WEEK 3:
VARIABLES AND BUGS

INTRO GAME:

Simon Says game, but with scratch statements!

Example:

Simon says put your hand on your head.

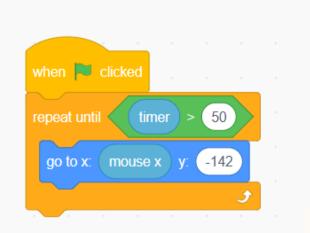Simon says that *if* you are in third grade, put your hand on your tummy.

Simon says to clap your hands, and repeat until we say "stop."

WORKSHOP: CATCHING GAME

Steps:
1. Make a new project.
2. Make a sprite and call it "bucket."
   1. Now design your bucket! 3 min
3. Move the sprite to the bottom of the screen.

Bucket

WORKSHOP: CATCHING GAME

4. Start your code!
5. We want the bucket to follow your mouse until time runs out, so go to "control" and get the "repeat until" block.
6. Go to "operators" and drag in the ">" operator.
7. Go to "sensing" and drag it in to the empty space.
8. Go to "motion" and drag in this block.
9. But we want it to move according to the mouse, so now go to "sensing" and drag in "mouse x."

Your code should look like this!
Now press the green flag and see what happens.

WORKSHOP: CATCHING GAME

10. Now we need to make the things we're catching. Make a new sprite and call it "Item."

11. Draw your item! 3 min

WORKSHOP: CATCHING GAME

13. Put a "when green flag clicked" block from "events."
14. Do the same thing we did last time so it will stop when the timer is over.
15. Now go to "control" and put "create clone of myself."
16. But now it will create too many clones! Put a "wait 1 second" from control.
17. Go to "operators" and put a "pick random." Now clones will be created randomly.
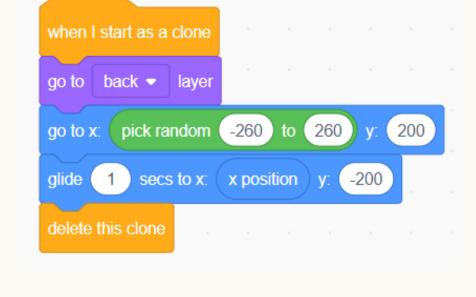
WORKSHOP: CATCHING GAME

18. The clones need to fall down. Go to control and drag in "when I start as a clone."

19. Go to motion and drag in the "go to" block. Set y to **200.** Then get a "pick random" from "operators" and put it in like this. Now it will start in a random place.

20. Put in the "glide" block and then put "x position" in the x slot and -200 in the y slot.

21. When it has gotten to the bottom, we want the clone to be gone. Put "delete this clone" from control.

WORKSHOP: CATCHING GAME

21. Now try pressing the green flag.
22. The items might be falling in front of the bucket. If you want them to fall into the bucket, add "go to back layer" from looks.

INTRODUCING VARIABLES

[What Are Variables and Lists in Scratch? (Part 1)| Tutorial](#)

WORKSHOP: CATCHING GAME

23. Finally, we want to keep score of how many items you catch. In the items sprite, drag in a new "when I start as a clone."
24. We want it to wait until it touches the bucket, so drag in "wait until" and then "touching' from sensing.
25. Change "mouse-pointer" to "Bucket."
26. Drag in "change my variable by one." Click the block to rename the variable to score.
27. We also want clones to disappear when they hit the bucket, so put "Delete this clone."

WORKSHOP: CATCHING GAME

28. We need to make sure score always starts at 0, so add this block to the when green flag clicked.

WORKSHOP: CATCHING GAME

29. Now we need a way to show the score. We can do this by adding the "show variable Score."

EDITS YOU CAN MAKE

- You can change the design of the items or the bucket!
- Ask us if you want to make multiple different items fall.
- Make the amount of seconds smaller to make it more difficult, and make it bigger so that it is easier.

BREAK TIME

20 minute break!

WORKSHOP: NAME RESPONSE

Let's learn how to have a sprite ask you for your name and then say hello "your name!"

INTRODUCING... BUGS

What are bugs?

Bugs are errors in programming. An error is when the program does not do what you want it to do. Real bugs and programming bugs are both **annoying!** But luckily, there is something called **debugging:** finding and removing errors.

EXAMPLE: PROGRAM THE ROBOT

When the robot does something we do not want it to do, that is called a **bug.** Let's demonstrate!

Bugs are **mistakes in instructions.**

DEBUG ME #1

Debug-It 1.1 on Scratch

DEBUGGING PRACTICE

Debug-It 1.1 on Scratch

Debug-It 1.2 on Scratch

Debug-It 1.3 on Scratch

Debug-It 1.4 on Scratch

Debug-It 1.5 on Scratch

DEBUGGING PRACTICE

Debug It! 2.1 on Scratch

Debug It! 2.2 on Scratch

Debug It! 2.3 on Scratch

Debug It! 2.4 on Scratch

Debug It! 2.5 on Scratch

DEBUGGING PRACTICE

Debug-It 3.1 on Scratch

Debug-It 3.2 on Scratch

Debug-It 3.3 on Scratch

Debug-It 3.4 on Scratch

DEBUGGING PRACTICE

Debug-It 4.1 on Scratch

Debug-It 4.2 on Scratch

DEBUGGING WORKSHOP FINAL

There are **3 bugs** in this project that need fixing.
Untitled project on Scratch

First: **what is the problem?**

Second: **what is causing the problem?**

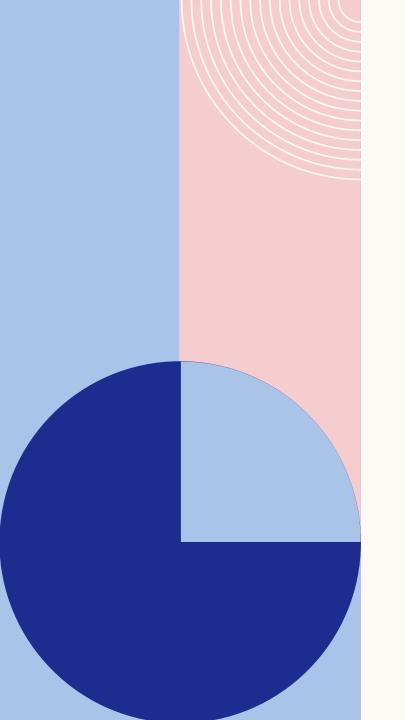Third: **how do you fix the problem?**

DEBUGGING WORKSHOP FINAL

Bug 1: The "catch me" sprite wasn't hidden. Fix: **hide** block.

Bug 2: The items are flying the wrong way! Fix: change numbers.

Bug 3: The score variable was not being reset, so it kept increasing.

BREAK TIME

20 minute break!

REFLECTION AND JOURNAL