Always START WITH YOUR STORY.

a) **Identify the nouns (agents), visual attributes/adjectives (shapes), verbs (actions), adverbs (modify conditions/actions)**
b) **Pick simple shapes/depictions to start. TILE, COLOR, SELECT-COLOR, for instance**
c) **Build your model by instances. What can you build first and test to be sure it is right? What can you build as the next phase/stage/instance? Build. Test. Repeat.**

Our first "class story":

A thing moves randomly in the world.

Accessing AgentCubesOnline

You have been given an account in AgentCubes to use during the class. To log in:

- Go to https://www.agentcubesonline.com/
- Log in using shodor4 for the 9:30 class and shodor5 for the 1:00 pm class.
- The initial password is sh0d0r1f1c PLEASE DO NOT CHANGE THE SHARED ACCOUNT PASSWORD.

- Click New Project to get started. You will be asked to name it and then you will see the default world (blue grid) and conditions and actions that can be used to help agents interact with the world.
- Add a new agent by clicking on that feature in the bottom left corner of the window.
- Give the agent conditions and actions by dragging them to the "while-running" area.
  - Conditions are after IF,
  - Actions are after THEN.
- Return to the main page (as pictured above) by clicking on the agentcubes icon in the upper right corner of the window.

EXIST → ACT → INTERACT → QUANTIFY

BUILDING A PROJECT **NOTES**

- Create a *new project (you will need to give it a name)* For the first project, use: yourname_thing1.

- Create each agent (you will need to give each agent a name), and we will make different shapes for the agents that have more than one adjective, *keeping the initial shapes simple!*

- In AgentCubesOnline, there is a default "world" into which we can place the agents(shapes); you can create other worlds later if desired. How big is the default world?

- We will test the model and see how it behaves.

- We will modify the behavior of the agents and test, modify the behavior and test, again and again at each stage.

- We will pause at each stage and reflect on what we have observed, how it compares to our expectations, and then go through "modify behavior, test" phase again. (And again, as needed!)

- When we decide we want a better model, we will start by modifying our story, then implement the changes, test, and cycle again: ***Expectation, Observation, Reflection***.

- Show Light Window (under "gear: menu"). How does your model look different depending on the position(s) of the light source(s)?

How many different models can you think of that can be modeled by the basic behavior: "A thing moves randomly in the world"?

What if you had more than one thing?

What if the shape of the world was different?

What would you need to add to get a different model?

COUNTING AND PLOTTING

- Quantity plays an important role, not just qualitative observations. In science we want to count and visualize the objects and their properties so we can detect and understand *patterns.*

- In our model world, we would need to give some agent the "job" of counting and plotting. Often it is good to give this job to a separate agent that isn't moving around, getting sick, eating rabbits, or in any other way interacting with the world or agents in it.

Common Conditions

- see; see-a
- next-to; stacked; stacked-a
- empty
- once-every

- percent-chance
- is-selected
- current-world
- key
- test
- has-attribute
- first-person-view

Common Actions

- move; transport; move-random; move-random-on; move-random-on-a
- change; new; erase
- rotate-by; rotate-to
- teleport-to-row-column
- wait
- message; delayed-message; broadcast; message-in-stack
- set value to; set @value to
    - agents_with_shape(“*shape”*)
    - agents_of_type(“*type”)*
- set-color-to; set-rgba-color; map value to color
- plot-to-window; plot-agents-attribute

Common Triggers

- while running
- on
- when-creating-new-agent
- before-running
- on-hand-tool