## This is a picture of the CS For All logo.

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

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| **Lesson 3: Decomposition & Abstraction** | | **Grade Level: 1** |
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| **Concepts: Decomposition & Abstraction** | | |
| **Vocab:**   * Decomposition * Abstraction | | |
| **Summary:** In this lesson, students will learn about abstraction and decomposition. They will be able to explain how to decompose a story and abstract a story sequence. They will practice abstraction and decomposition by following steps for drawing a monster. | | |
| **Lesson Objectives (learning targets):**  **I can…**   * Define and give examples of abstraction * Define and give examples of decomposition * Follow steps to draw a monster * Use abstraction to identify the most important features of my monster | | |
| **VDOE English Standard(s)** | **Computer Science Standard(s)** | |
| **Communication and Multimodal Literacies:**  1.1 The student will use oral communication skills.  i) Retell information shared by others.  **Reading**  1.9 The student will read and demonstrate comprehension of fictional texts.  g) Summarize stories and events with beginning, middle, and end in the correct sequence. | 1.1 The student will construct sets of step-by-step instructions (algorithms) both independently and collaboratively a. using sequencing;  1.3 The student will analyze, correct, and improve (debug) an algorithm that includes sequencing and simple loops, with or without a computing device. | |

| **Materials** |
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| * Teacher slide deck (see website) * [First Grade Word Wall Cards](https://www.dropbox.com/scl/fi/uh16g18cl9dqcvmz6aag7/G1-Word-Wall-Cards.docx?dl=0&rlkey=q0lstfr54vnwnrgwxgkynyjg2) |

| **Lesson Structure and Activities** |
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| **Warm-up/Bell Ringer Activity: (5-10 min)**  **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.**   * Review Vocabulary with Emphasis on Patterns **(Slides 6-8)**: computer science, sequence, debug |
| **Direct Instruction: (10 min)**   * Introduce new vocabulary: abstraction and decomposition. Give examples of abstraction and decomposition in connection with the previous lesson’s retelling activity (slides 9-14). |
| **Guided Practice: (5-10 min)**   * Ask students how they would “decompose” the process of making a peanut butter and jelly sandwich (slides 15-16). * *Wait time. Allow students to offer responses. If time, allow students to turn and talk with a neighbor.* * Review steps for making a peanut butter and jelly sandwich (slide 17). |
| **Independent Practice (20-30 min)**  **Monster Maker activity**   * Introduce the “monster maker activity.” Students will decompose the task into a series of steps (slide 18-20). * The class will apply abstraction to only draw the most important features of the monster (slide 21). * After drawing their monsters, instruct students to fill in the following sentence: “My monster has a \_\_\_\_\_\_\_\_\_ head, \_\_\_\_\_\_\_\_ eyes, a \_\_\_\_\_\_\_\_nose, \_\_\_\_\_\_\_\_ ears, and a \_\_\_\_\_\_\_\_\_\_ mouth.” (slide 22)   *Optional extension:*   * Instruct students to write a set of instructions for a partner to follow in order to draw the monster. Their instructions can use the following template:   + Draw a monster with a \_\_\_\_\_\_\_\_\_ head, \_\_\_\_\_\_\_\_ eyes, a \_\_\_\_\_\_\_\_nose, \_\_\_\_\_\_\_\_ ears, and a \_\_\_\_\_\_\_\_\_\_ mouth. |
| **Wrap up: (2 min)**   * Review the definitions of abstraction and decomposition (slides 23-24). |
| **Assessment Strategy:** Evaluate students’ monster drawings with a teacher-made rubric or focusing on a target skill based on the student’s area of need. |