

**Lesson created by the GMU-ODU CSforAll Team. For more information about this lesson and our CSforAll initiative, contact Dr. Amy Hutchison at** [achutchison1@ua.edu](mailto:achutchison1@ua.edu)

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| **Lesson 1: Introduction to Computer Science (~45 min)**  *Grades 3-4* |

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| **Concept:** | |
| **Vocabulary:**   * Computer Science * Coding * Computer Scientists * Patterns * Sequencing * Computational Thinking | |
| **Summary:**  In this lesson, students will explore what Computer Science is and be introduced to the computational thinking skills of patterns and sequencing. They will also learn how coding and writing processes mirror one another and be introduced to Scratch. | |
| **Lesson Objectives (learning targets): I can…**   * Describe characteristics of Computer Science (CS) * Define the computational thinking skills of patterns and sequencing * Describe a pattern I follow in my own life * Change my sprite and backdrop in Scratch * Identify and understand the purpose of the start, speak/say, and switch costume blocks in Scratch * Believe anyone can be a computer scientist! | |
| **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:**   * Chromebook/Laptop * Internet Access * Scratch Offline Editor (app) * [Teacher slides](https://drive.google.com/file/d/1cvz0-UEJFtzM7Z5m8ZkU_Nj3dq0u5taF/view?usp=drive_link) * Hard copies of the [printable Scratch blocks](https://www.dropbox.com/scl/fi/dfzs0syb8j7sbzaz12wzt/Lesson-1-Printable-Scratch-Blocks.docx?dl=0&rlkey=98ajk6zje2r8fuzbbvf6vyqqo)   **Supplemental resources:** |

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| **Lesson Structure and Activities** |
| **(5 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.**   * Optional: Introduce lesson, learning goals, and resources (Slides 2-4) * Ask students to share what they know about the following words:   + Computer Science (slide 6)   + Coding (slide 7) * Next, explain that we are going to be learning more about Computer Science and share the video (watch until 1:09)(slide 8) * Explain what a computer scientist does (slide 9) * Check off completed lesson objectives as lesson proceeds (slide 10) |
| **(30 min) Direct Instruction & Guided Practice:**  Introducing Patterns & Sequencing (10 min)   * Introduce the five **computational thinking** skills (slides 11-13) * Introduce concepts of patterns and sequencing (slides 14- 18) * Identify patterns in writing and explore the overlaps between writing and coding (slides 19-22) * Instruct students to turn and talk to discuss the patterns they follow to get ready for school (slide 23) * Show the slide with checked off lesson objectives (slide 24) * Reiterate that there are many connections between writing and coding (slide 25) * Explain that we can code in Scratch using blocks (slide 26) * Play an introductory video to Scratch (slide 27)   Introducing Scratch blocks (20 min)   * Introduce terms: blocks, sprite, backdrop (slide 29) * Describe the key components of the Scratch interface (slides 30-41) * Demonstrate how to change Scratch sprite and backdrop (slides 42-50) * Guided Practice: Have students practice adding/changing a sprite and adding/changing a backdrop (slide 51) * Introduce Scratch blocks:  [start block](https://www.dropbox.com/scl/fi/5or5l54rceoihkz76nm8e/When-greenflag-block.mp4?rlkey=pjphshzjlbfvmng8e62buqlqo&st=zjbfppu6&dl=0),  [think block](https://www.dropbox.com/scl/fi/ewbstphkn5qs95ewfq4ch/ThinkCoCo_Nov16.mp4?rlkey=2kb9u5ak6al1pxbsp5fkc3zdv&st=ujw3xy72&dl=0),  [speak/say block](https://www.dropbox.com/scl/fi/j7nj4qc4cpop3ojsi7vax/SayForSecondsCoCo_Nov16.mp4?rlkey=6sob21d6v5l438yzehmqod5z3&st=l3pa0ngz&dl=0),  [switch costume block](https://www.dropbox.com/scl/fi/1idrp8km7xd8n4pvvs758/SwitchCostumeCoCo_Nov16.mp4?rlkey=0shwn17gqhdy441epxfvjws3d&st=ao4lv932&dl=0) (slides 53-58) |
| **(10 min) Independent Practice:**   * Instruct students to open Scratch, find the new blocks, and arrange their Scratch code in a pattern; they may design their pattern around the color of the blocks, the shape and size of the blocks, or the words in the blocks. They must also include a start block (slides 59-61) |
| **(2 min) Wrap up:**   * Instruct students to pick one CT skill and share with a partner or small group for a few minutes about how this skill helps them think like a computer scientist. (slide 63) |
| **Assessment Strategy:**  Did the student…   * Describe characteristics of Computer Science (CS) * Define the computational thinking skills of patterns and sequencing * Describe a pattern I follow in my own life * Change my sprite and backdrop in Scratch * Identify and understand the purpose of the start, speak/say, and switch costume blocks in Scratch * Believe anyone can be a computer scientist! |