Count-controlled iteration

Year 7 – Programming essentials in Scratch: part I

National Centre for Computing Education

KNOWING WHAT YOU KNOW

Go to:

https://joinmyquiz.com
Wait for the join code

Make sure to write your name and grade level properly

Example:

MY THO NGUYEN 6.7

What patterns can you spot?

What is the program going to output?

Can you spot any repetition and/or any patterns?

think/write/pair/share

Lesson 5: Count-controlled iteration

In this lesson, you will:

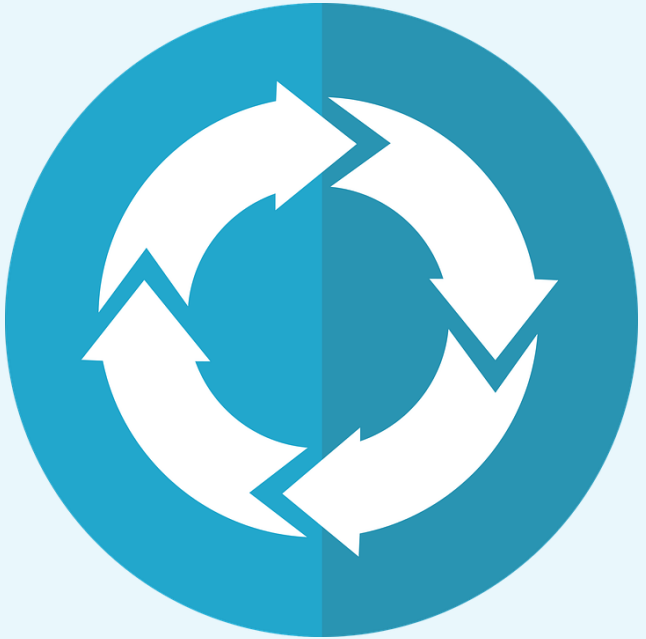
- Define iteration as the process of repeatedly executing instructions
- Describe the need for iteration
- Identify where count-controlled iteration can be used in a program
- Implement count-controlled iteration in a program
- Detect and correct errors in a program (debugging)

Iteration

Iteration in computing is the process of repeatedly executing instructions

Being able to repeatedly execute instructions is commonly referred to in computing as **iteration.**

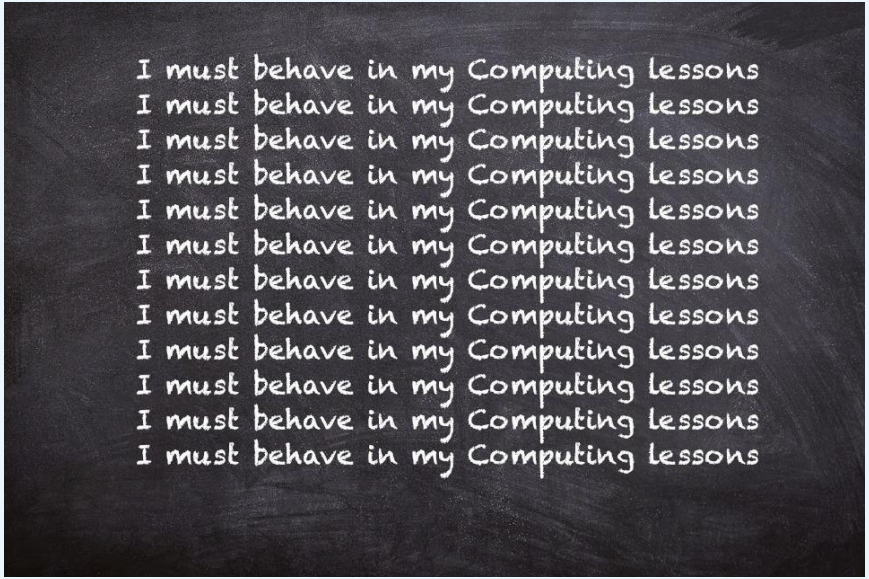
Can you think of any repetitive tasks that computers or humans might be able to perform?



The repetitive task

Think about if a teacher tells you to write lines as a punishment. What instructions would they give?

1. What to write
2. That they want you to write this repetitively
3. How many times to do this **or** when to stop



Count-controlled or condition-controlled

Count-controlled

Count-controlled iteration will execute the commands a set number of times

Example: “Write out lines 100 times”

Condition-controlled

Condition-controlled will execute the commands until the condition you set is no longer being met

Example: “Write out lines until 4pm”

The counting cat

Let's work on the counting program from the beginning of the lesson.

Together we will work through the steps of how to add **iteration** to this program to make it more 'elegant'.

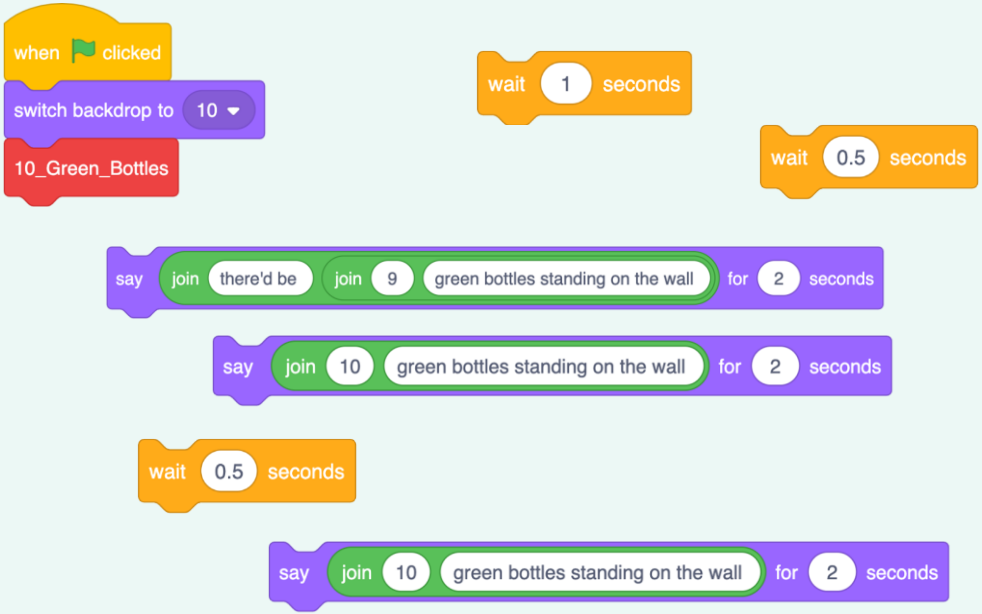
Watch the demonstration and when instructed, complete the steps you have just seen.

ncce.io/CountingCat

Ten green bottles

Your task is to use Scratch code to make a version of the nursery rhyme *Ten Green Bottles.*

1. Open the program and place the blocks together to play the first verse of the nursery rhyme
2. Modify the program so that it uses iteration to play the full nursery rhyme



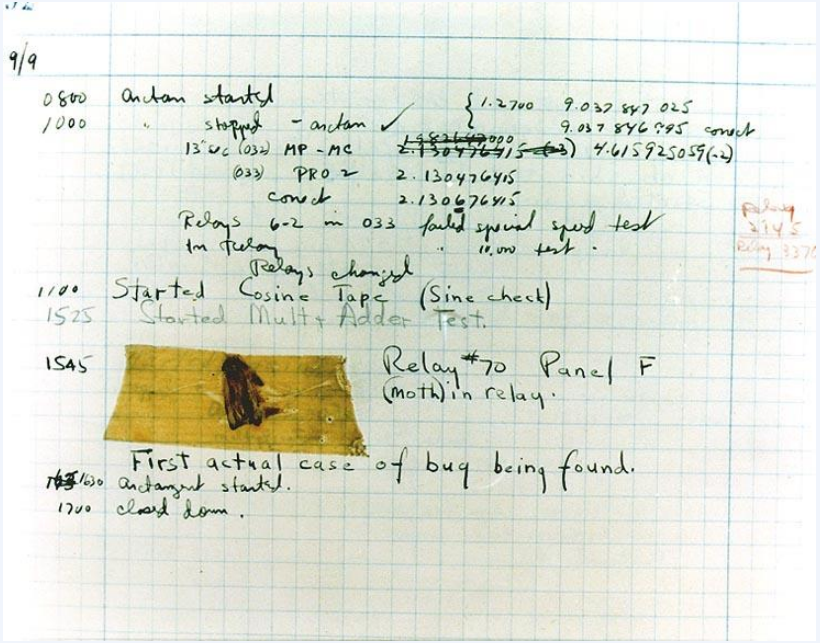
ncce.io/10GreenBottles

Pair programming: driver/navigator swap roles every five minutes

Computer bugs

A bug in a computer system is ***code*** that causes your program to behave unexpectedly.

The first recorded bug in a computer system was part of work done by famous computer scientist Grace Hopper.

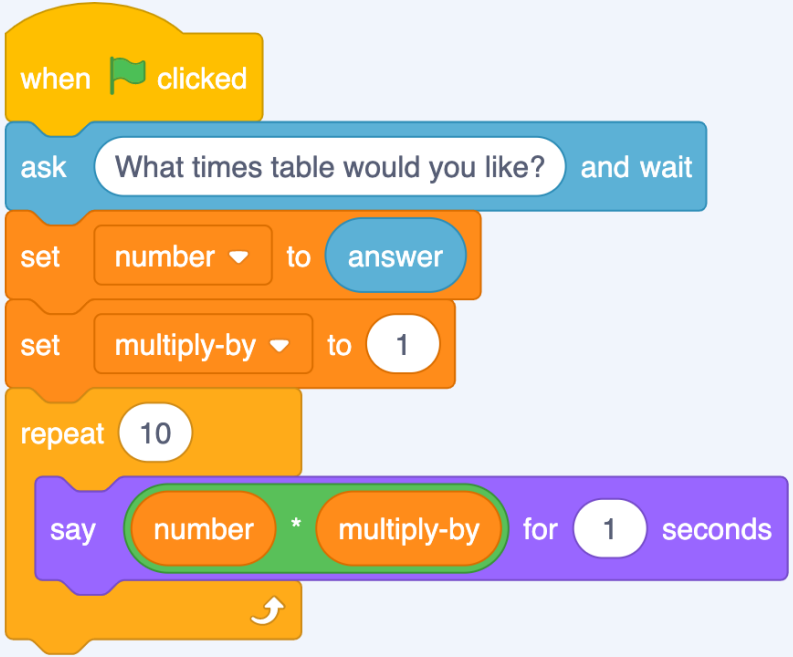


Debugging

Debugging is the process of finding an error in your code and taking steps to fix the problem.

The code to the right has a problem that needs debugging.

Use your worksheet to help you find the bug and suggest a solution.



KNOWING WHAT YOU LEARNED

Go to:

https://joinmyquiz.com
Wait for the join code

Make sure to write your name and grade level properly

Example:

MY THO NGUYEN 6.7

Next lesson

In this lesson, you...

Learnt the term iteration

Looked specifically at count-controlled iteration

Learnt techniques to help debug code

Next lesson, you will...

Solve a problem by combining all of the new programming skills that you have developed over the past five lessons