources (slides 1-3) 2. Guide students to create a pattern of any kind with the provided Scratch blocks (digital or printed) (slide 5) 3. Ask students to share what type of pattern they made with a partner (slide 6). 4. Introduce the concept of patterns (Slides 7-10) and define patterns and sequences with examples. 5. Introduce today’s objectives (slide 11). |
| **(15-20 min) Direct Instruction & Guided Practice:**   1. Introduce vocabulary: “command” and “algorithm” and “code” (Slides 12-22) 2. Explain that patterns and sequences are very important in Computer Science (slide 23)    1. “We can see examples of patterns and sequences in algorithms in Scratch”    2. (Optional) Briefly explain that Scratch is a program that allows you to code and create animations and games. Ask students to describe what the blocks on the slide might do in Scratch (slide 24). 3. Introduce and model how to use the following Scratch blocks: (slides 25-27)    1. Start Block [(explainer video)](https://www.dropbox.com/scl/fi/5or5l54rceoihkz76nm8e/When-greenflag-block.mp4?rlkey=pjphshzjlbfvmng8e62buqlqo&st=zjbfppu6&dl=0)    2. Think Block [(explainer video)](https://www.dropbox.com/scl/fi/ewbstphkn5qs95ewfq4ch/ThinkCoCo_Nov16.mp4?rlkey=2kb9u5ak6al1pxbsp5fkc3zdv&st=ujw3xy72&dl=0)    3. Speak Block [(explainer video)](https://www.dropbox.com/scl/fi/j7nj4qc4cpop3ojsi7vax/SayForSecondsCoCo_Nov16.mp4?rlkey=6sob21d6v5l438yzehmqod5z3&st=l3pa0ngz&dl=0) 4. Guide Students to log into Scratch and try using each of these blocks. Encourage students to create a sequence with the blocks. (slide 28)    1. Optional: Students can work in pairs or independently    2. Optional: Have students share to teacher Scratch 5. Review how Scratch blocks can be used to create a pattern and sequence as students work in Scratch (slide 28) |
| **(25 min) Independent Practice:**  *Students may work independently or in pairs (pair programming).*   1. *Optional: if students are working in pairs, you may wish to play the video explaining pair programming in computer science on slide 31.* 2. Instruct students to access their student slide decks. Students will practice putting code in the correct sequence by solving [Coding Puzzles- Sequence](https://www.dropbox.com/scl/fi/kg68grx79webbgz81kpzo/U1D2Unplugged-Activity2.pptx?rlkey=owayduqmso0favrx9ghj1f8yf&st=enqurq2d&dl=0) (slide 30-32)    1. Teacher’s note: if your students are not working on their own devices, an unplugged alternative is to print the slides and ask students to number the blocks in the correct order. 3. Review the answer key to each coding puzzle. (slide 33) |
| **(5 min) Wrap up:**  Review today’s vocabulary terms and share the [“Careers in Tech” Video](https://www.dropbox.com/scl/fi/xpni0btxu64wc7lxduu6g/Careers-in-Tech_-My-name-is-Tess.mp4?rlkey=x1o44aiohshmolc95kubxpwwv&st=6pnvlwwf&dl=0). Remind students that anyone can be a computer scientist! (slides 34-37)  (Optional) Ask students to share their Scratch work to your studio. Check to make sure each student successfully logged in, shared their project, and added it to the designated Scratch studio (slides 38-40). |
| **Assessment Strategy:**  Did the student…   * Review familiar patterns and sequences * Review Scratch objects and blocks * Identify and use the start block, speak block, and think block * Select and drag Scratch blocks to sequence a code |