UNIT 1 LESSON 1

INTRODUCTION TO PATTERNS, SEQUENCING, AND CODING

3RD & 4TH GRADE

Award #1837380

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

SUMMARY AND STANDARDS

Summary:

In this lesson, students will be introduced to the basic commands of Scratch and sequencing a code.

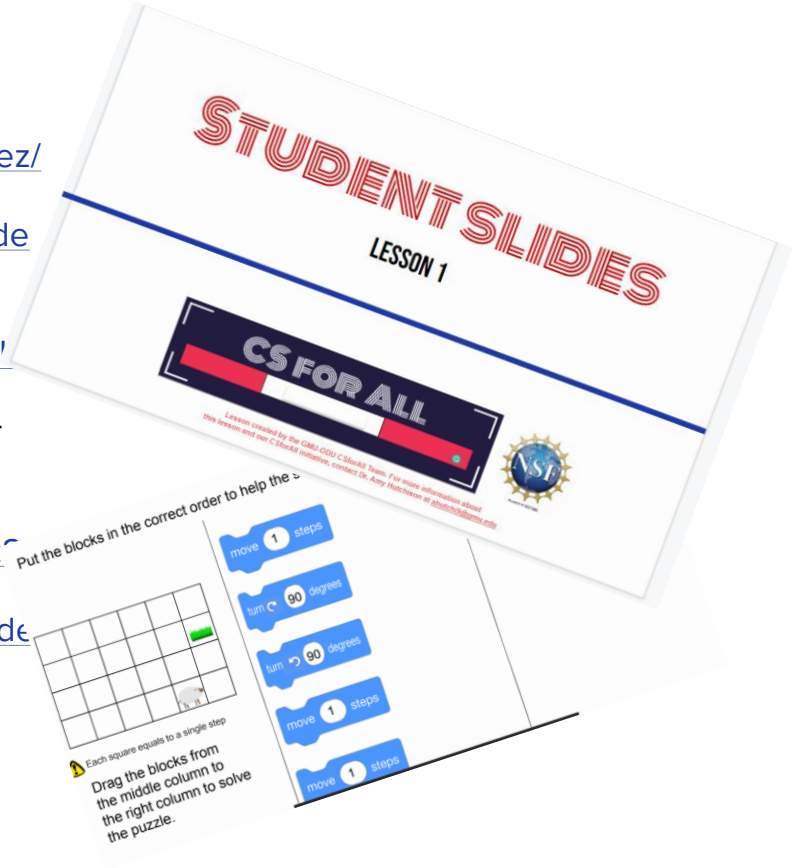
Content Standards:
The student will use effective communication skills in group activities.
a) Listen attentively by making eye contact, facing the speaker, asking questions, and summarizing what is said.
b) Ask and respond to questions from teachers and other group members.
c) Explain what has been learned.
d) Use language appropriate for context.
e) Increase listening and speaking vocabularies.

CS Standards:
The student will construct sets of step-by-step instructions (algorithms), both independently and collaboratively
a) using sequencing;
b) using events.

MATERIALS AND RESOURCES NEEDED FOR THIS LESSON:

- Teacher slide deck
- Student slide deck: https://www.dropbox.com/scl/fi/6bebs9rl80ctsidtu6kez/Student-Copy-Unit-1-slides.pptx?dl=0&rlkey=ymvw5rdnpvm037db60xjevpfc#slide=id.p1
- Scratch blocks: hard copy (https://www.dropbox.com/scl/fi/8xu9xbrwuu8oelwgvu33x/'sson-1-Printable-Scratch-Blocks.docx?dl=0&rlkey=tqn6d0vrh2cfzz2ob20me45k6) or digital copy in student slides
- Coding Activity: https://www.dropbox.com/scl/fi/kg68grx79webbgz kpzo/U1D2Unplugged-Activity2.pptx?dl=0&rlkey=owayduqmso0favrx9ghj1f8yf#slide=id.p1

- *Teachers: Remember to create a new Scratch Studio for CoCo projects!* (Instructions for students on slides 38-39)



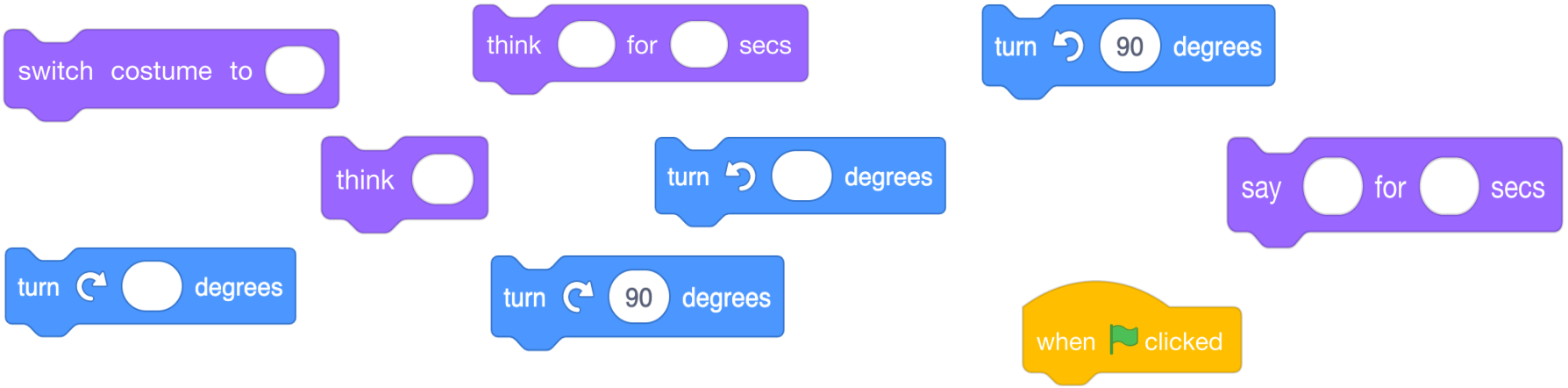
WARM UP

LET'S GET STARTED: WARM-UP

We are going to create a **pattern** with these fun blocks.

Remember, a **pattern i**s something that repeats, like a design or sequence.

Consider designing your pattern around: the color of the blocks, the shape and size of the blocks, or the words in the blocks.



TURN & TALK: SHARE YOUR PATTERNS

Pattern: a repeated way in which something happens

Roses are red.	A
Violets are blue.	B
I'm out of my head	A
With thinking of you.	B

What is the next number in this pattern?

10, 12, 15, 19, 24, ____

A. 25 B. 27

C. 29 D. 30

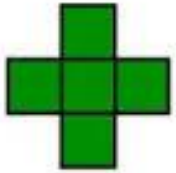


Figure 1

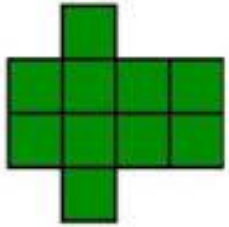


Figure 2

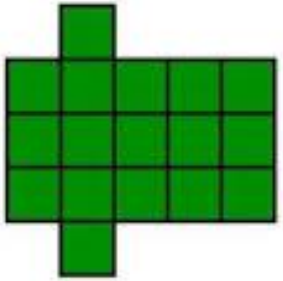


Figure 3

INTRODUCTION: EXAMPLES OF PATTERNS --THINGS THAT REPEAT--IN REAL LIFE

SEQUENCE: AN ORDERED SET OF INSTRUCTIONS

SEQUENCE FOR MAKING A BOWL OF CEREAL

1

2

3

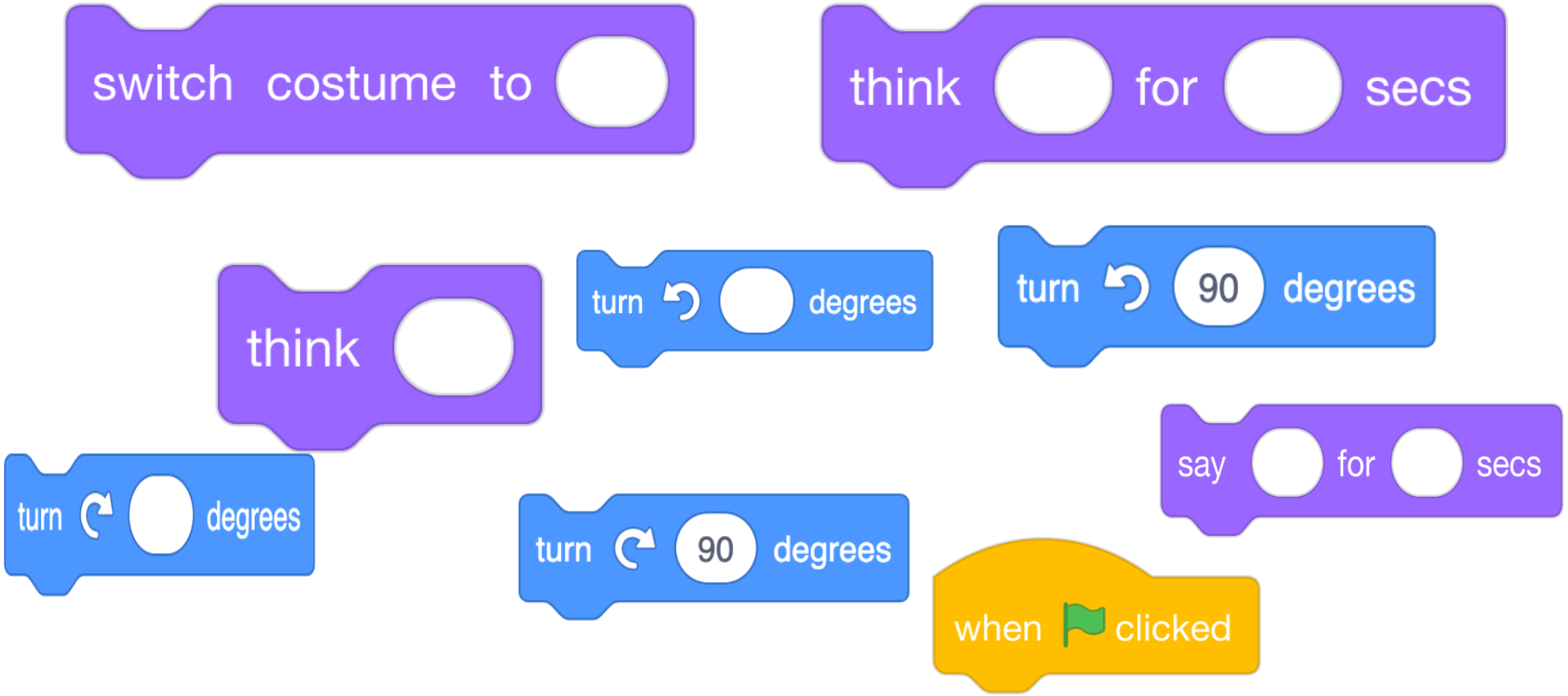
LESSON OBJECTIVES: I CAN...

- ❏ Review familiar patterns and sequences
- ❏ Review Scratch objects and blocks
- ❏ Identify and use the start block, speak block, think block
- ❏ Select and drag Scratch blocks to sequence a code (unplugged)

VOCABULARY

COMMANDS: TELL A PERSON OR COMPUTER WHAT TO DO

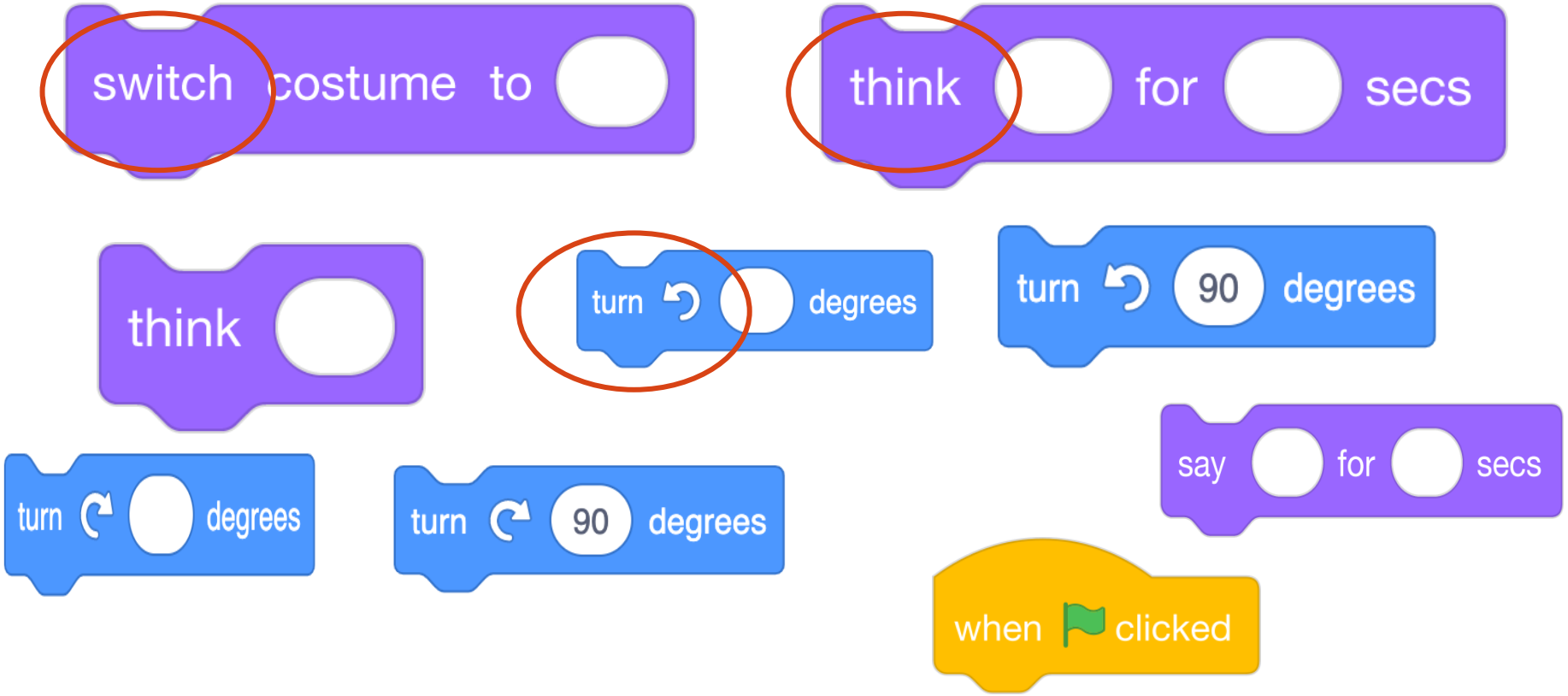
COMPUTER COMMANDS



CODE:

THE LANGUAGE THAT COMPUTER SCIENTISTS CREATE AND USE TO TELL A COMPUTER WHAT TO DO.

COMPUTER COMMANDS



ALGORITHM: A LIST OF STEPS TO FINISH A TASK

CODING AN ALGORITHM

This algorithm tells the computer to make the sprite say “Hi!” for 2 seconds then turn right 90 degrees.

COMMANDS: TELL A PERSON OR COMPUTER WHAT TO DO

ALGORITHM: A LIST OF STEPS TO FINISH A TASK

CODE: THE LANGUAGE THAT COMPUTER SCIENTISTS CREATE AND USE TO TELL A COMPUTER WHAT TO DO.

COMMANDS MUST BE IN THE CORRECT SEQUENCE

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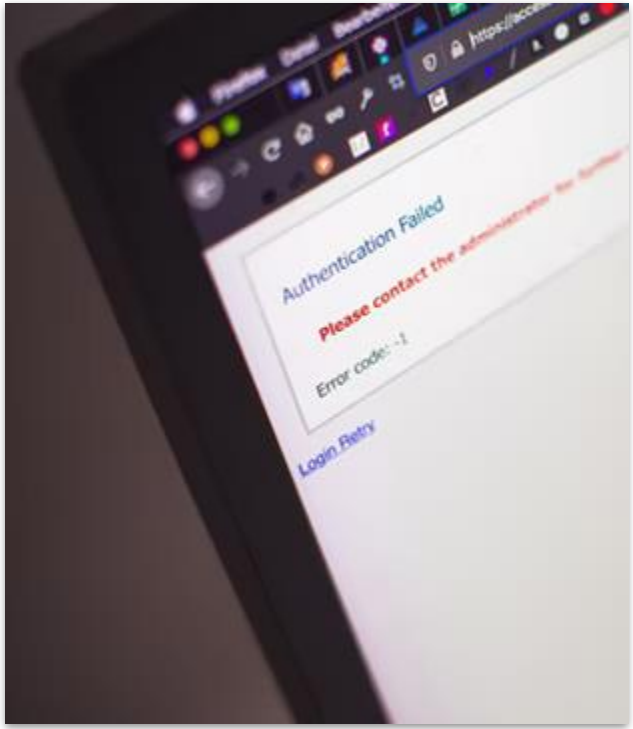
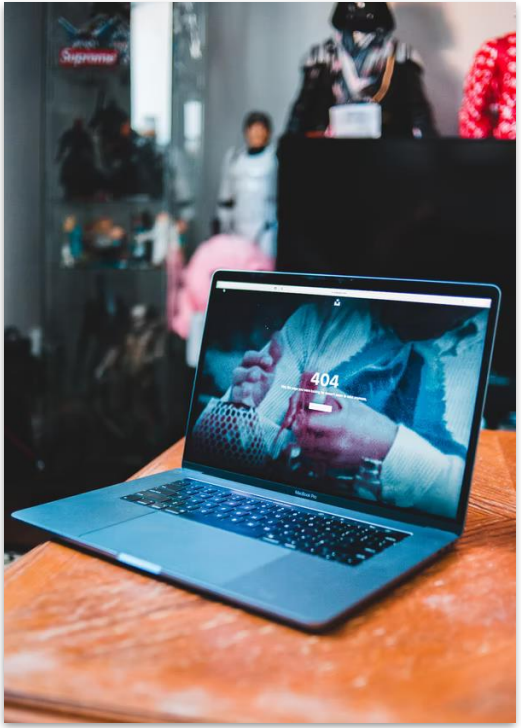
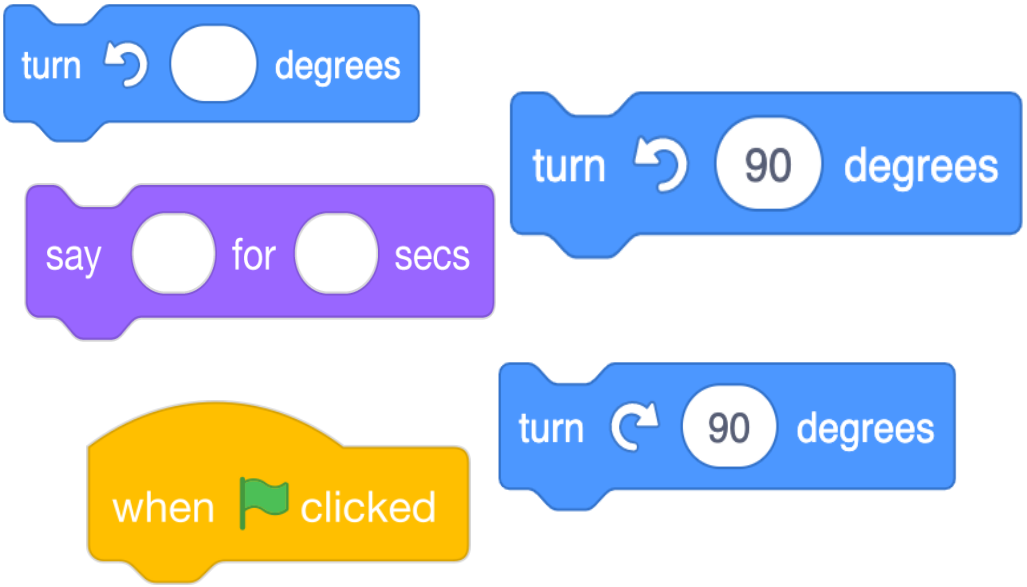
WHY DO PATTERNS AND SEQUENCES MATTER IN COMPUTER SCIENCE (CS)?





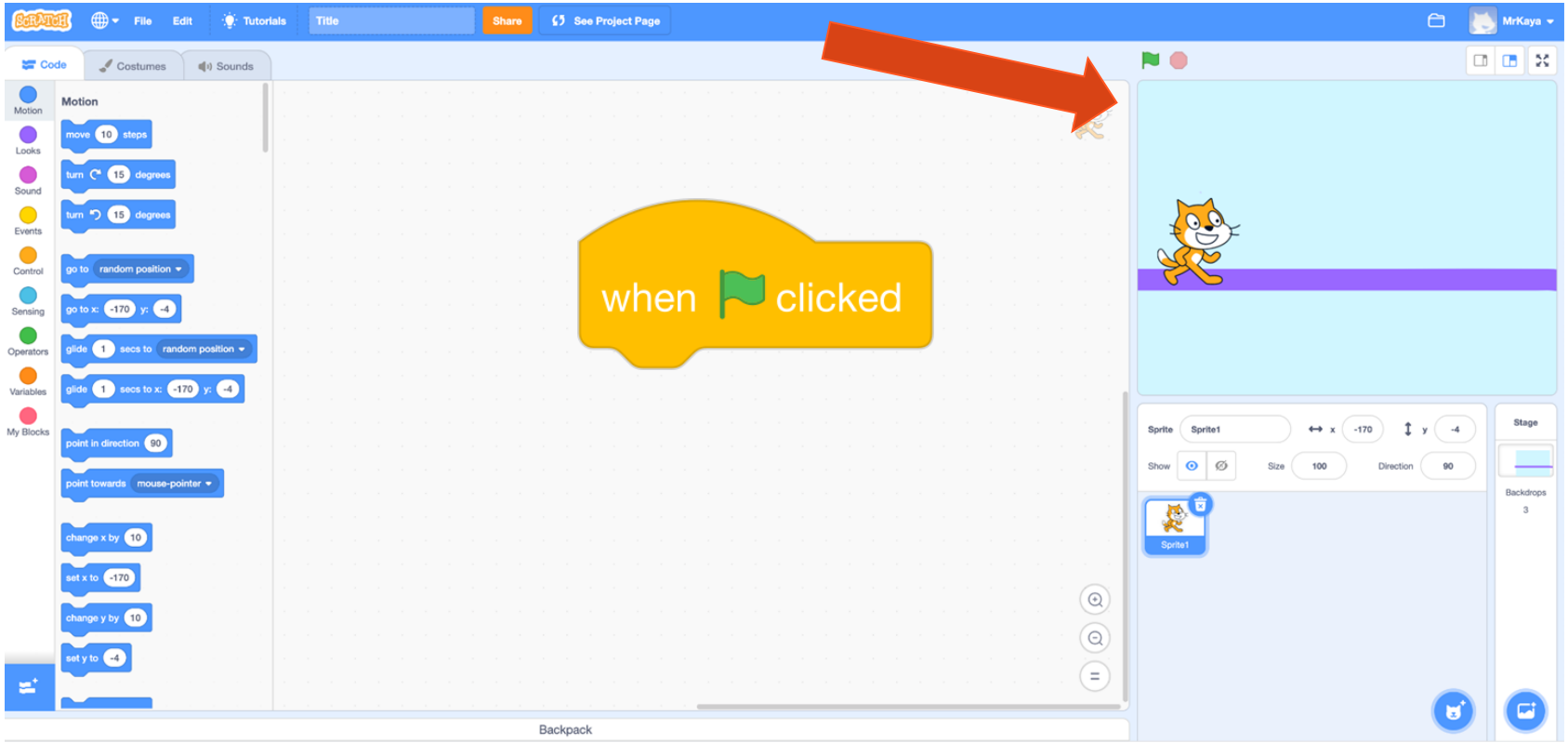
WE CAN WRITE CODE IN SCRATCH



PAUSE AND SHARE (2-5 MINUTES)

https://www.dropbox.com/s/n1flwnn68llvrku/greenflag.mp4?dl=0

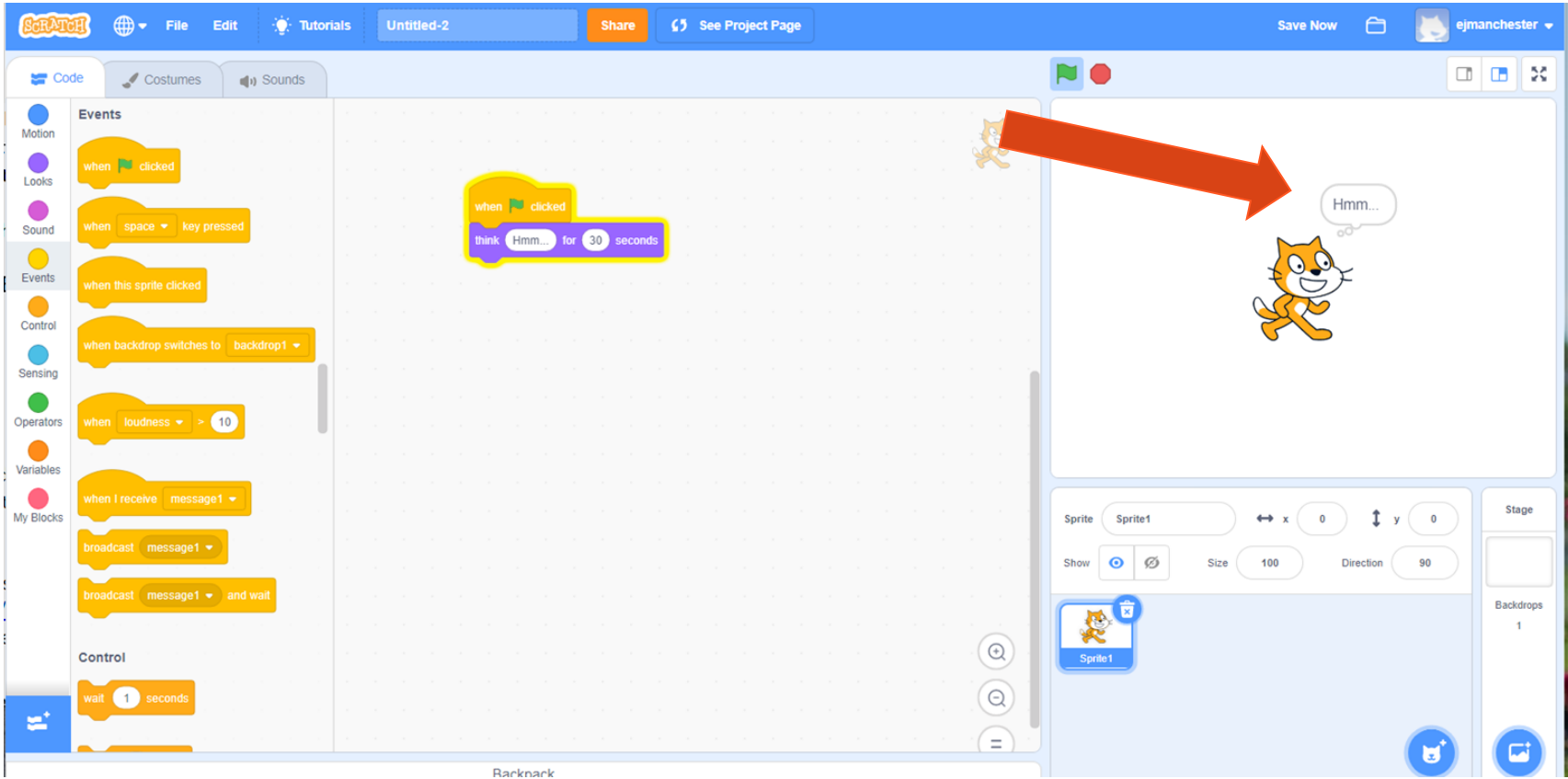
START BLOCK (EXPLAINER VIDEO)



Tells your code to run when you click the green flag in Scratch.

https://www.dropbox.com/s/xgv1w5kl8wvrby4/ThinkCoCo_Nov16.mp4?dl=0

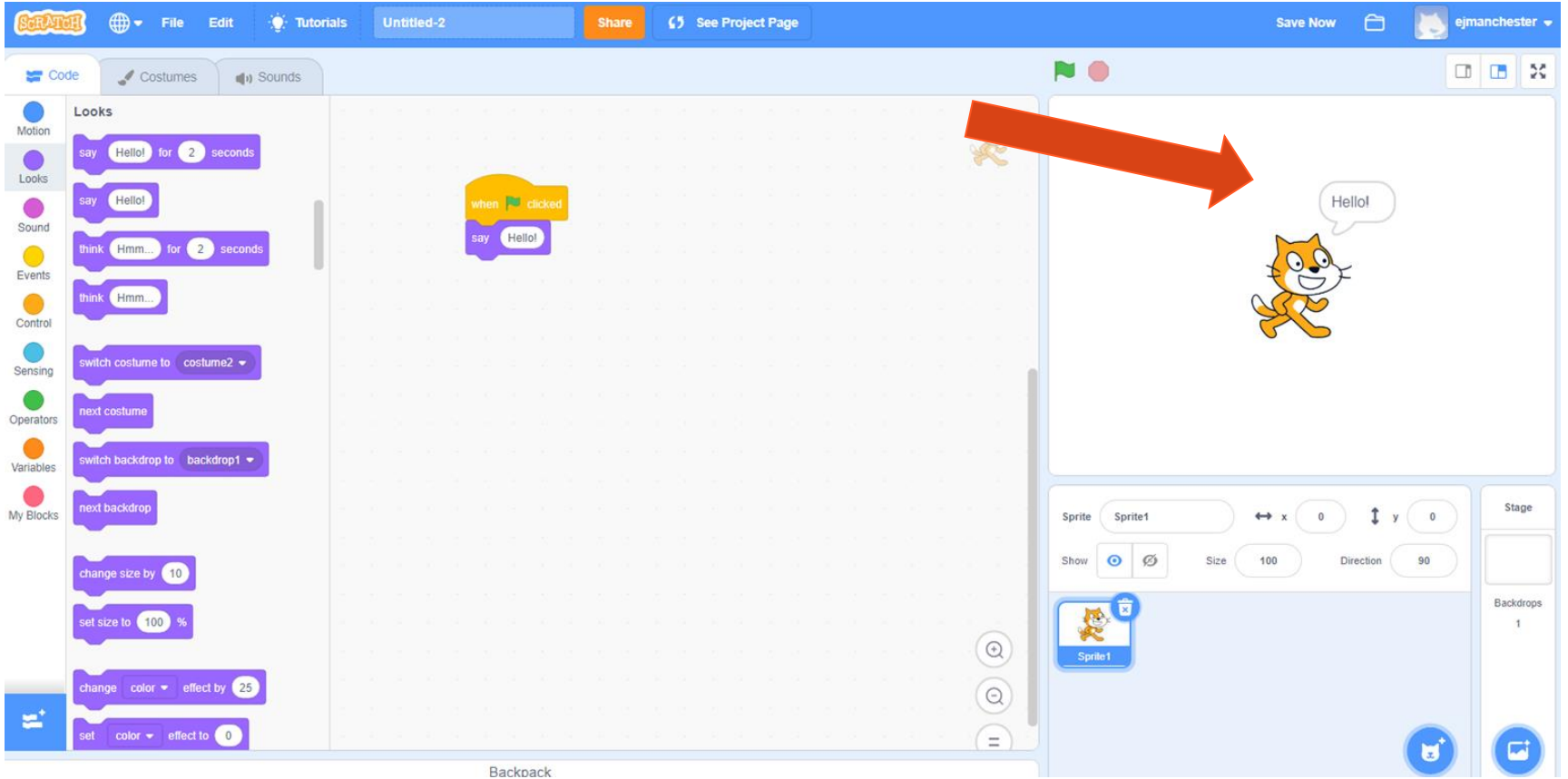
THINK BLOCK (EXPLAINER VIDEO)



Makes your sprite “think” something

https://www.dropbox.com/s/1xakgwx6g8lwp3y/SayForSecondsCoCo_Nov16.mp4?dl=0

SPEAK/SAY BLOCK (EXPLAINER VIDEO)



Codes your sprite to say something

TRY IT OUT!

- ❑ Navigate to Scratch at scratch.mit.edu
- ❑ Make a sprite
- ❑ Find the **“when green flag clicked”** block
- ❑ Make the sprite **think** something
- ❑ Make the sprite **say** something

PAUSE AND WORK (10-15 MINUTES)

INDEPENDENT PRACTICE

INDEPENDENT PRACTICE: CODING ACTIVITY

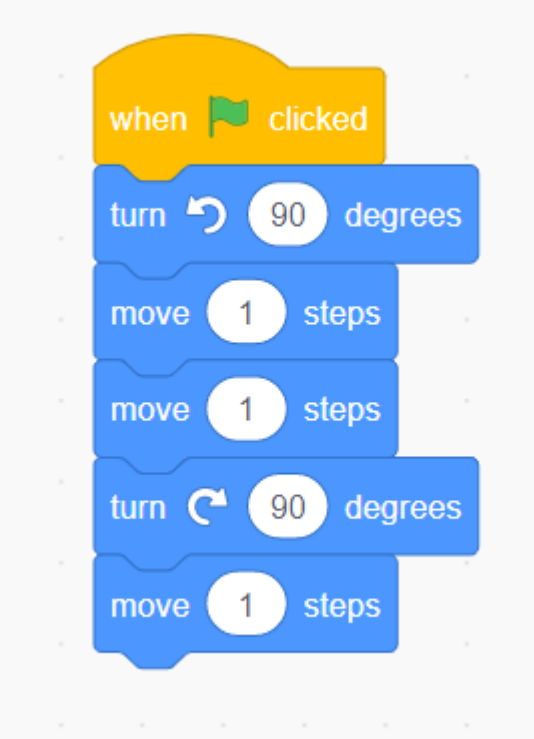
- Click on the link below and complete the coding puzzles on your computer (or paper)
- https://www.dropbox.com/scl/fi/kg68grx79webbgz81kpzo/U1D2Unplugged-Activity2.pptx?dl=0&rlkey=owayduqmso0favrx9ghj1f8yf#slide=id.p1

More on Pair Programming–

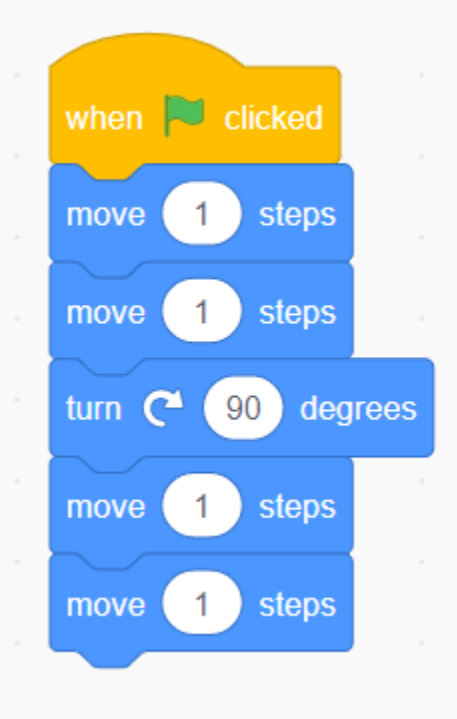
https://www.dropbox.com/s/f3ozppb4pk4egku/Pair%20Programming-%281080p%29.mp4?dl=0

PAUSE AND COMPLETE YOUR CODING PRACTICE (10-15 MINUTES)

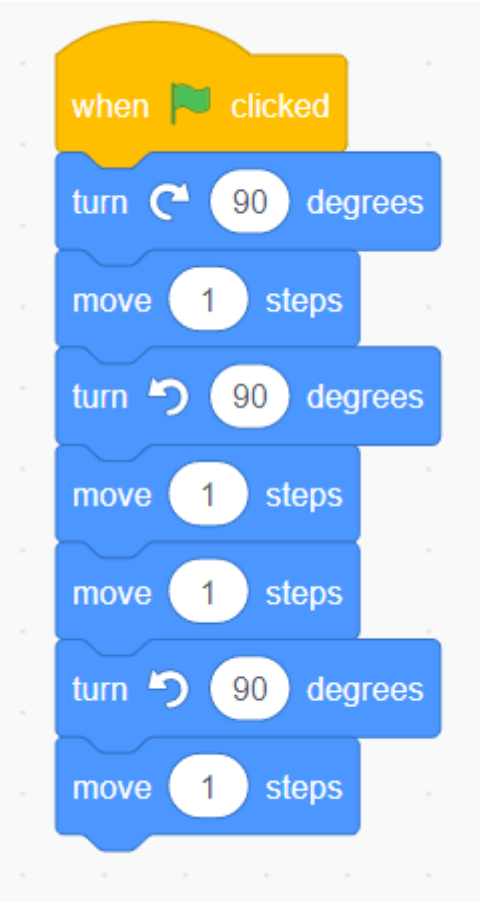
ANSWER KEY



Puzzle on slide 2



Puzzle on slide 3

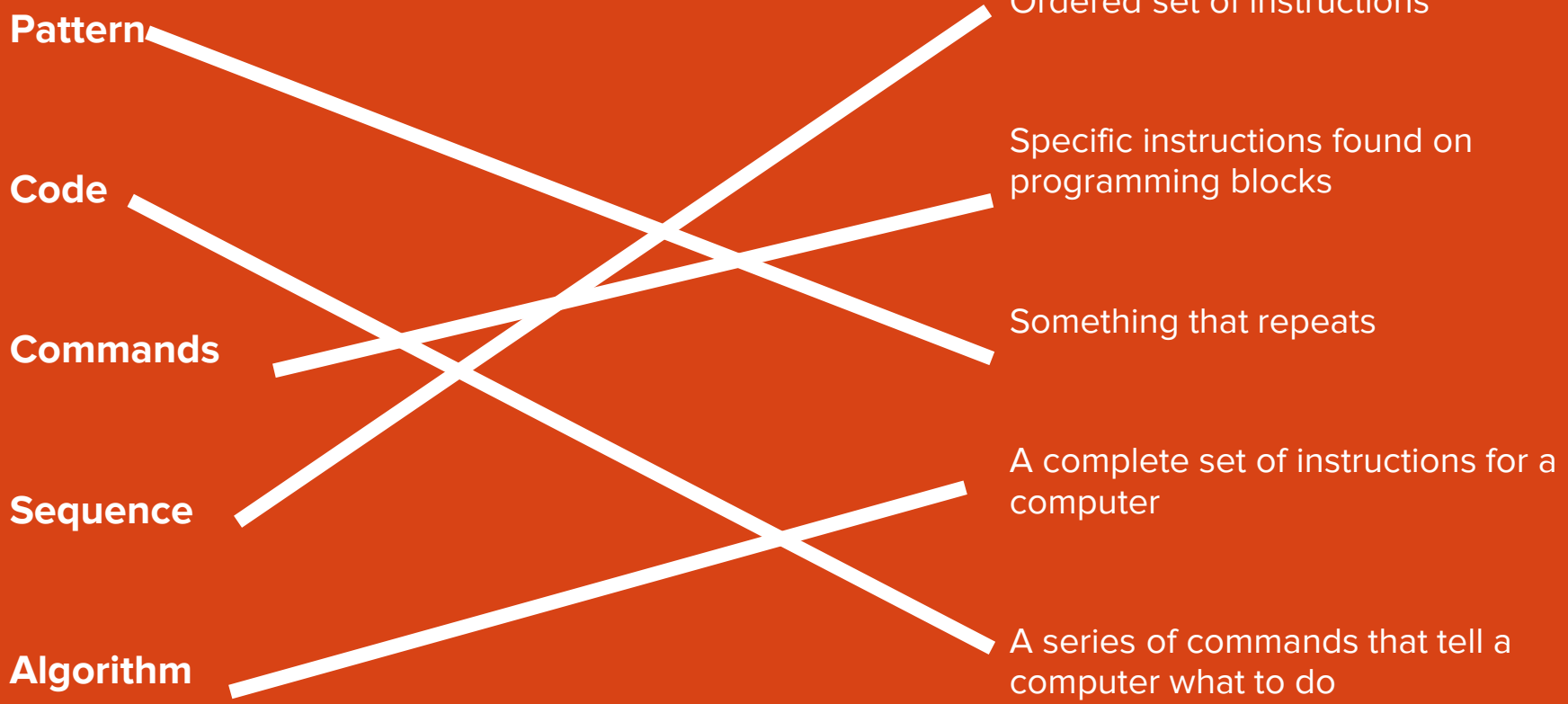


Puzzle on slide 4

Let’s review: match each vocab word to its definition

Pattern	Ordered set of instructions
Code	Specific instructions found on programming blocks
Commands	Something that repeats
Sequence	A complete set of instructions for a computer
Algorithm	A series of commands that tell a computer what to do

Let’s review: match each vocabulary word to its definition



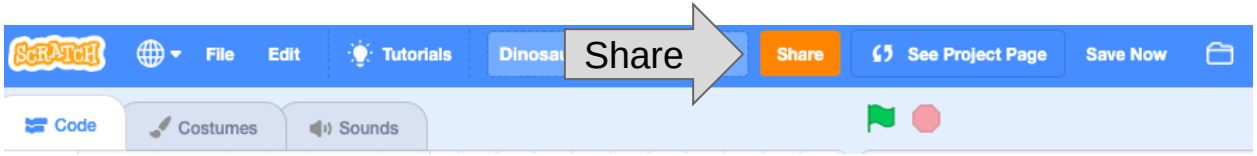
TODAY'S CAREER IN TECH: MEET TESS

https://www.dropbox.com/s/11z2mqm0yfsn6l9/Careers%20in%20Tech_%20My%20name%20is%20Tess.mp4?dl=0

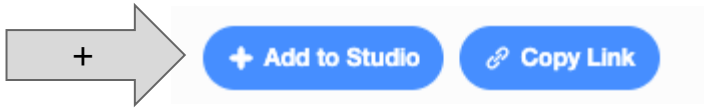
AND REMEMBER....ANYONE IN THE WORLD CAN BE A COMPUTER SCIENTIST!

SHARING YOUR SCRATCH CREATION TO YOUR TEACHER'S STUDIO

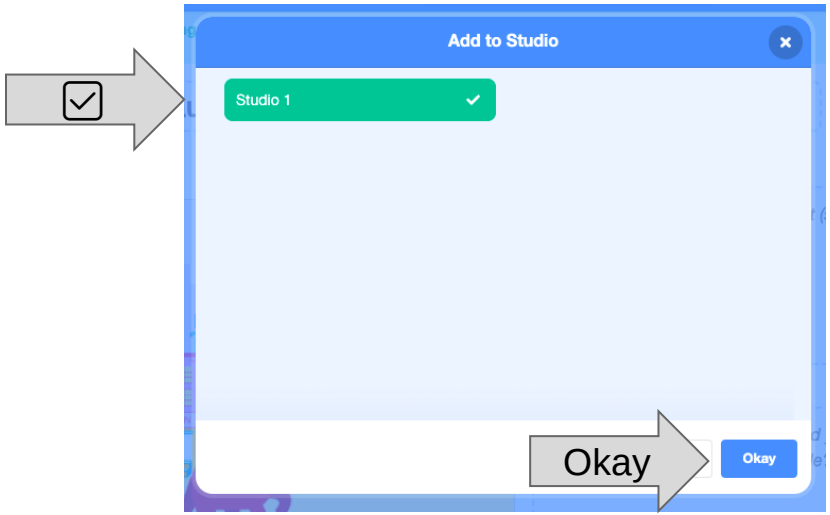
1. Click "Share" when you are done with your project.



1. Choose "+ Add to Studio".



1. Pick the designated Studio for the Unit.



1. Click "Okay".

HERE IS AN OPTIONAL VIDEO TO LEARN HOW TO SHARE YOUR PROJECT IN SCRATCH.

https://www.dropbox.com/s/6o6iu58m61nyctq/Student%20-%20How%20To%20Add%20A%20Project%20To%20A%20Studio%20In%20Scratch.mp4?dl=0

Pause here.

SCRATCH CHECKLIST

- [x] I LOGGED INTO SCRATCH
- [x] I SHARED MY PROJECT
- [x] I ADDED MY PROJECT TO MY TEACHER'S STUDIO