Game Making with Alice

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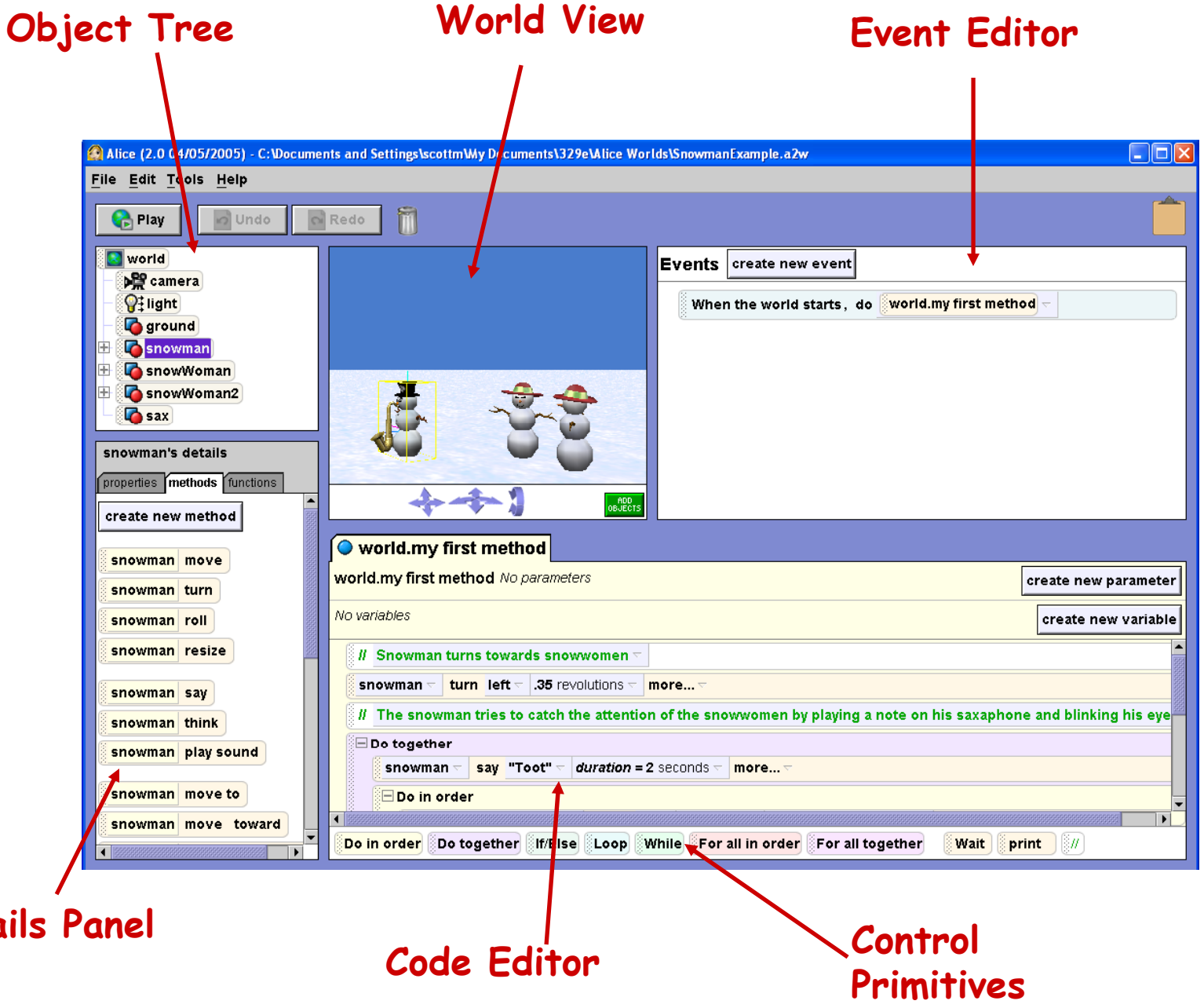
What is Alice?

- Alice is a visual programming language.
- Alice is designed to teach you how to program
- The output of Alice programs are movies.
- The movies can be interactive

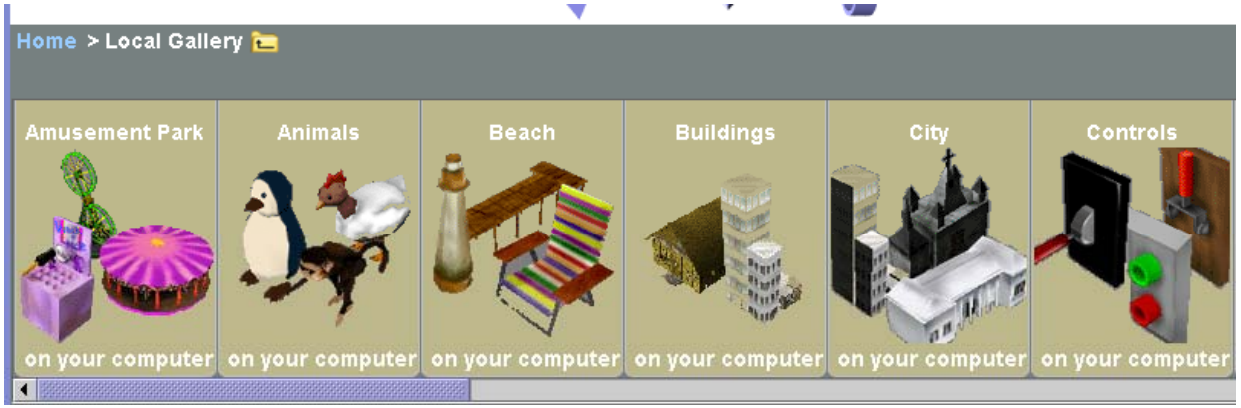
Alice and Visual Programming

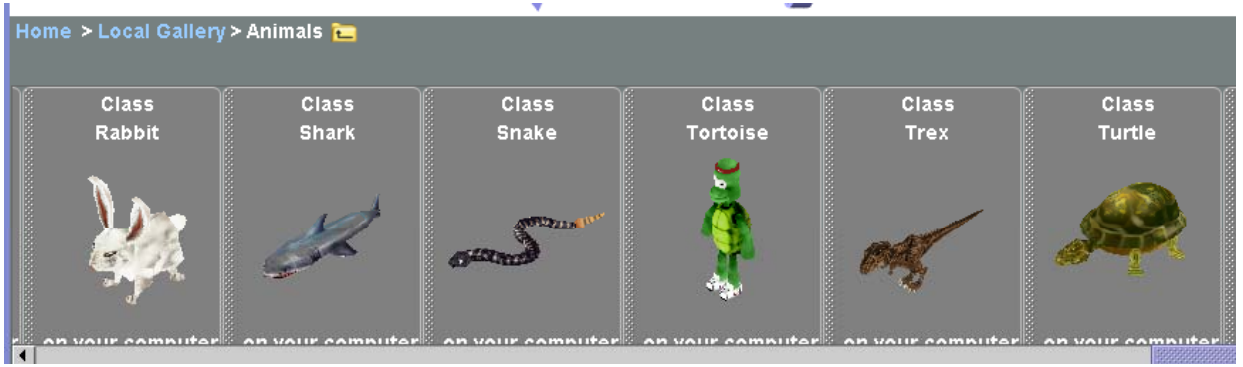
- Programming is done by pointing and clicking, dragging and dropping, selecting from menus, and some typing
- Download Alice for free:
- www.alice.org


Object Tree
World View
Event Editor
Details Panel
Code Editor
Control Primitives
File Edit Tools Help
Play
Undo
Redo
world
camera
light
ground
snowman
snowWoman
snowWoman2
sax
snowman's details
properties
methods
functions
create new method
snowman move
snowman turn
snowman roll
snowman resize
snowman say
snowman think
snowman play sound
snowman move to
snowman move toward
Events
create new event
When the world starts, do world.my first method
world.my first method
world.my first method No parameters
create new parameter
No variables
create new variable
// Snowman turns towards snowwomen
snowman turn left .35 revolutions more...
// The snowman tries to catch the attention of the snowwomen by playing a note on his saxaphone and blinking his eye
Do together
snowman say "Toot" duration = 2 seconds more...
Do in order
Do in order
Do together
If/Else
Loop
While
For all in order
For all together
Wait
print
//

Alice Models

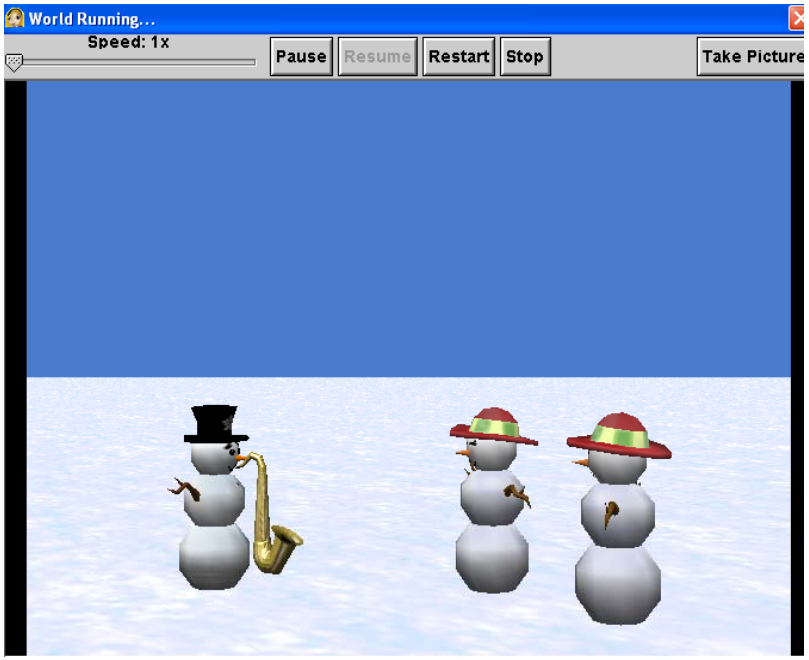
- Main programming data are 3d models
- Many built in and more on web





Output

- Output are 3d movies
  - run the program, play a movie
  - can also add sound to programs
- A lot easier to recognize logic errors
  - "Why do my ninja's arms keep flying away?"



Sample Program - Bunny and Broccoli

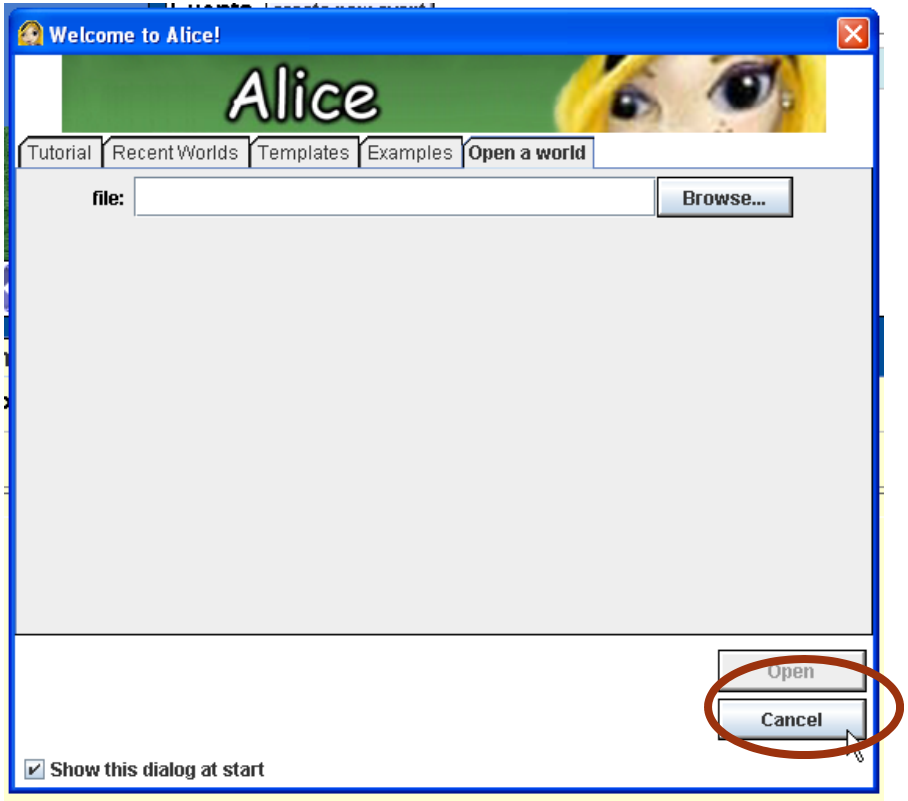
Click the Cow

Eat the Hay

Start Alice

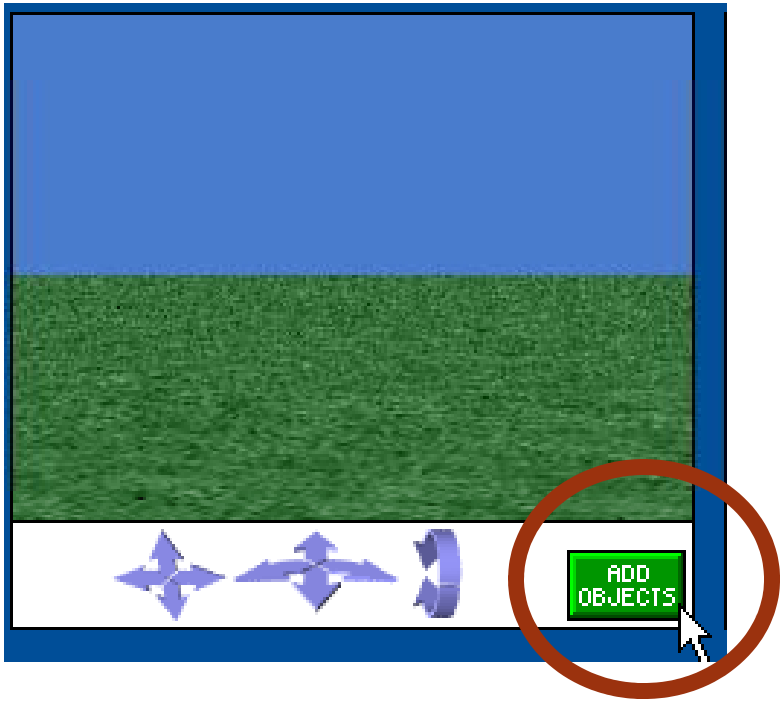
- Double click on the Alice icon to start Alice
  - It may take a minute to start up

- Cancel the opening dialog screen



Build the Scene

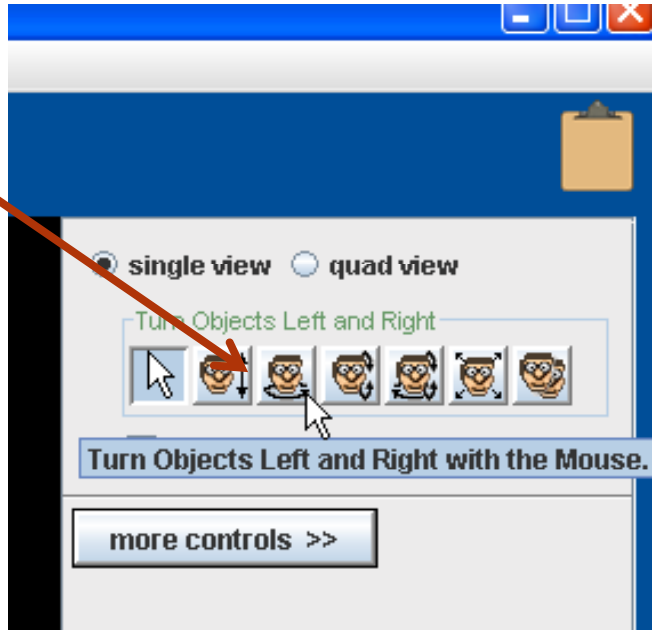
- Click on the add objects button at the bottom right of the scene



- Scroll to the Farm category and clock on Farm

Add Objects to Scene

- Click and Drag some objects into the scene
- Once in the scene objects can be positioned with the mouse
- Object can be rotated by selecting the proper option from the menu in the upper right
- If you want to get rid of an object right click it and select delete

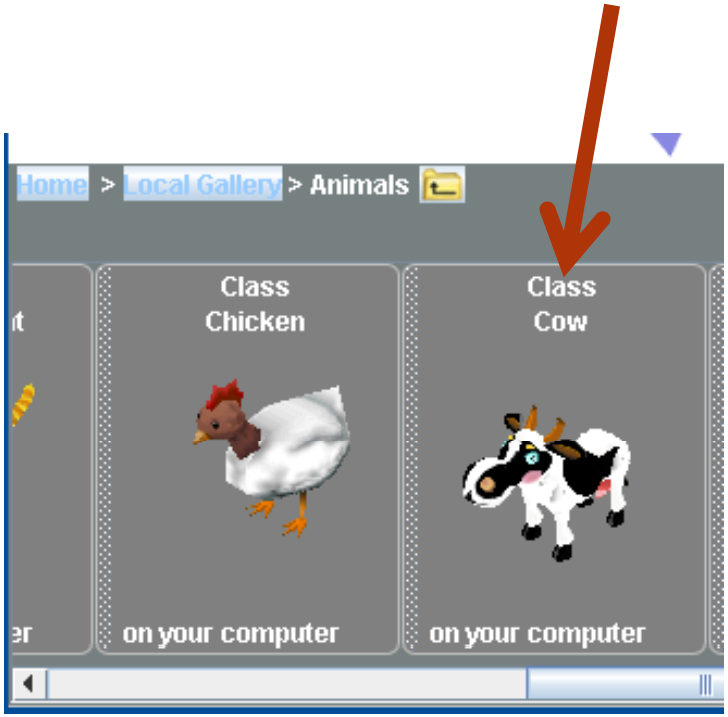


A Farm Background

- Yours can be different.

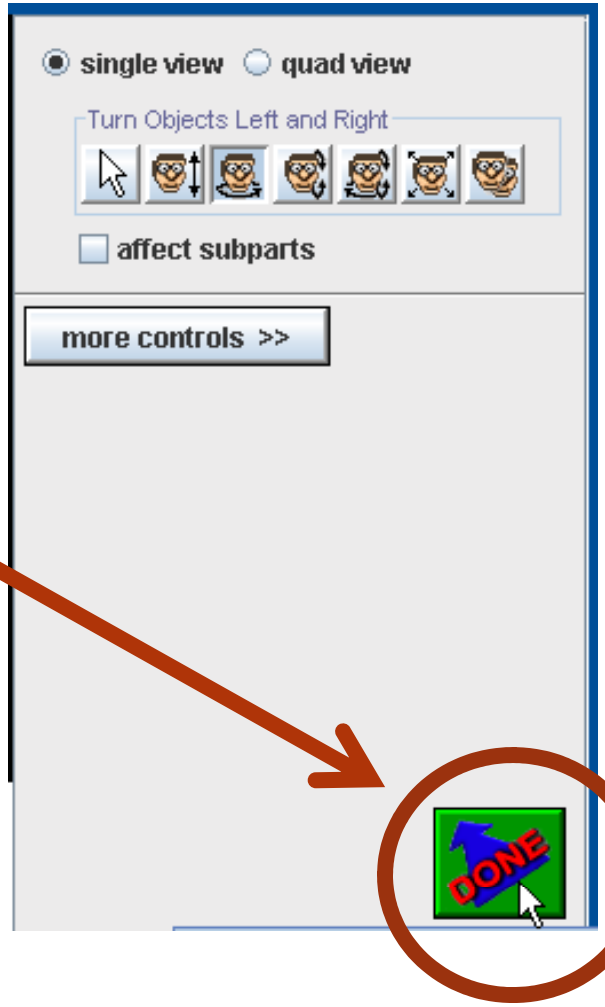
Add The Cow

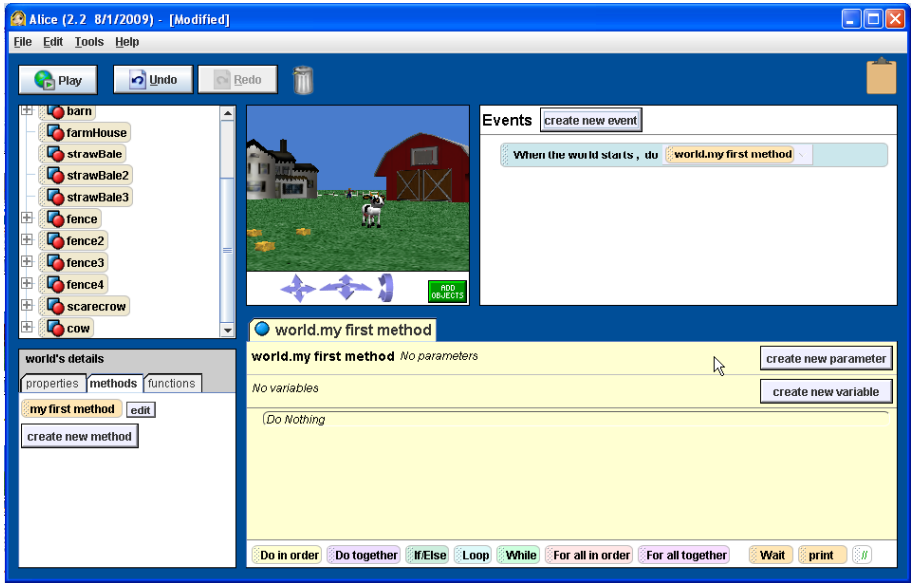
- Click on the Local Gallery to get back to the list of categories
- Open the Animals Category
- Scroll over to the Cow and add one to the world



Back to Programming

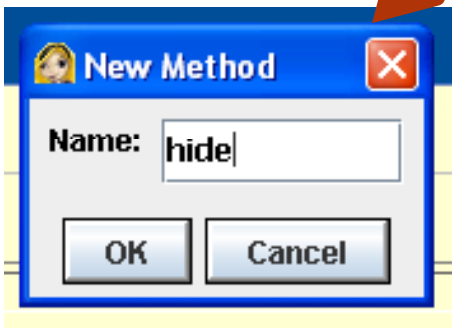
- Exit the scene editor by clicking the done button

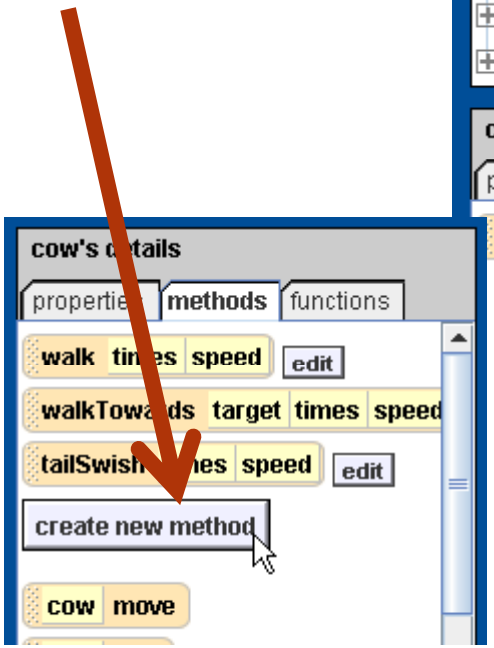


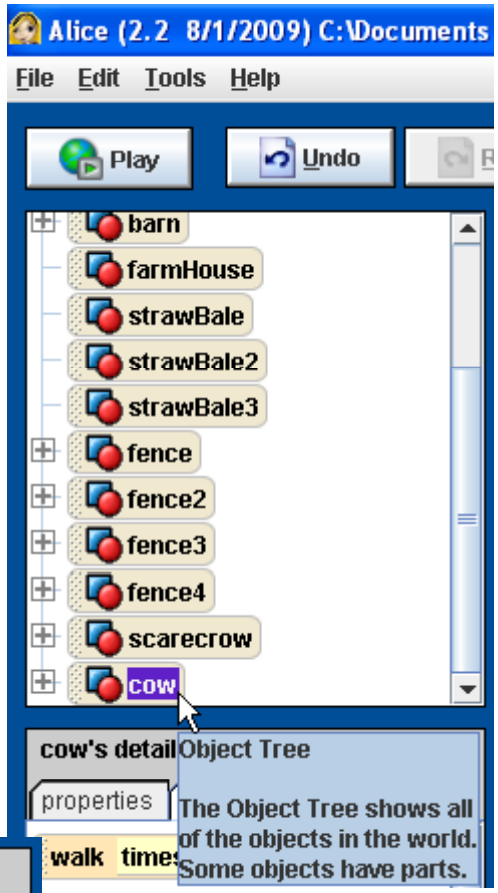


Make a method to hide the cow

- Click on the cow in the object tree.
- Click on the methods in the details window
- Click on the create new method button
- Name the method hide

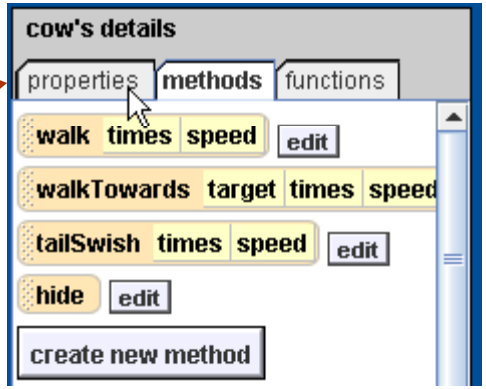


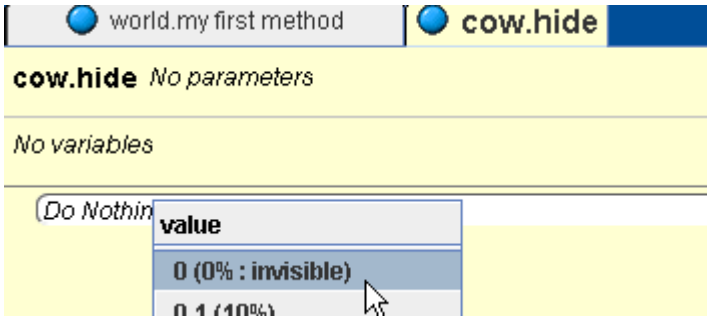


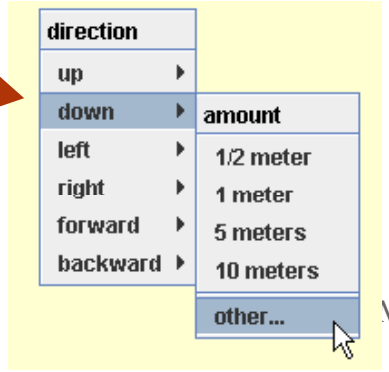


Add commands to the hide method

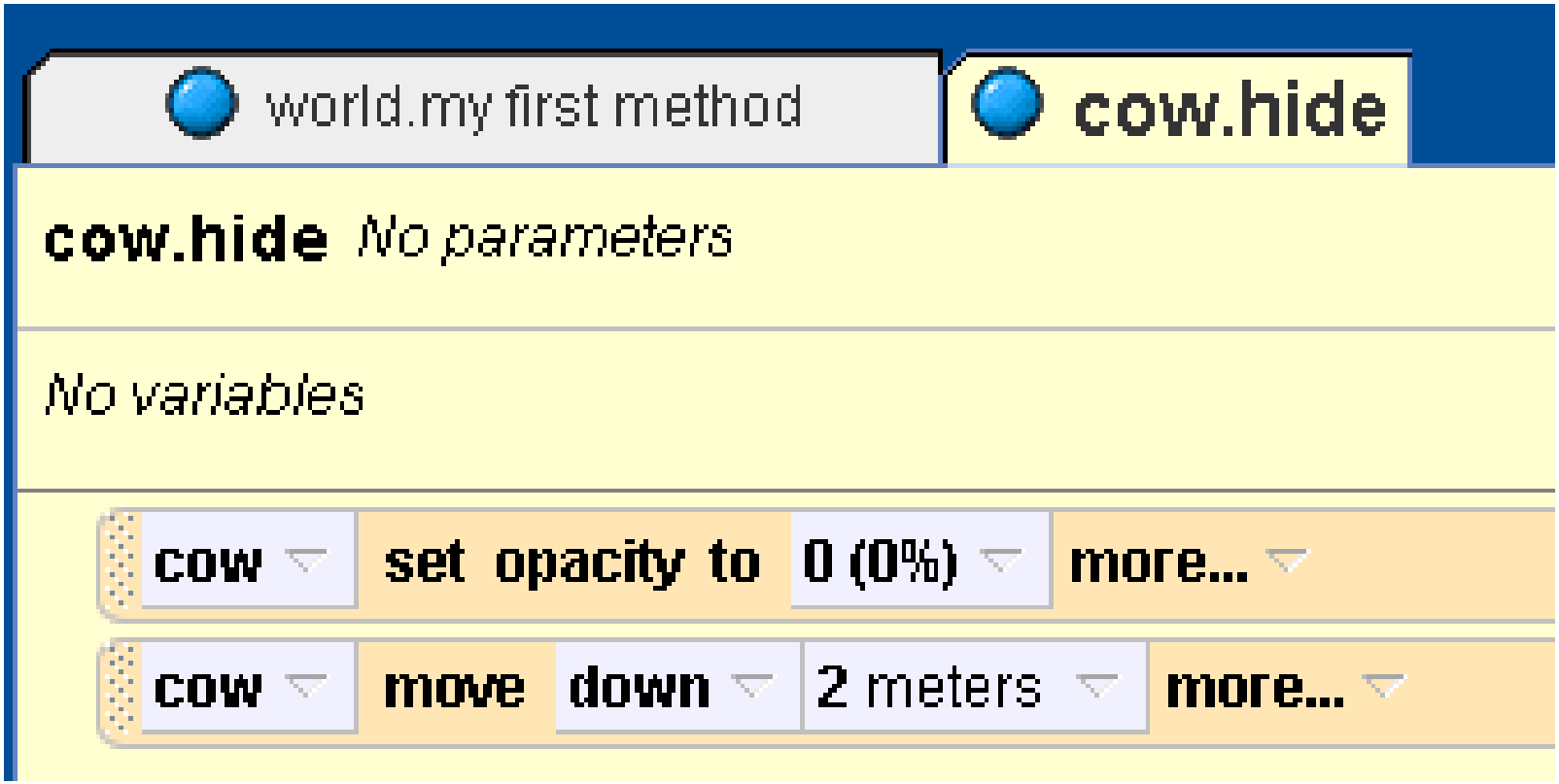
- Click on the properties tab in the detail window
- Drag the opacity = 1(100%) icon into the window for hide
- Change the opacity to 0(0%)
- Click on the methods tab in the details window
- Drag over the cow move command
- Select down for the direction and other for the amount.
  - Set to 2





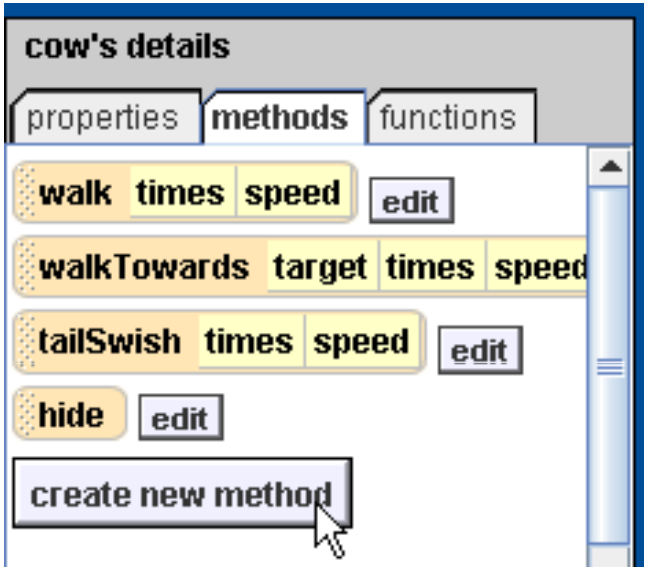


The completed hide method



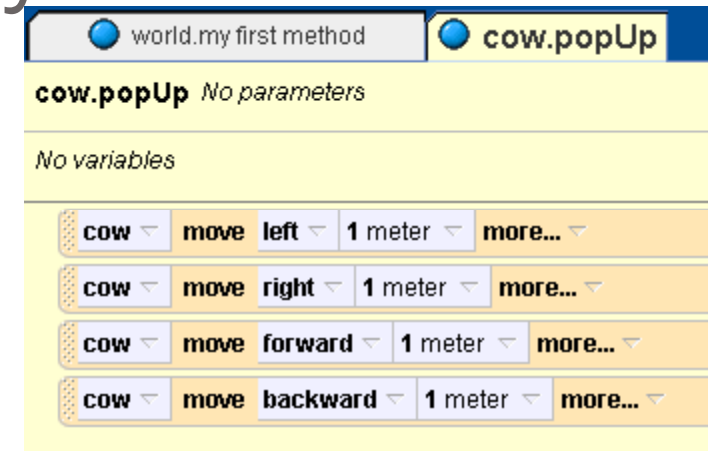
Create the pop up method

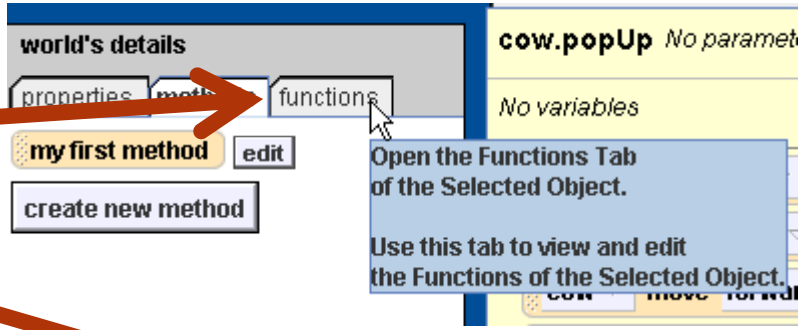
- Click the cow in the object tree
- Click on methods
- Click the create new method button
- name the method popUp

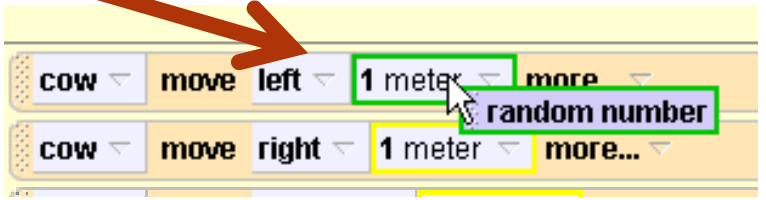


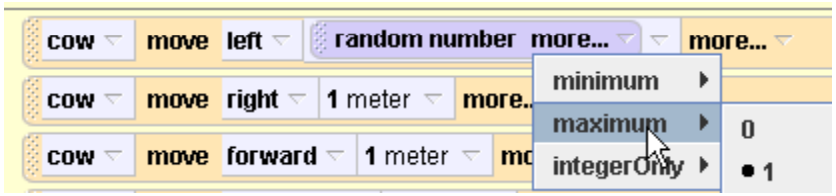
Move the cow randomly

- Start by dragging out cow move tiles
  - one for each of left, right, forward, and backward
- Click on world in the object tree to select it
- Click on functions in the details window
- Drag out random number and drop it on the 1 meter
  - select more and change max to 2



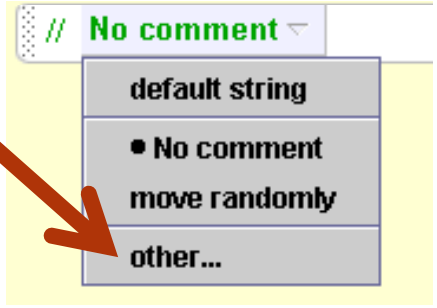


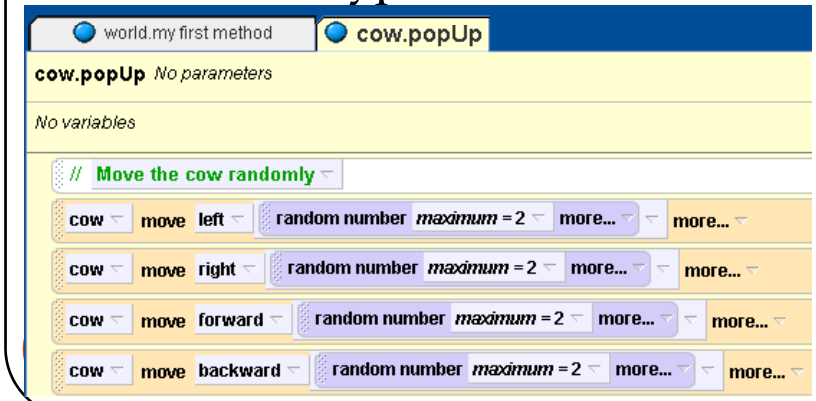




Add a comment

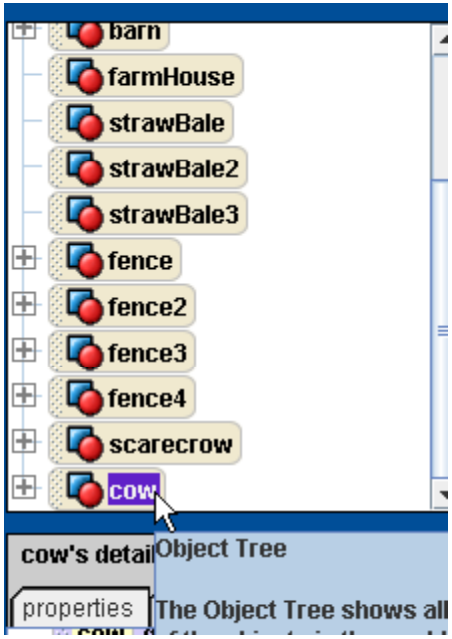
- You can add a comment to explain what you are doing in English
- Drag a // tile from the bottom of the method editing window to where you wish to place the comment
  - Click on the down arrow
  - Select other
  - Type in the comment

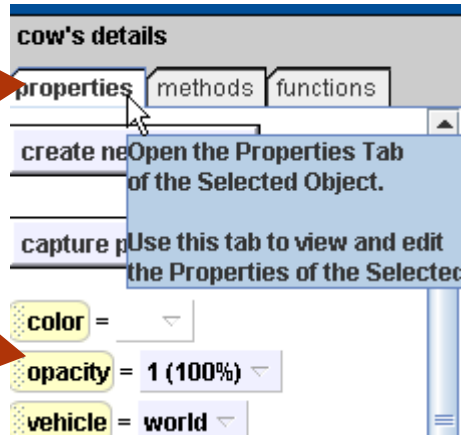




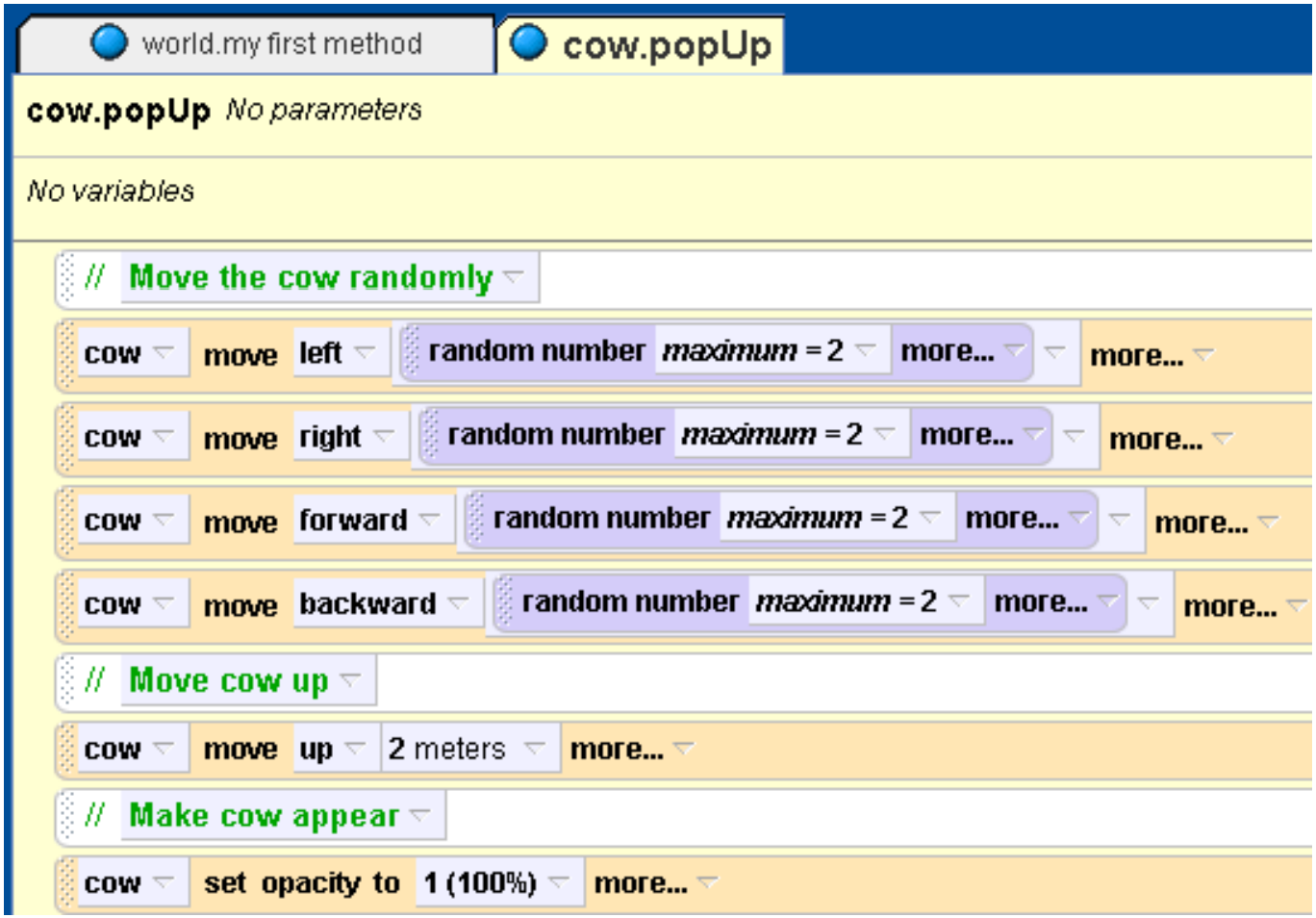
Showing the cow

- Click on cow in the object tree to select it
- Click on methods in the details window
- Drag out a cow move tile
  - select up 2 meters
- Click on properties in the details window
- Drag out opacity = 0
  - change to 1 (100%)



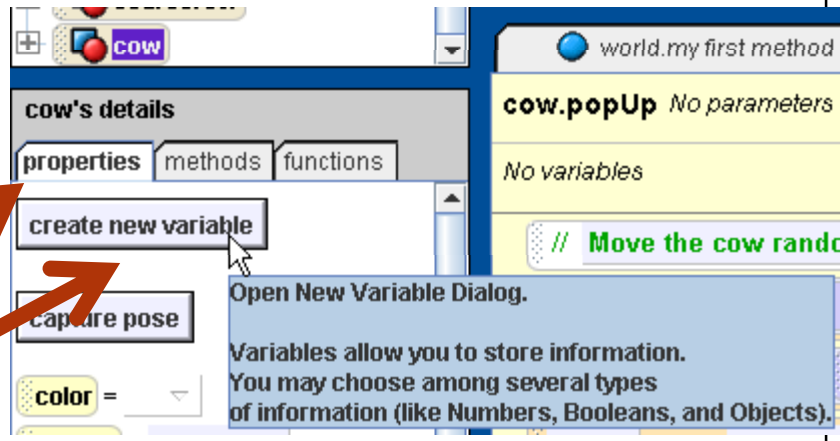


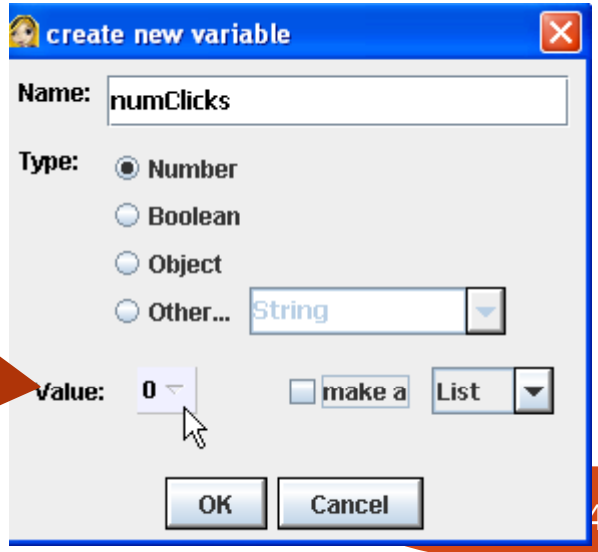
Completed popUp method



Adding a property (field)

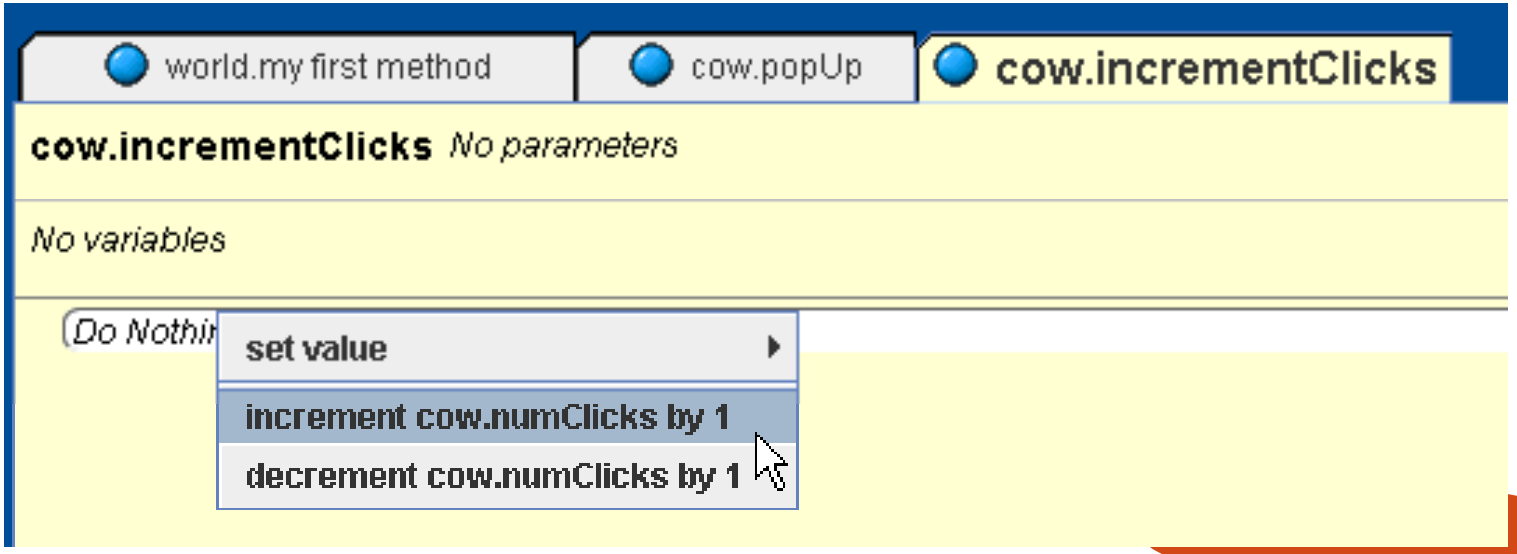
- **We need to store the number of time the cow has been clicked**
- Click the cow in the object tree
- Click on the properties tab
- Click the create new variable button
- name the variable numClicks
  - set the value to 0





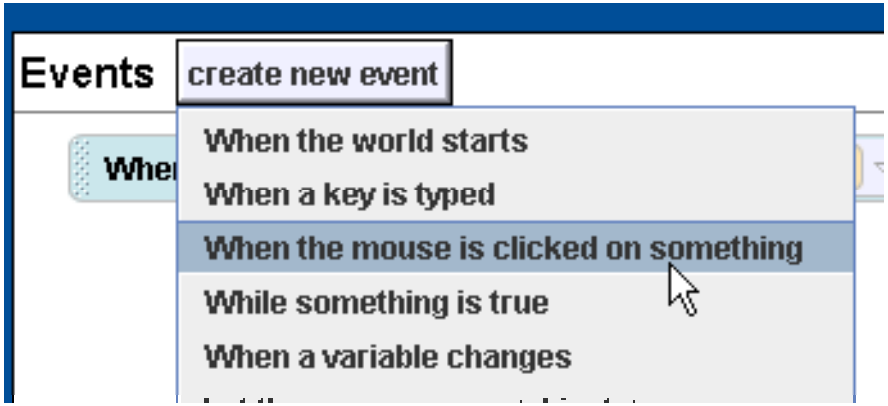
Increment the number of hits

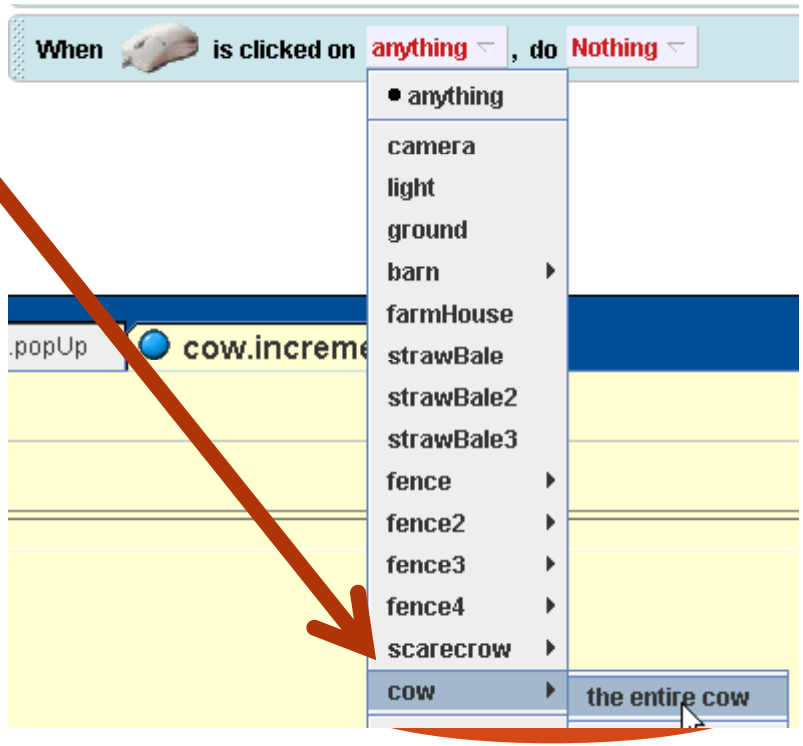
- If the user clicks on the cow we want to add 1 to the number of clicks so far
- Create a method that does this
  - It should be a new cow method (cow selected in object tree)
- Drag numClicks variable into method and select the increment cow.numClicks by 1 option

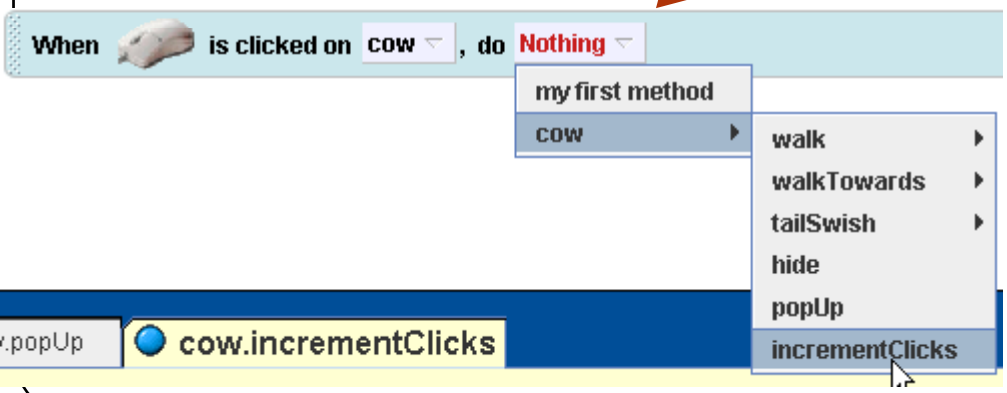


Respond to mouse click on cow

- In the events window click the create new event button
  - select When the mouse is clicked on something
- Change the anything to the cow (the entire cow)
- Change the nothing to cow incrementClicks

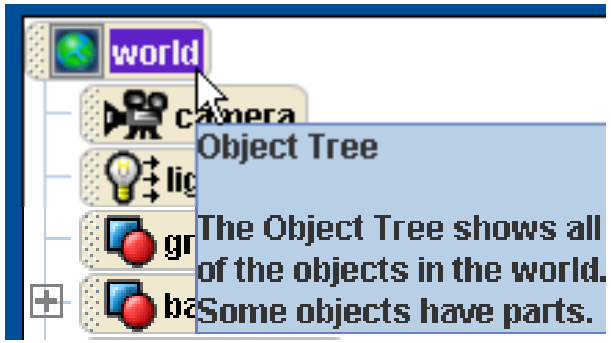


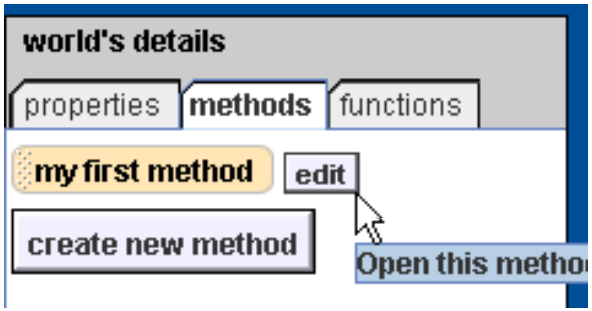


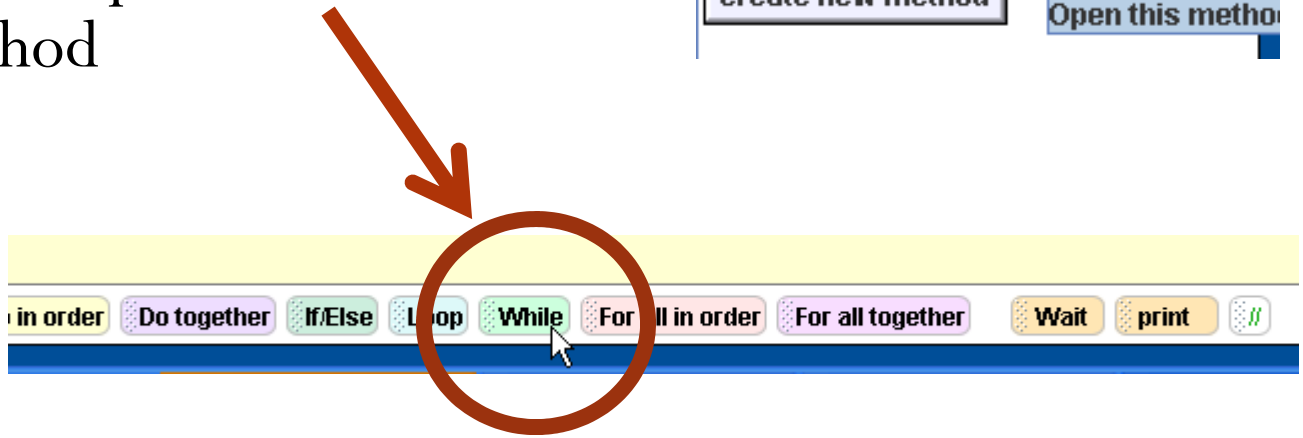


Method to run the game

- Click on world in the object tree
- Select methods and edit the my first method
- Pull up a while tile from the bottom of the editor window and drop into the my first method
  - select true

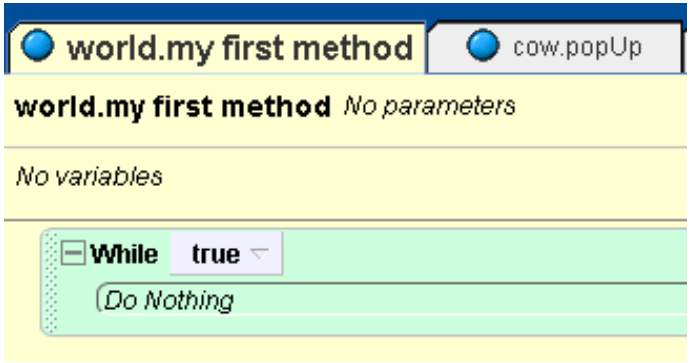


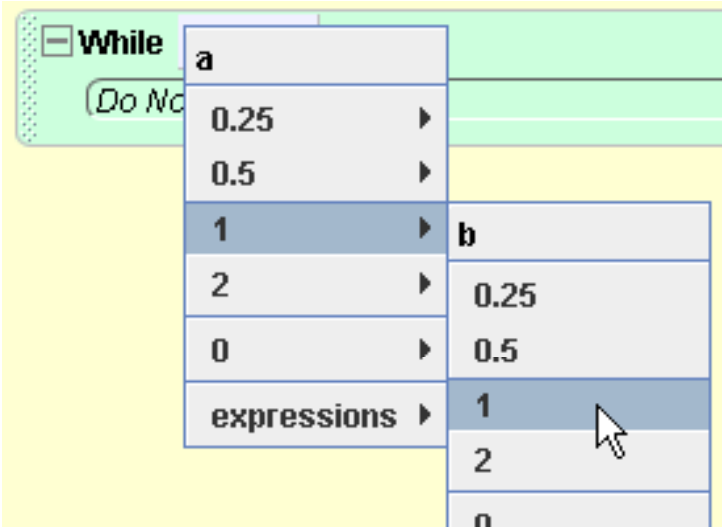




Change while loop

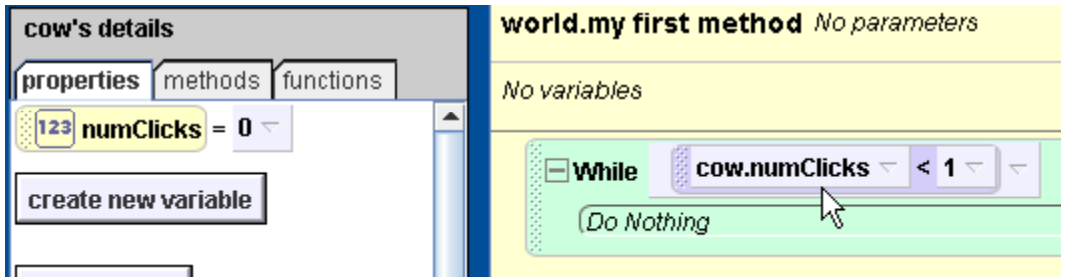
- Click on functions tab
  - drag out a < b and drop it on true
    - select 1 and 1





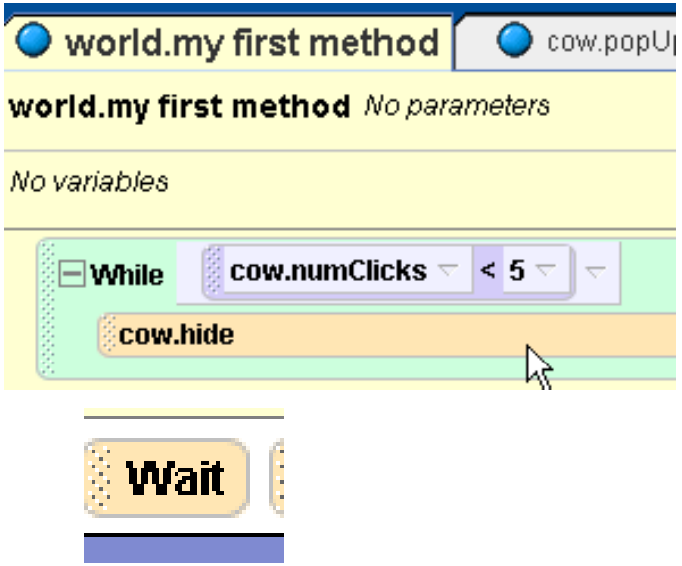
While number of hits < 5

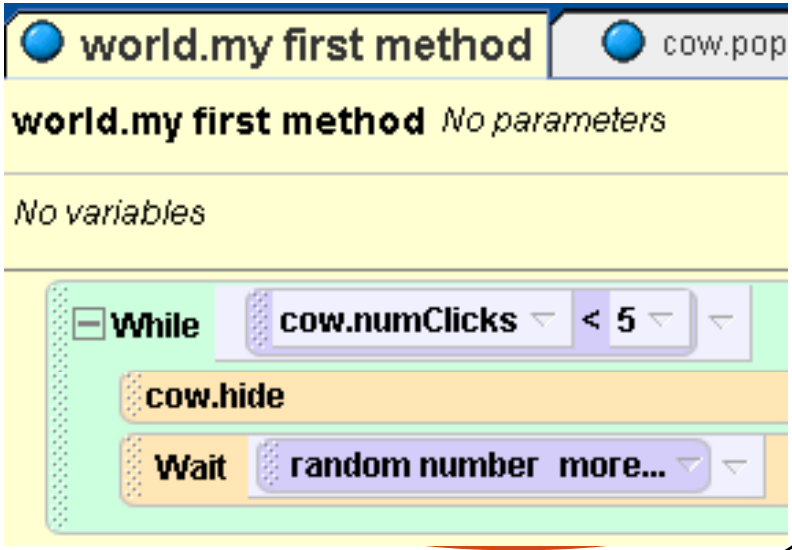
- Click on cow in the object tree
- Click on properties
  - drag out numClicks = 0 and drop on the first 1
- Change the second 1 to 5
  - click on other and enter 5



Hide and wait a random amount of time

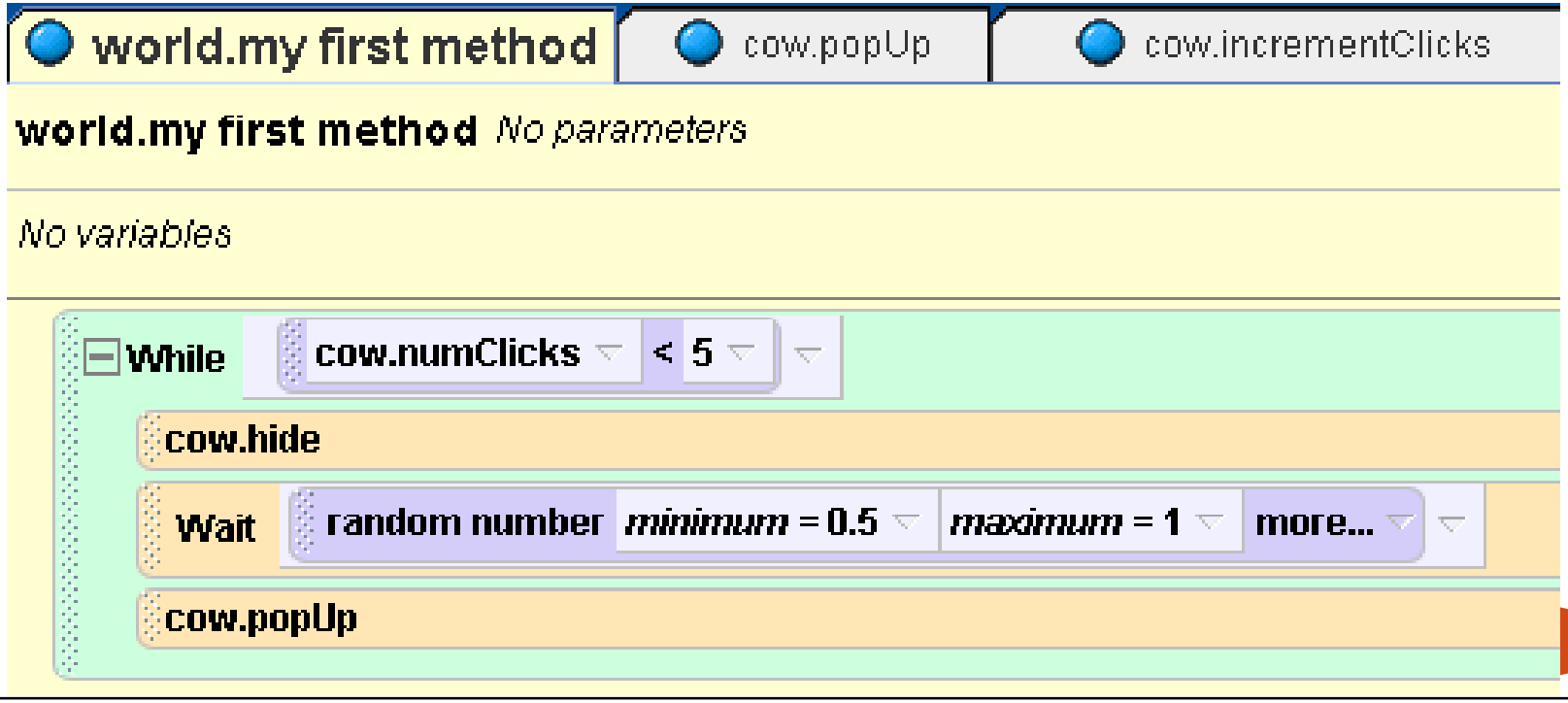
- Click on cow and then the methods
- Drag out hide
- Drag up a wait tile from the bottom of the editor window
  - select 1 second
- Click on world in the object tree
  - click on functions
  - drag out random number and drop on the 1 second





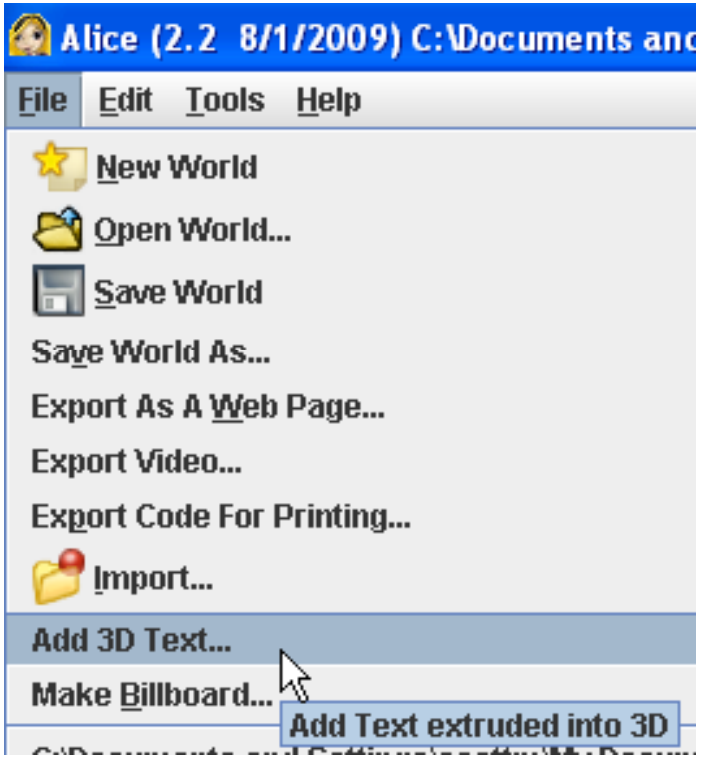
pop up and wait for 1 second

- Change random number on wait to a min of 0.5 seconds
- Drag out a cow popUp
- Try it out!
  - What happens after you click on the cow 5 times?



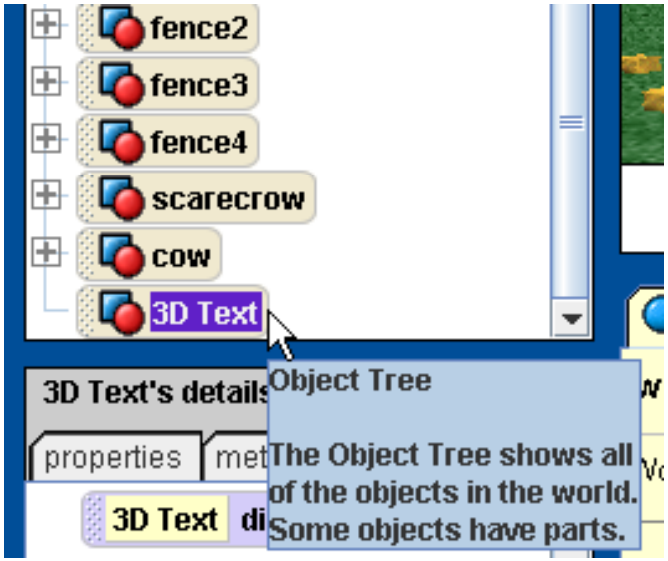
Tell the user they won

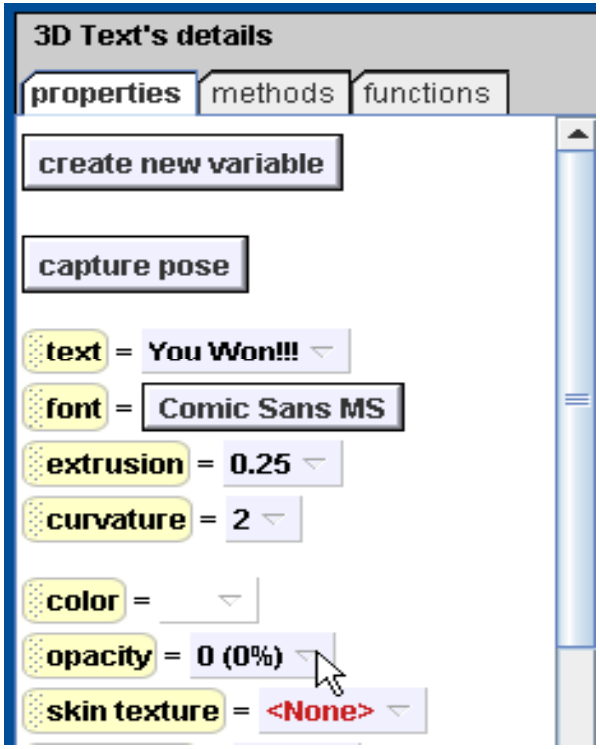
- Add some 3D text that tells the user she or he won
  - Click on File and then on Add 3D Text
  - Type in the text
    - you can change the font
- Place it where you want it to appear
  - Click on add objects to get to the mouse controls
  - Click on done when done



Make the text invisible to start

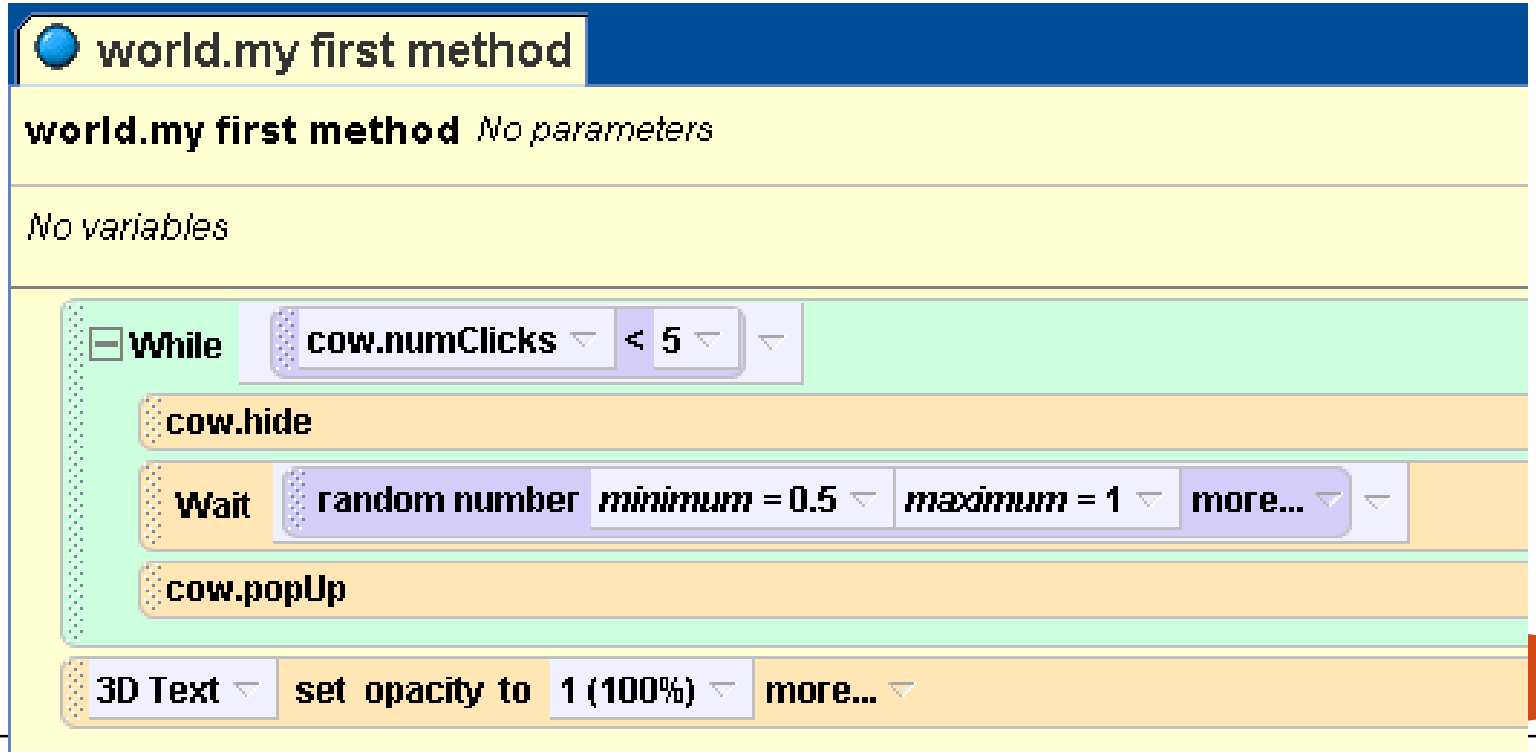
- Click on the text in the object tree
- Click on properties
  - Modify opacity to 0 (0%)





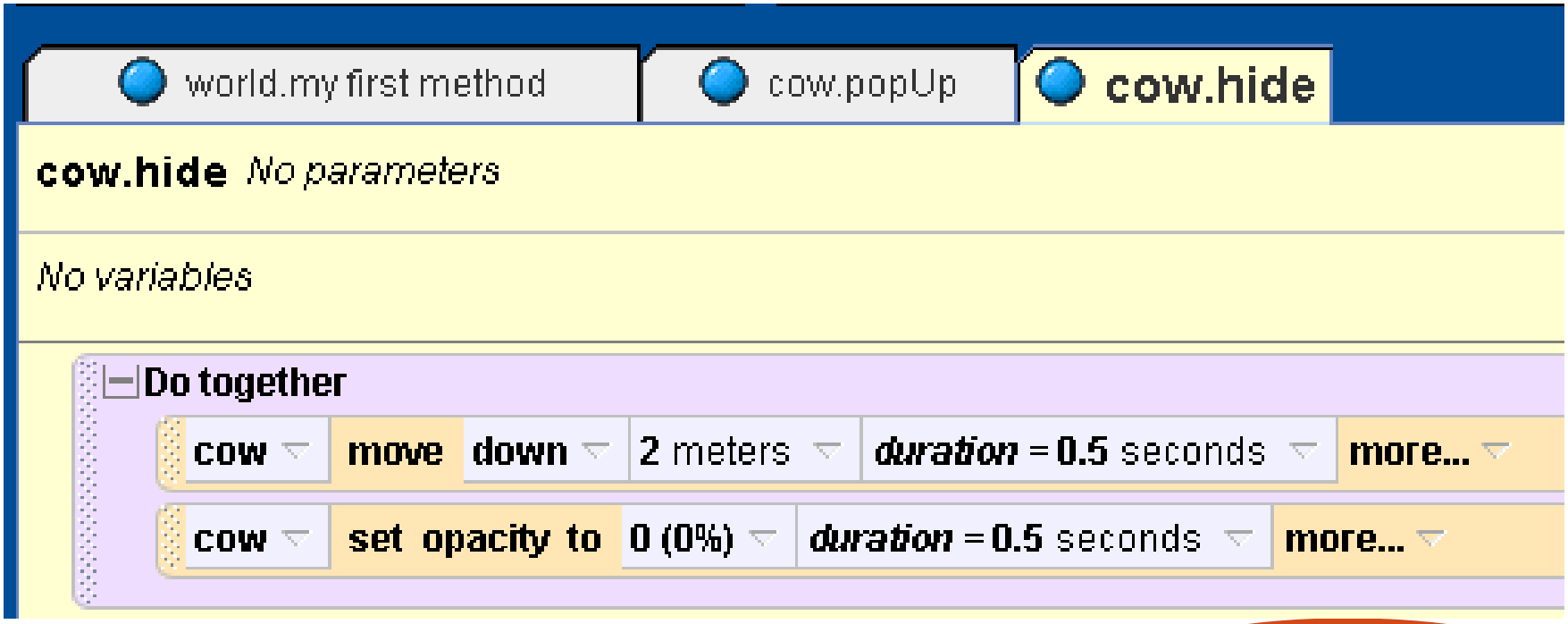
When the user wins show the text

- Drag out opacity = 0 to the my first method
  - change to 1 (100%)
- Play the game!



Speeding things up in hide method

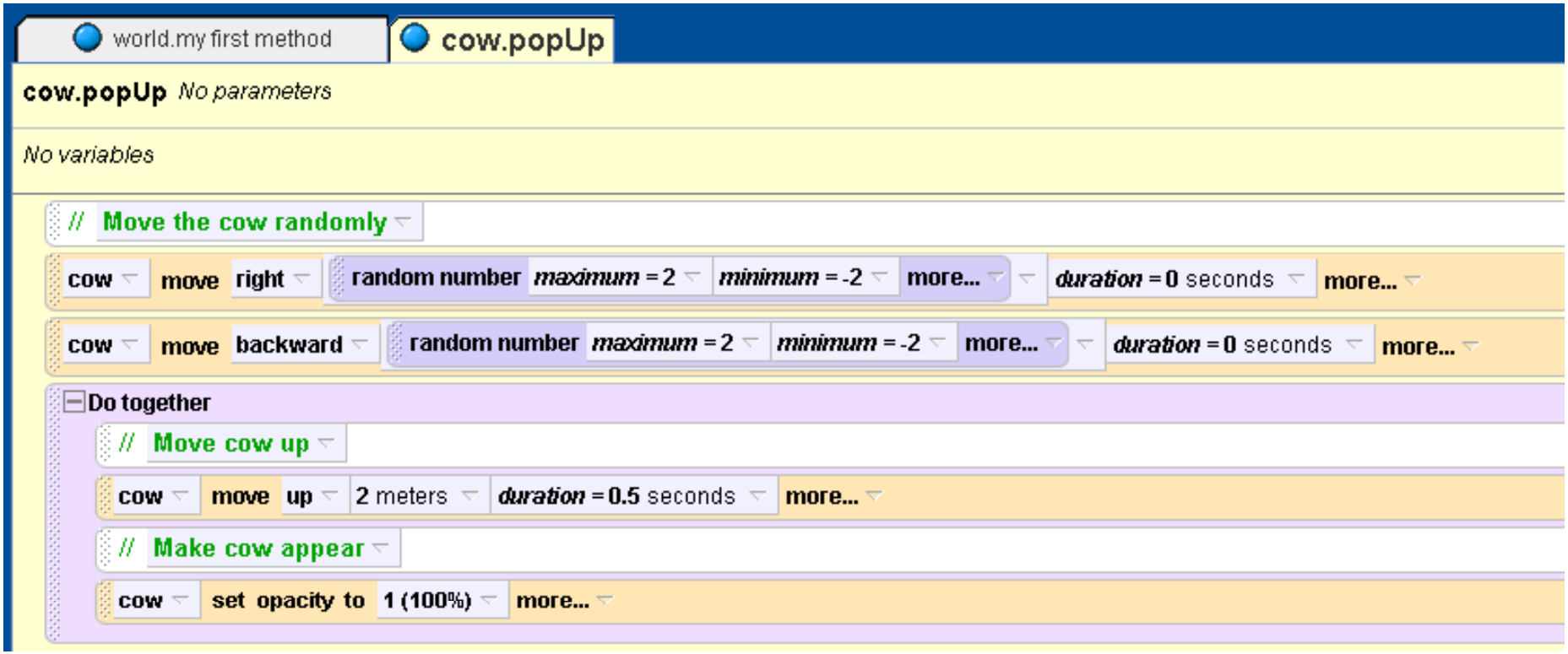
- All animation commands takes 1 second by default
  - you can change this using the more…
- Drag a Do together block from the bottom and then drag both commands into it



Speeding things up in popUp method

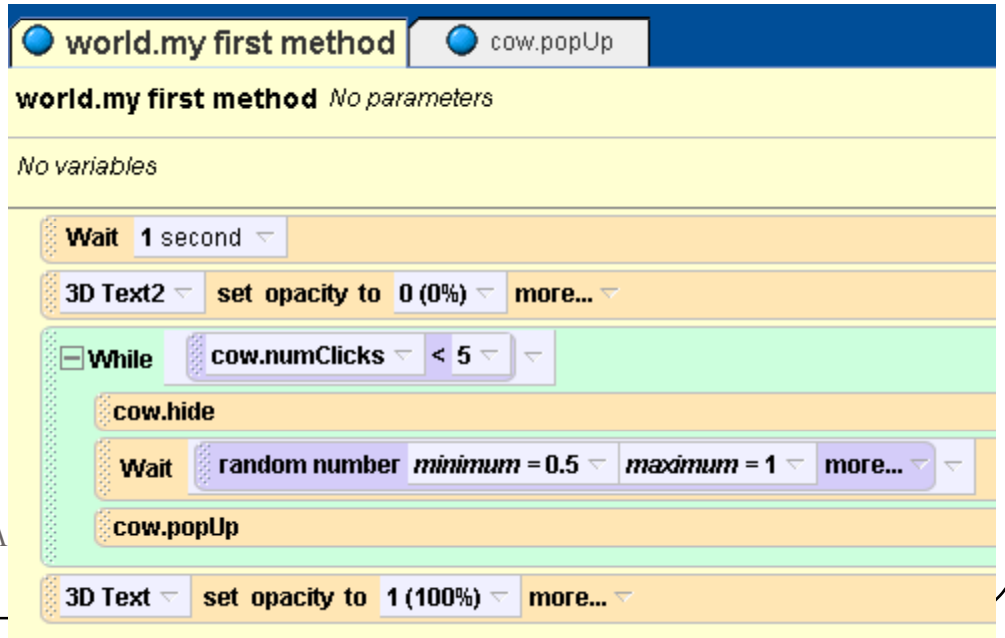
- Remove the random move left and forward
  - Right click commands and select delete
- Change minimum on random move right and back to -2
- Set duration on random moves to 0
- Put move up and set opacity to 1 commands to a do together block and change duration to 0.5 seconds

Finished popUp method



Add instructions

- Create 3D text that tells the user what to do in the game
- When the game starts wait for 1 second
  - then make the text invisible
    - can set opacity to 0

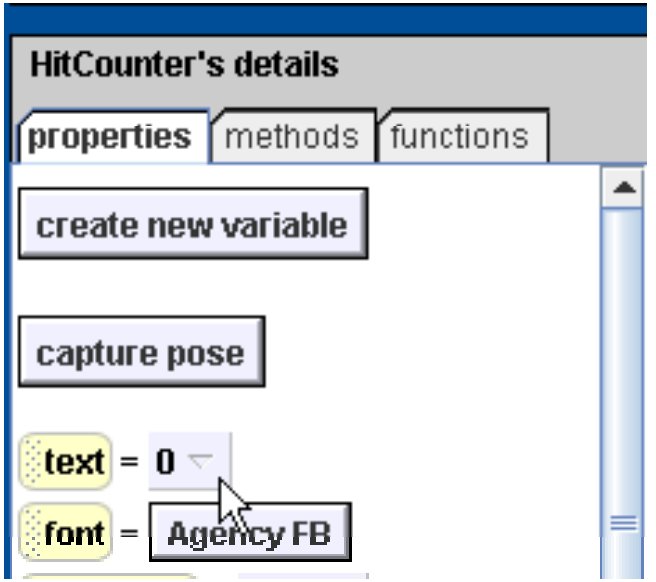


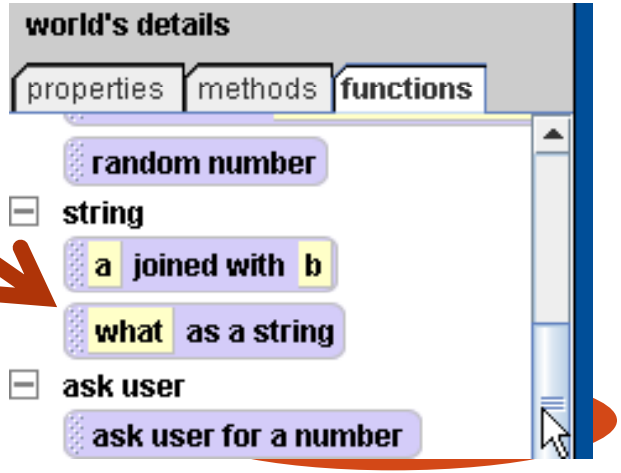
Show the number of hits

- Create 3D text that says Hits and one that says 0
- Use the mouse controls to position the text
  - Click on Add Objects to see the mouse controls
    - when done click on done

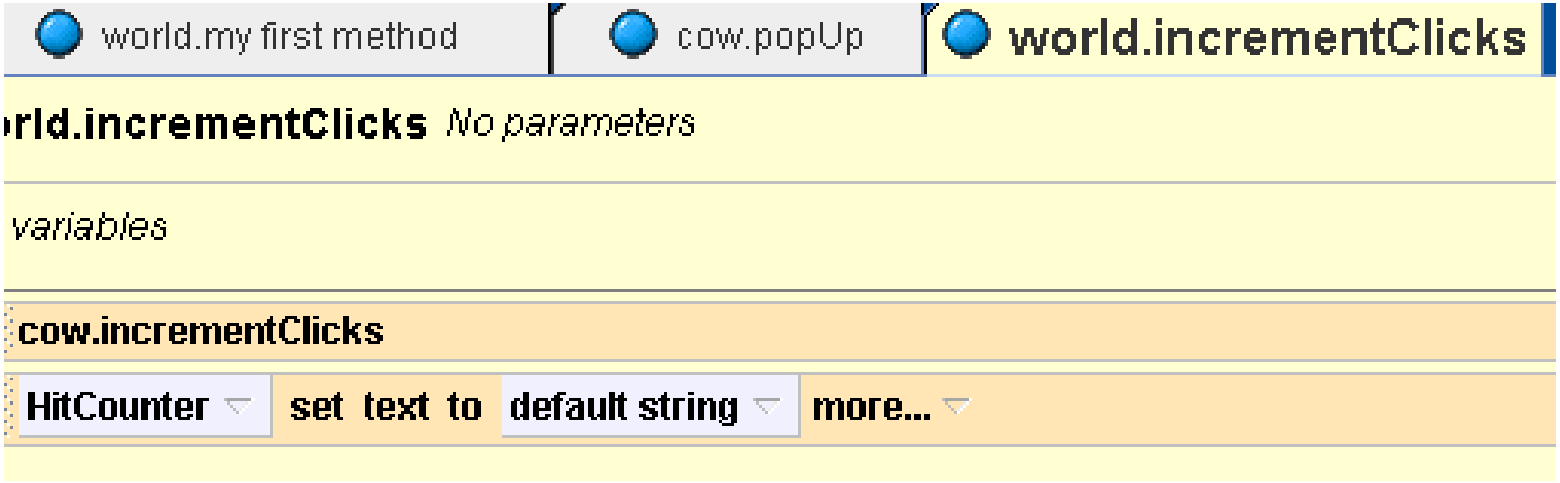
Create World incrementClicks method

- Add an incrementClicks method to the world
  - call the cow incrementClicks method
  - click on the 0 3dText object then properties
    - drag out text = 0
      - select default string
    - replace the default string with the what as string function in the world to convert the number to a string
    - choose expressions and pick cow numClicks as what to convert

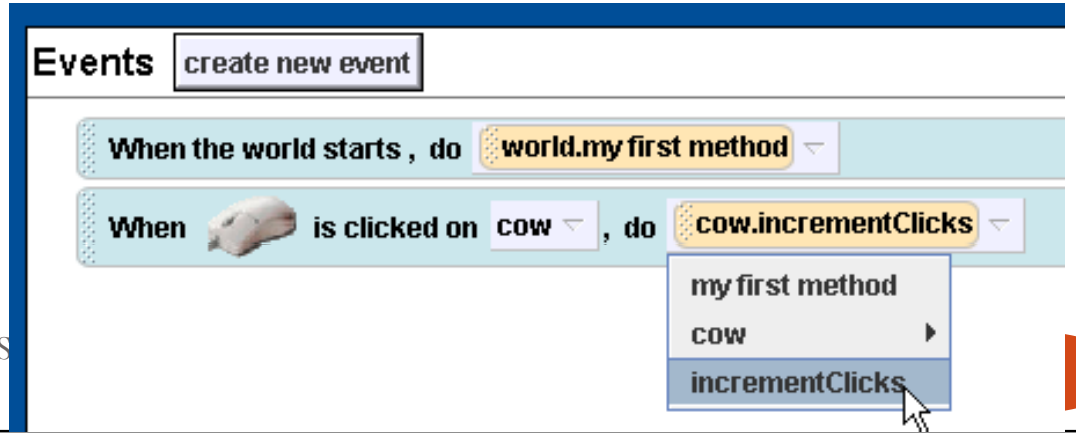




Change when mouse clicked



- Modify then when mouse is clicked on the cow to call the world's incrementClicks method
- Try it!



Other Ideas

- Have the cow play a sound when hit
  - modify cow incrementClicks method
  - use play sound in methods
    - you can also record your own sounds
      - click on properties for the cow
      - click on the + next to Sounds
      - and record a sound and name it
- Count the number of times the cow has appeared
- Add a way to lose
  - maybe it will only run till it appears 10 times
  - maybe add a timer and a time limit
  - maybe add other cows that if you click on these you lose, change color of target cow to something like orange
- Make the amount of time you give the user to click on the cow a random amount from 0.5 to 1 second

Summary

- Alice can be used to create simple 3D games
- Concepts covered
  - creating methods
  - creating a property (field)
  - creating a variable
  - using a while loop
  - creating a comment