

Algorithms & Programming: Control Grade: 2

Standard .2.AP.C.01

Create **programs** using a programming language, robot device, or **unplugged** activity that utilize sequencing and repetition to solve a problem or express creative ideas.

Essential Skills

Recognize that a **computer program** is a set of instructions in a specific sequence.

Create a simple computer program, including repeated sequences, to express an idea or solve a problem. Students can be supplied with the commands/code to create the program.

Essential Questions

How can you show the order of a list of steps or a set of instructions?

Why is sequence of events important in solving a problem, telling a story or writing a **computer program**?

How can you show that some or all of a list of steps or a set of instructions should be repeated?

Explanation

Students should understand that the order of steps in a set of instructions affects the outcome or end result of the project or **program**. When instructions are repeated multiple times, loops can be used to eliminate redundancy. Students can experiment with different sequences as well as different loop configurations to determine their effect on the final outcome. Sequencing terms being used in language arts can be reinforced when addressing this standard.

Think of this as similar to....

How might a story change if an event from the middle of a story happened when the story began?

Implementation Examples—What would this look like in the classroom?

Title	Description	Link	Content Connection & Notes
Dancing Alone	<p>Grade K- Students use Scratch Jr. to create a silly dance for Scratch Cat using motion blocks. Students are introduced to creating sequences of code in Scratch Jr. Students should be able to identify the blocks at the beginning, middle and end of the program they create and in the dance the Scratch Cat does.</p> <p>Grade 1- Students should identify how the order of the motion blocks determine the order of the dance, predict how changing the order of the blocks will change the dance and test their predictions. Any patterns or repeated block sequences should be identified as such.</p> <p>Grade 2- Students should use at least one loop in the dance program.</p>	Dancing Alone	This lesson also aligns with CS AP.V.01, AP.PD.01, AP.PD.03 and AP.PD.04 and is similar to Getting Loopy
Repeated Addition	Grade 2 --Students work in pairs and have each student create arrays. They then give the arrays to their partner who will use repeated addition expressed as a loop to calculate the total number of items. Students can do this as an unplugged activity, or work in Scratch Jr.		This lesson also aligns with MATH 2.OA.C.4
Maze Loops	Grade 2 --In this Code.org Angry Birds activity students identify repeated sequences and use loops to make their code more efficient as the bird tries to catch the pig.	Maze Loops	A similar lesson is Loops with Rey and BB8

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These annotations are a collaboration between [Maryland Center for Computing Education](#) and the [Maryland State Department of Education](#).