

Snap – Looping and Custom Blocks

Major Concepts

- Loops
 - forever
 - repeat
 - for
- Variables
- Custom Blocks
 - Creating your own block
- random reporter

Loops

- Repeat and for blocks are called Loops
- Loops repeat code



Loops

- “forever” block repeats indefinitely



- The script below says “Hello” then “Goodbye”, alternating forever.



Loops

- “repeat” block repeats a specific number of times



- The script below draws a pentagon

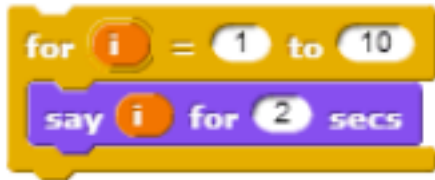


The for loop

- Has two blanks – we call these parameters
 - The first parameter is the lower bound
 - The second parameter is the upper bound
 - The variable (by default “i”) begins at the lower bound, adds one to i each time the loop executes, until it reaches the upper bound



The for loop



Is the exact same as

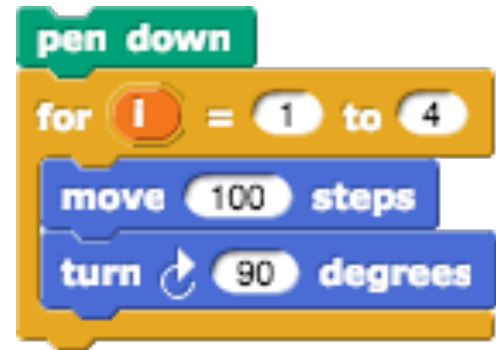


The for loop



```
pen down
repeat 4
  move 100 steps
  turn 90 degrees
```

Is the exact same as



```
pen down
for i = 1 to 4
  move 100 steps
  turn 90 degrees
```


How many times does “say....” execute? This is also known as iteration.



- A. 5
- B. 6
- C. 7
- D. infinite

Variables

- The “I” in the for loop is a variable
- In Snap!, variables are orange ovals that store a value



Value of “I” is:

1

2

9

10

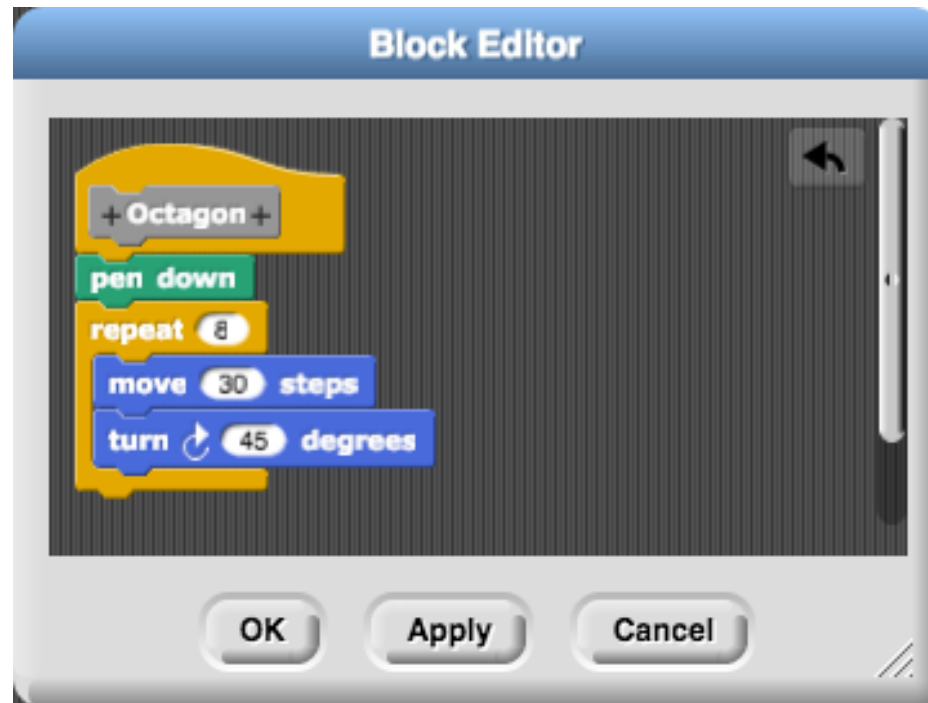
Custom Blocks

- For example: We want a block to draw an octagon every time it is clicked



Custom Blocks

- We can put this in a custom block
 - In the Variables category in the palette
 - Select “Make a block”



Octagon

Team Work

- With your neighbors, come up with a custom block example.
 - The block should perform one main task
 - The main task should be broken down into several subtasks
 - We will share a few

Adding input to Custom Blocks

- Custom blocks can accept input from the user
 - x here is a variable



(Editing our custom block)



(Using our custom block in the scripting area)



Adding input to Custom Blocks

- A block that “Says” the sum of two numbers



Reporter Block

- Oval shaped blocks that give a value
 - A variable is a type of reporter
 - Other examples:

mouse x

x position

+

x

say 3 + 6

Says "9"

The random reporter

- The random reporter randomly chooses a number between its lower bound and upper bound
- Choose your own lower and upper bounds



Says a number between 1 and 10. Could be different every time you click on it.



Says a number between 3 and 9. Could be different every time you click on it.

Which of the following is not a plausible output?

pick random 4 to 9 + pick random 3 to 7

- A. 3
- B. 8
- C. 12
- D. 16

Draw a Field of Flowers

- Each flower has a different:
 - Size
 - Shape
 - Position
- Use simple custom blocks created throughout Lab 2
- Write new custom blocks
- Use:

