

Sprite wants to remember ...

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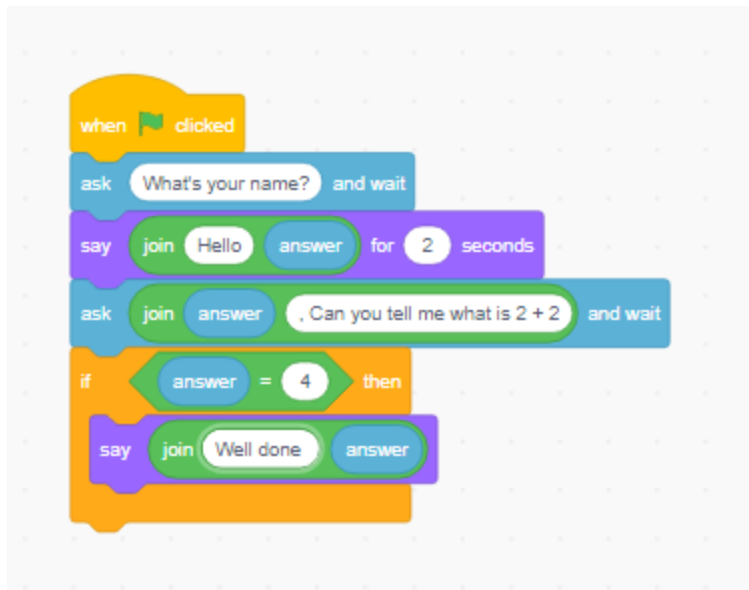
In this lesson, we will learn ...

- * How sprite can 'remember' things?
- * How variables can be defined, set and changed?
- * How we can see the value of variables?
- * What caution we must take when dealing with variables that multiple sprites can access.

<https://www.youtube.com/watch?v=wS1QETPfgGE>

Let's start with an example

- * In an earlier lesson, sprite asked us a question.

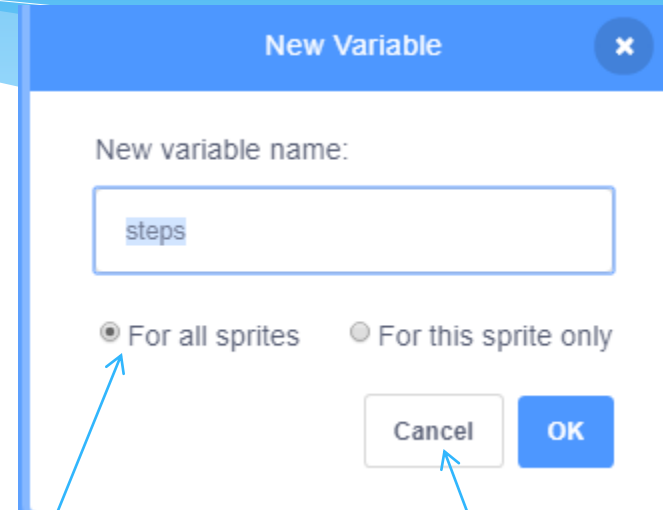
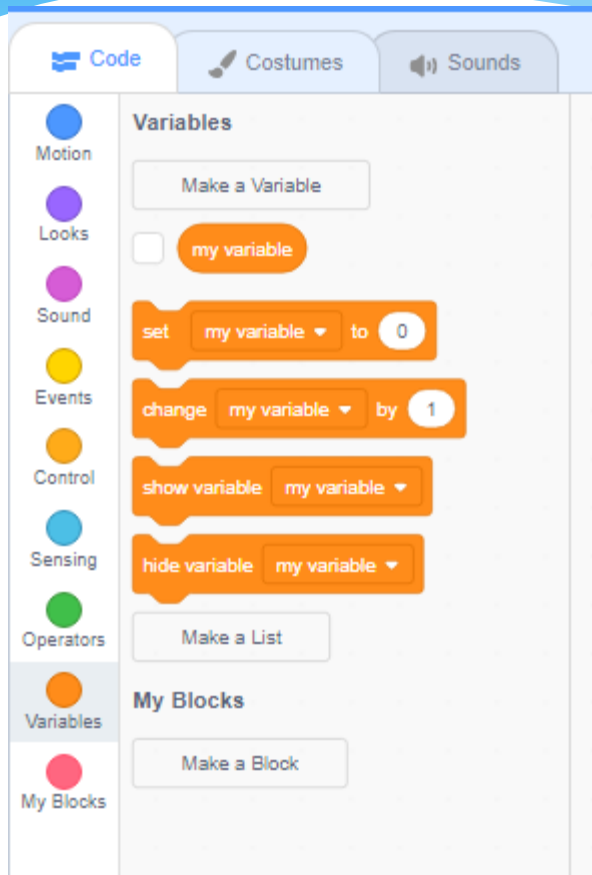


When I answered 4, I thought sprite will answer Well done Vineet, but it answered well done 4 ☹️ ... sprite totally forgot me ...

How can I make sprite remember?

- * The answer is to use a variable.
 - * This is an extremely important programming concept.
- * Think of variables as small bits of information that sprite can remember.
- * And since it can remember, it can do computations too.

How to define a variable



All sprites can see and use this variable

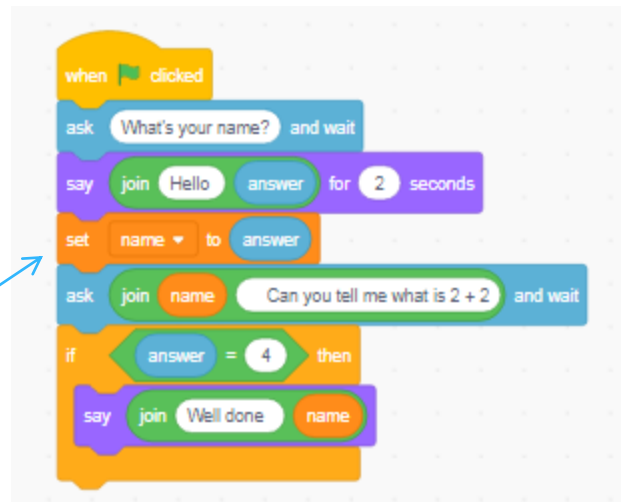
Only this sprite can see and use this variable

For now we will mostly use this.
(Convenient but requires care)

A variable called name

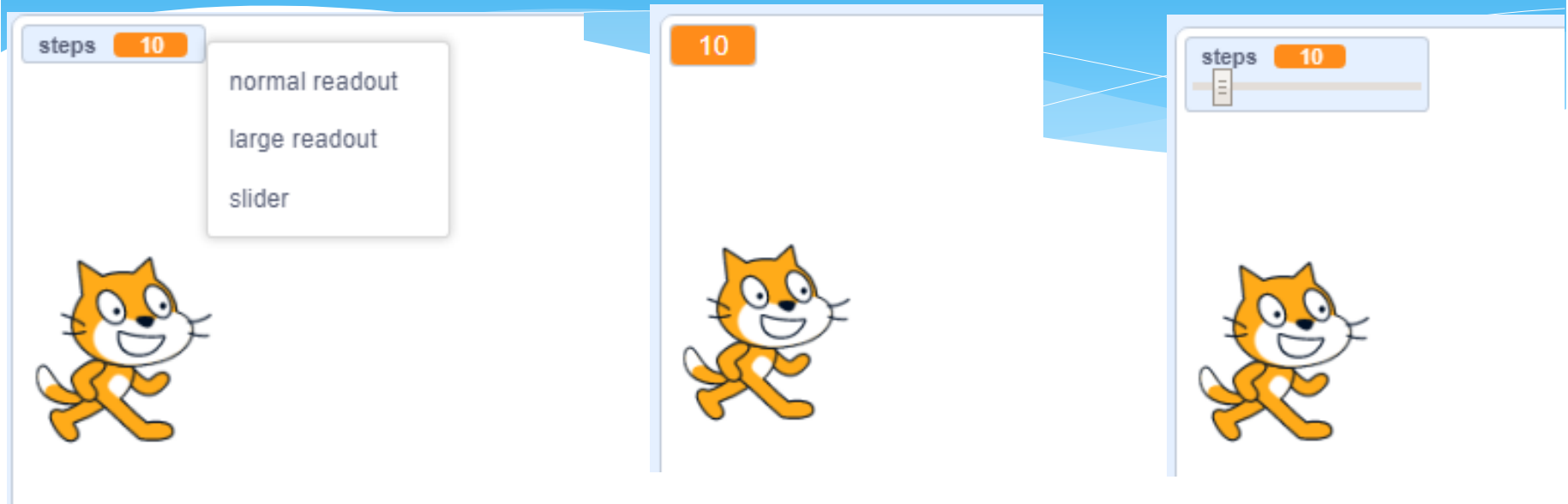
- * Not at all, see the previous example with some modification

Sprite has an additional container



Now sprite can remember my name ...

How to display a variable



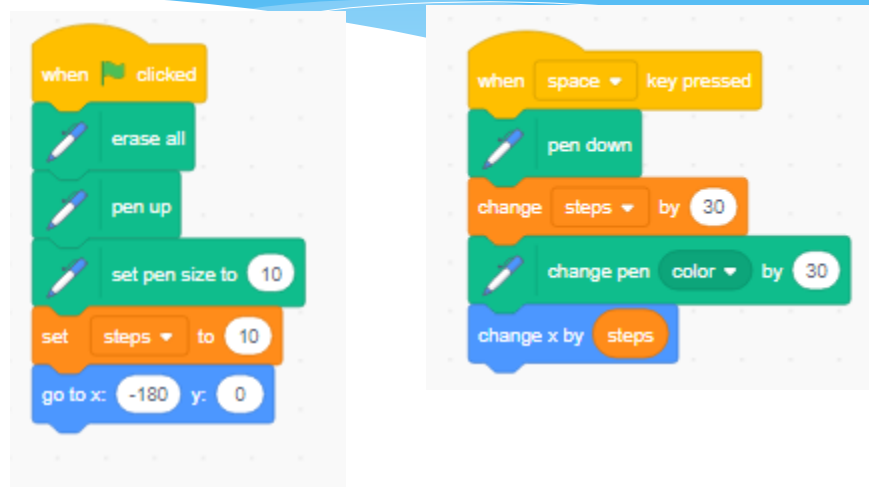
Tick this
box 😊



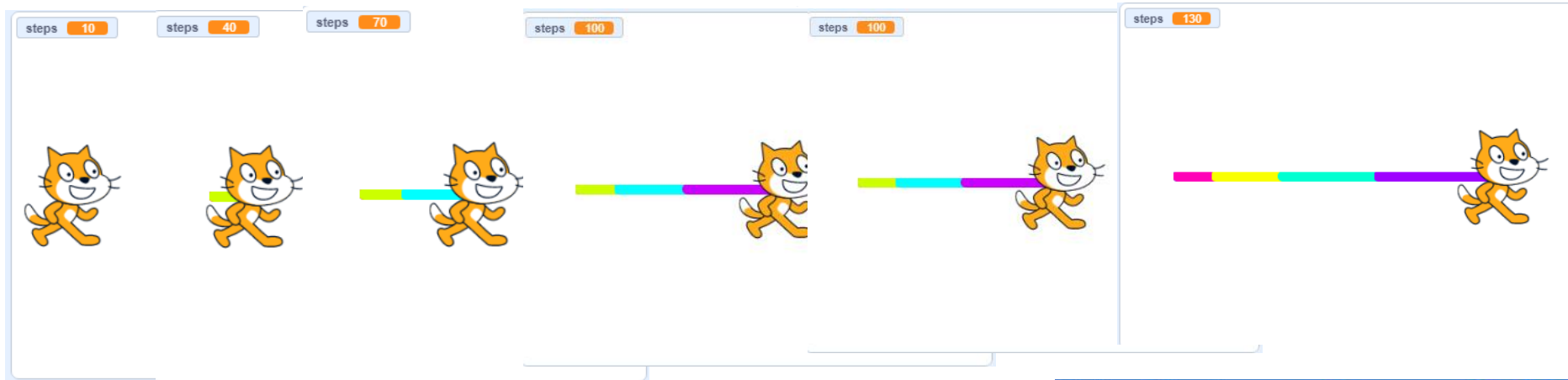
Now the best part ...

- * To the sprite, variables are like little containers with labels.
- * Analogy – containers in which you keep things – like a pencil box.
- * As the program runs, it can keep changing what is ‘inside’ these containers.

Using Variables



Do you notice that the sprite changes 'x' by larger and larger amounts, as the variable 'steps' keeps getting larger and larger



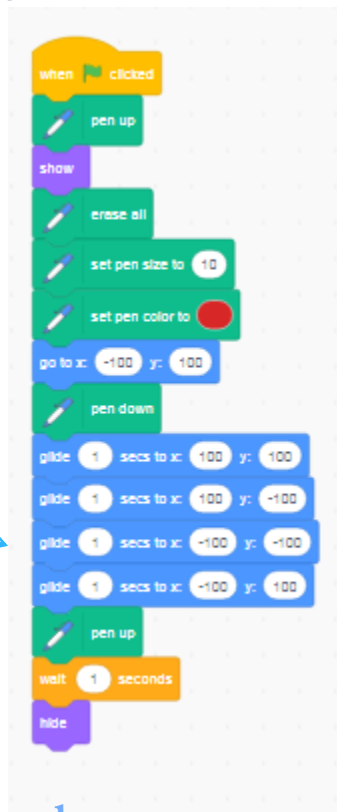
Variables are integral to any programming

- * Variables allow us to do many things like:
 - * Count how many lives we have in a game.
 - * Score in a game.
 - * In fact almost any meaningful computation requires variables – hence these are extremely important.

Variables can simplify the code

- * We can limit how many places something has to be changed.

Change required
in 4 places

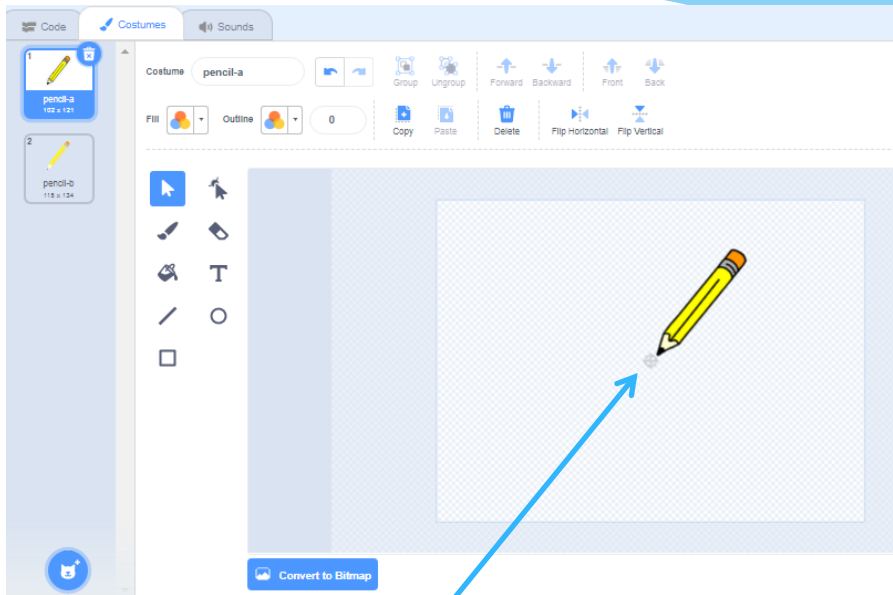


With 1
change, we
could speed
up the entire
code!

Using variables in a simple paint activity

- * Let us now make a paint box ...

Pencil Sprite ...



You can use any sprite for this, but generally speaking, a small, ball or dot shaped sprite, or a sprite with a sharp tip, which we can offset from centre, works better.

Notice, we have 'MOVED' the pencil sprite's costume a bit 'away' from the centre. This is not necessary, but creates an effect that the tip of the pencil is drawing.

Getting pencil sprite to draw

Always go to
MOUSE POINTER

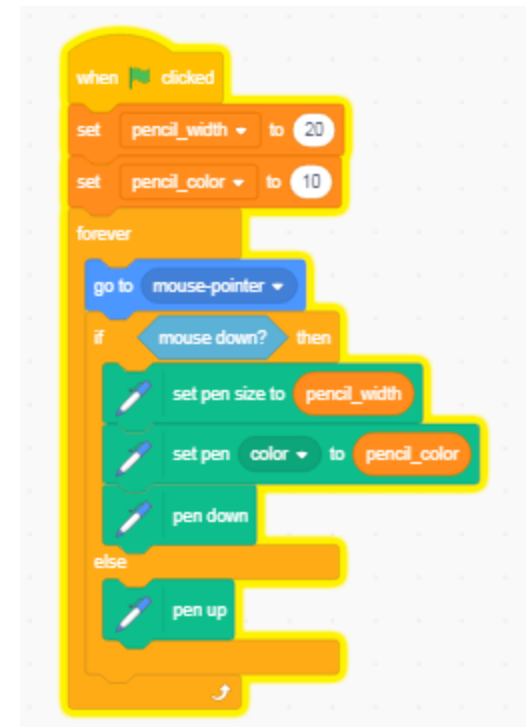
If MOUSE
CLICKED, DRAW



Adjust Pencil Width



Adjust Pencil Width
and colour



An erase button

- * An erase button which clears the stage.



Straightforward code

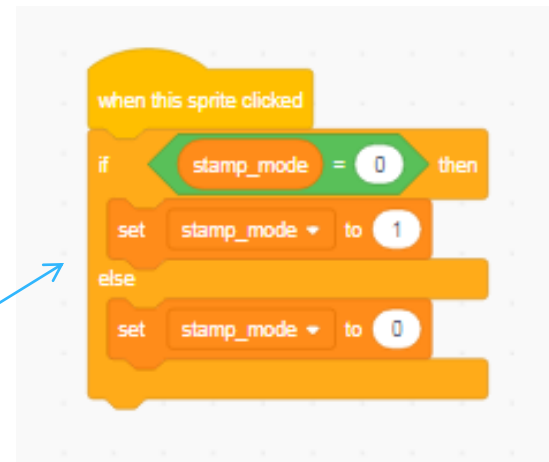


Stamp Mode

- * Another button that 'toggles' the STAMP MODE



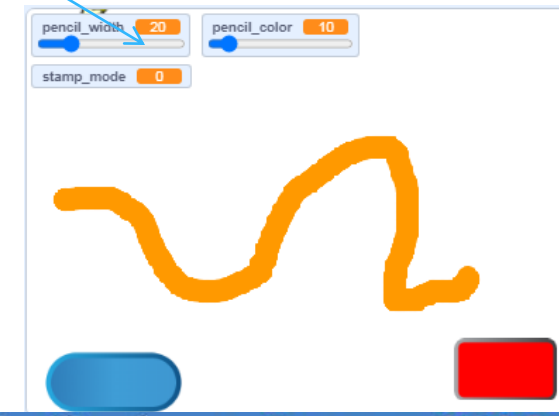
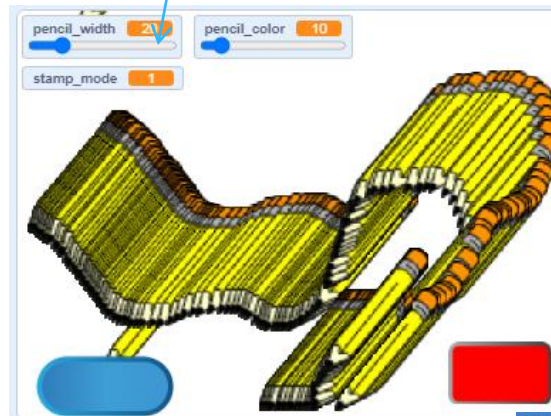
Notice how the stamp_mode changes to 1 (if it was 0) or changes to 0 (if it was 1).



Modifying the DRAW code for STAMPING



If Stamp_Mode is chosen, we change the drawing to 'STAMPING'

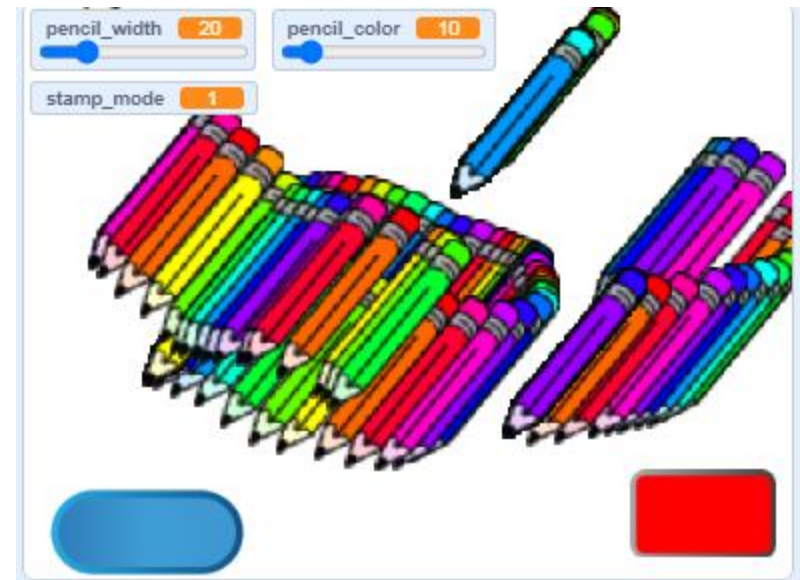


Color Effect

Use Colour effect with stamp to double the fun:



Play with
this 😊



You are all set ...

- * Variables are the key currency of programming, learn them well. You will need them in whatever programming language you use.
- * For now, though, you are all set for your independent activity – 6.
- * Enjoy!