Creating Simulations with Panther
Legos, Legos Everywhere, But Which Ones Do I Use?

• As you saw in class, to build a simulation with Panther, you just need to snap the right Lego blocks together.
• But which blocks do you use?
• There are 10 tabs of Panther blocks.

You will likely only use blocks from 6 of the tabs.
The 6 Sets of Panther Pieces You Might Use
Variables

• Whenever there’s something you need to keep track of, you need a variable!
First Make A Variable

- You might need to set the value of a variable.
- Or use a variable as part of a calculation.
- Or it might be helpful to display the variable’s value on the screen so you can watch it while your simulation runs.
- If you decide you don’t need it, you can delete a variable.
Sometimes You May Want A Set Of Related Variables

- If you have a set of related things like fish names, you might want to make a list
- Or add things to a list
- Or delete things from a list
- Or find the value of an item at the \( n^{\text{th}} \) position of a list
- Or find how many things are in a list
Sometimes You May Want A Set Of Related Variables

- Or insert something at a specific place in a list
- Or replace the item at the n\textsuperscript{th} position of a list with something
- Or see if a list contains something
More Lists

• You might want to delete everything in a list. Select the triangle in this block
to get this menu and select all.
When You Want To **Control** How Your Program Flows
More Control

- Our simulations all start when we click the green flag
- If you want to have the simulation pause for some time...
- If you want to repeat something forever...
- If you want to repeat something some number of times (you can replace the 10 with a number or a variable)
Even More Control

• This repeats whatever is inside this as long as the block is true
• If the block is true, do what’s inside
• Same as the if block, except that if the if statement isn’t true, do what’s inside this block
The Last Of The Control

- This block repeats what’s inside as long as this is true
If You Need Do Some Math Or Some Comparison
Math

- Standard math blocks
- Modular arithmetic
  \( X \mod Y \) means when you divide \( X \) by \( Y \), what is the remainder? So \( 10 \mod 3 = 1 \) because \( 10 \div 3 = 3 \) with a remainder of 1
- Rounding a number
- Trigonometric functions
Comparisons, Etc.

• Get a random number between the two values
• Comparing values
• And other things!
Need An Answer? Ask A Question!

• If you need to get some information from the user? Ask a question

And set a variable equal to the answer
Use Information From A File
If You Need Data From A File...

• Gives you the text on a line of the specified file
• Gives you the number of lines of text of the specified file
On Occasion, You’ll Want To **Look At** Something

- Want to make something show up on the screen? Try these