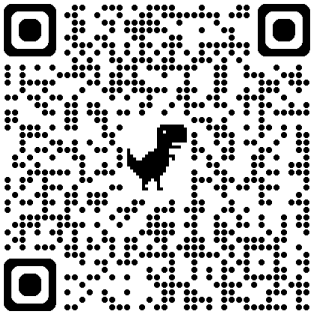
UNIVERSITY OF CALIFORNIA, BERKELEY
Department of Electrical Engineering and Computer Sciences
Computer Science Division

CS10 Spring 2025 **TA: Victoria**



Discussion 8: Midterm Practice

Instructions:

- If you're attending this section in-person, please log into iClicker!
- If you missed this discussion, fill out this entire worksheet, and upload it to the Gradescope assignment titled "Discussion 8" by next Discussion.
- Please open up snap.berkeley.edu/run on your computer.
- For the worksheet, you can either explain the process in words, show a screenshot, or draw the block/process.
- Please complete the Feedback Form **tinyurl.com/sp25-disc-form**

Group Activity / Question of the Day

- What is your least favorite chore to do and why? Also, do you have a favorite chore and why?

Required (Pages 2 - 5):

Assigned Reading

How will the widespread adoption of automation and AI impact income inequality? Will it lead to a higher concentration of wealth in the hands of a few, or will new economic opportunities be created? How can we ensure that these technologies are used responsibly, without exacerbating unemployment or creating social harm?

Section I - Scope

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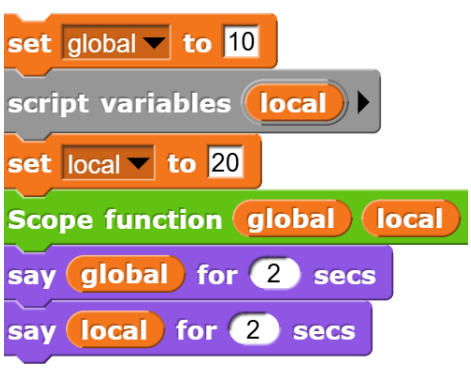
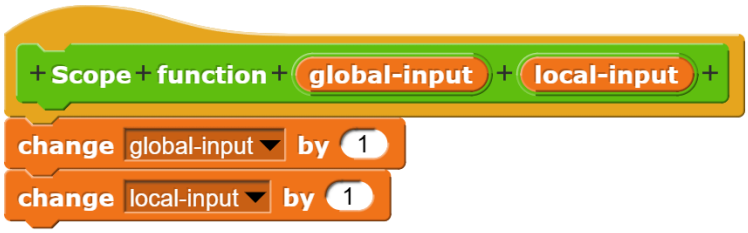
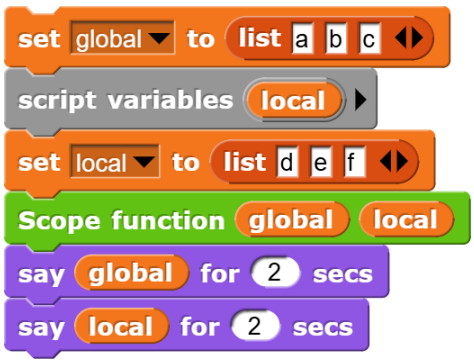
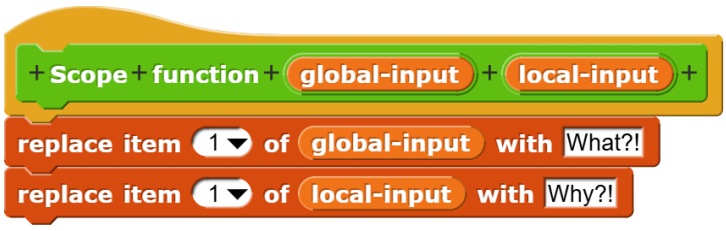
1. Determine what the 'say' blocks should say for each script
   a. Script 1





   b. Script 2

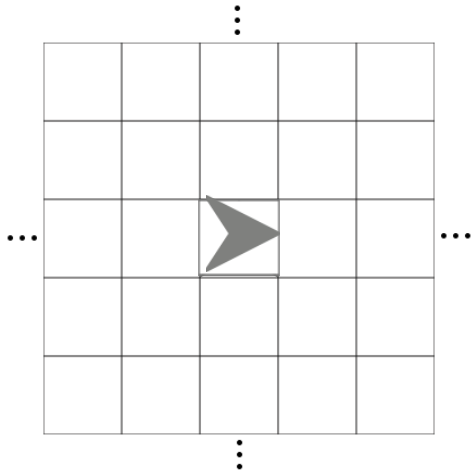




Section II – Iteration + Randomness

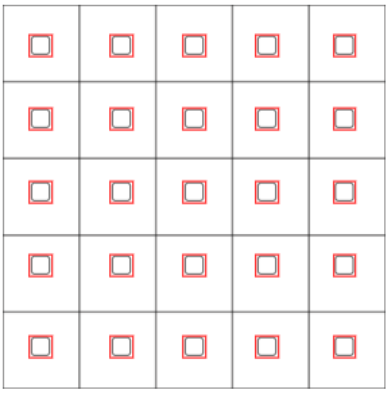
Here are helper blocks for controlling a robot (shaped like an arrowhead) on a grid world (infinite in both X and Y dimensions), looking down on it.

2. The robot moves N squares forward in the direction it's facing.

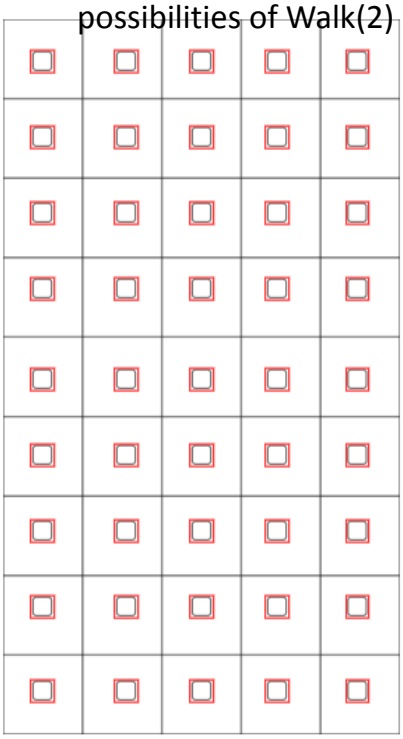


3. The robot turns some number of degrees clockwise (right), in-place, about its center. (remaining in the same square).
4. The robot starts in the right direction

A. Fill out the grid for all possibilities of Walk(1)



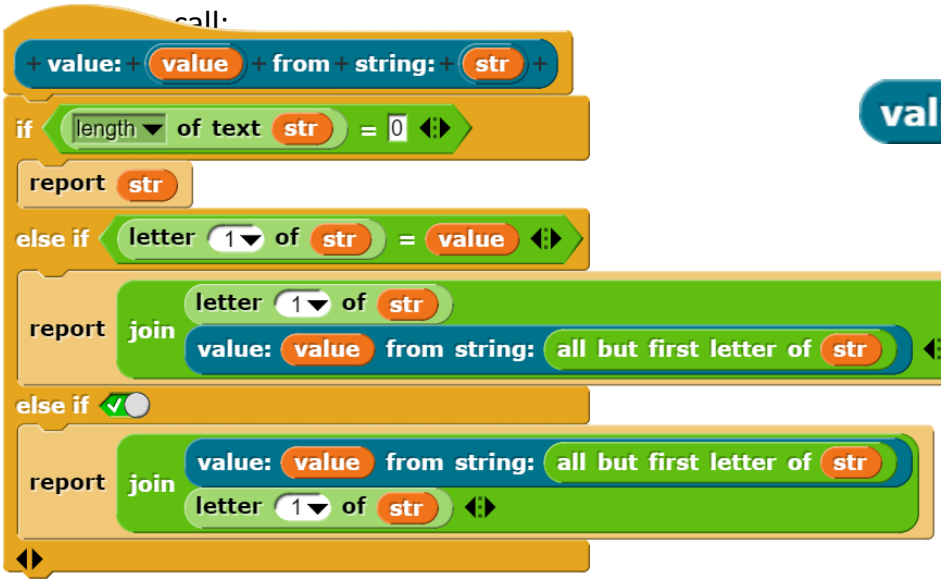
B. Fill out the grid for all possibilities of Walk(2)



Is there a pattern? If so, can you draw out the pattern as N gets larger?

Section III – Recursive Tracing

1. Your job is to understand and trace the function each time it is called or enters a new frame. Trace the function, and find the input value for str for that frame. By trace, we mean, figure out what the inputs are (what str is set to) for each frame. You DO NOT need to trace the value for value. You will be tracing the following call:



value: c from string: cats

Call #1: str=

Call #2: str=

Call #3: str=

Call #4: str=

Call #5: str=

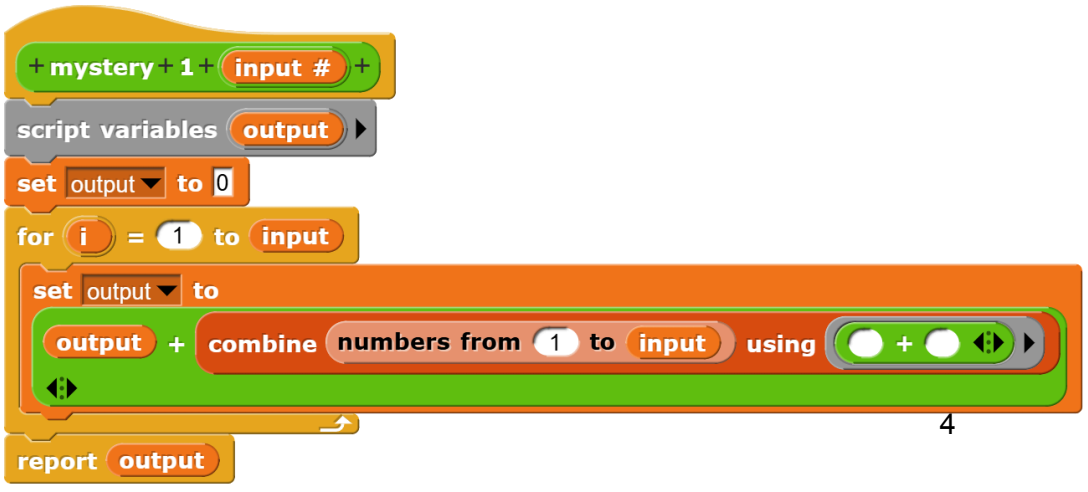
2. What will the final output be for: **value: c from string: cats**

3. What would the final output be **value: o from string: world** for:

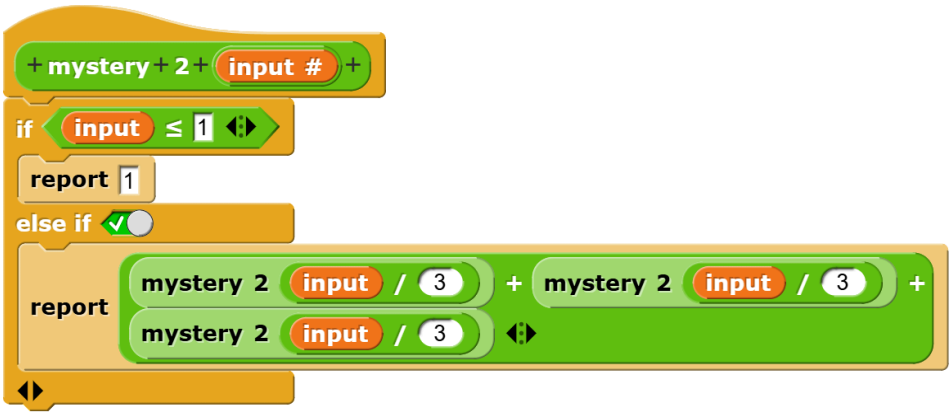
Section IV – Algorithmic Complexity

I. For each function, determine the worst-case runtime.

A. Mystery 1



B. Mystery 2



Section V – HOFs

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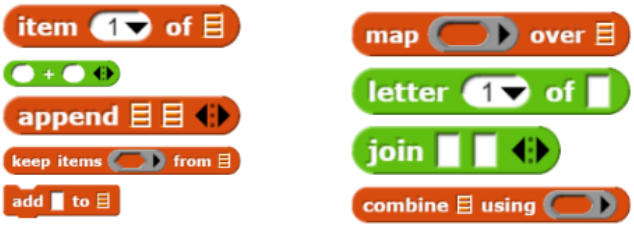
1. Consider the following list

3	A	B	C
1	Victoria	Berkeley	Green
2	Andrew	San Francisc	Blank
3	Alonzo	Snap!	Yellow

The objective is to report the following flattened list using 3 functions/operations

Choose the corresponding functions that will allow us to do so



2. Using the same input list, we now want to output the list below.Circle the options below that will allow us to return the desired output (may be more than one)

3	A	B	C	D
1	Victoria	Berkeley	Green	CS10
2	Andrew	San Francisc	Blank	CS10
3	Alonzo	Snap!	Yellow	CS10