

Torching Castles

The screenshot shows a game window with a dark green border. In the top left corner, there is a blue icon of a castle. In the top right corner, there are a green flag icon and a red circle icon. The main area of the window displays a 3D scene of a dirt path leading to a castle with a red roof and grey walls, surrounded by green trees. A green dragon with yellow wings is breathing fire on the path. A white speech bubble with black text says "MAX CASTLES TORCHED IS 8".

Castles Torched

1	3
2	1
3	7
4	8
5	2

maximum 8

length: 5

MAX CASTLES TORCHED IS 8

Code It

Torching Castles is a text input/output app in which a dragon tells the user about castles torched by her fiery friends.

Add a castle backdrop to the stage and a dragon sprite. Then add a list (similar to a one-dimensional *array*) called Castles Torched – the user will be asked to tell the dragon how many castles each of her five friends torched. Also create a variable named maximum. Write a script that determines which list item is the maximum.

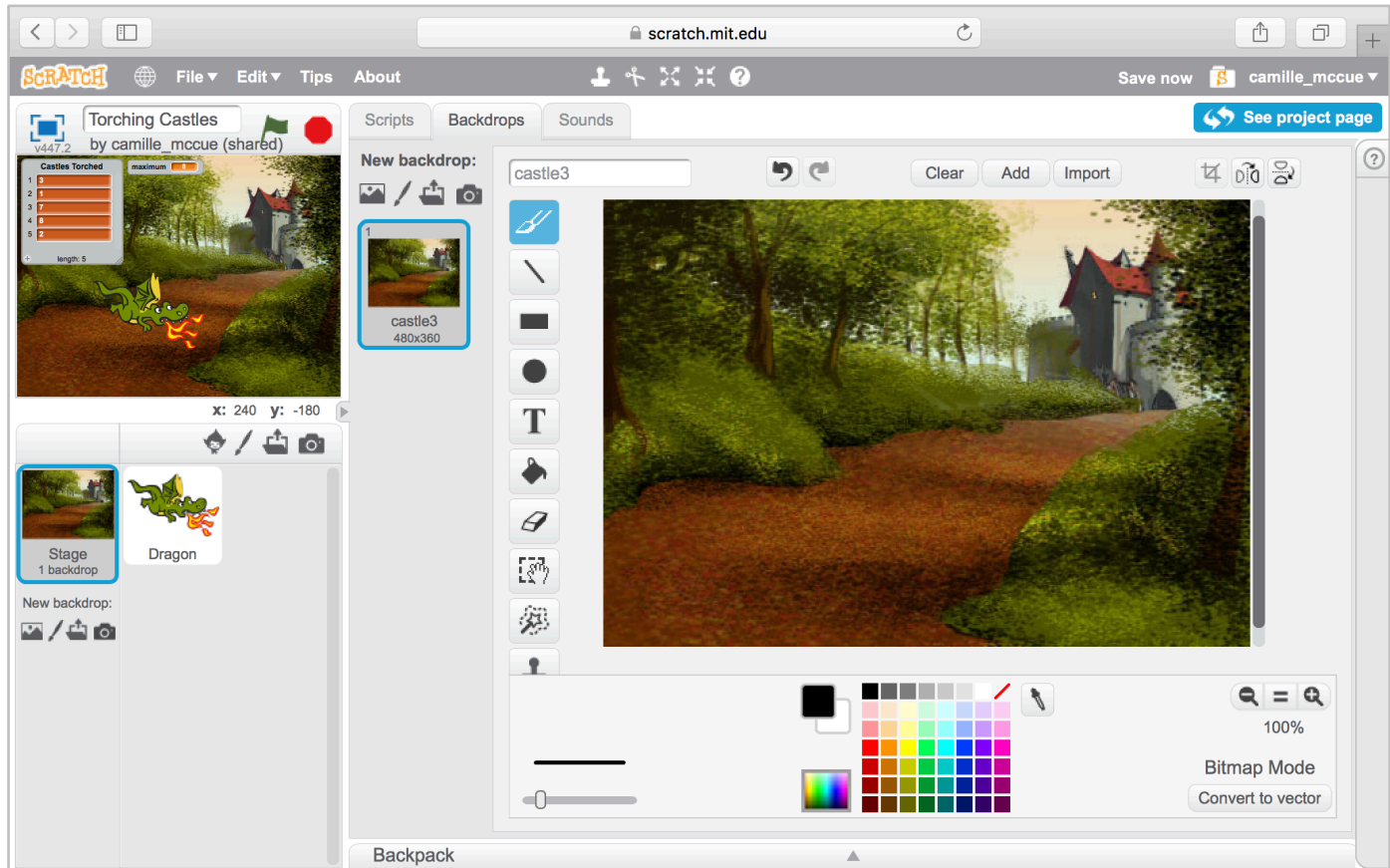
Start the action by initializing the list and variable (clearing list items and setting the maximum value to zero) with the green flag.

Play It

Press the green flag to start the action.

Torching Castles

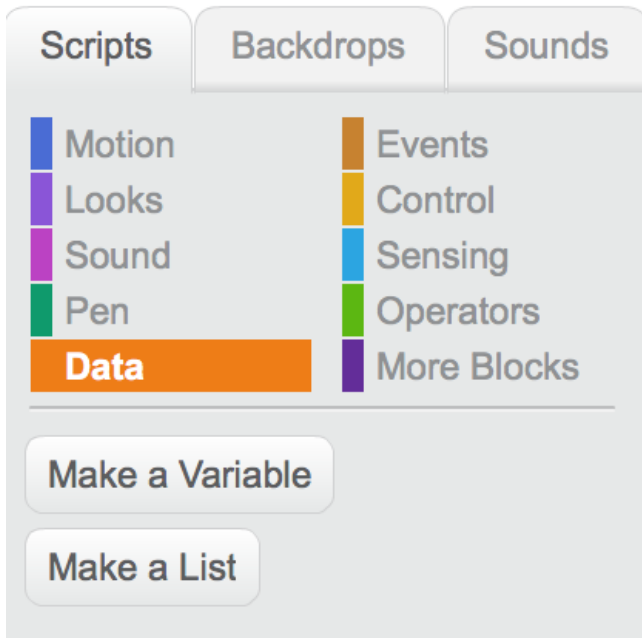
Stage – Backdrop



Dragon Sprite – Costumes



Dragon Sprite – Variables



The image shows the Scratch Scripts menu. The 'Data' category is highlighted in orange. Below the menu are two buttons: 'Make a Variable' and 'Make a List'.

Scripts

Backdrops

Sounds

Motion

Looks

Sound

Pen

Data

Events

Control

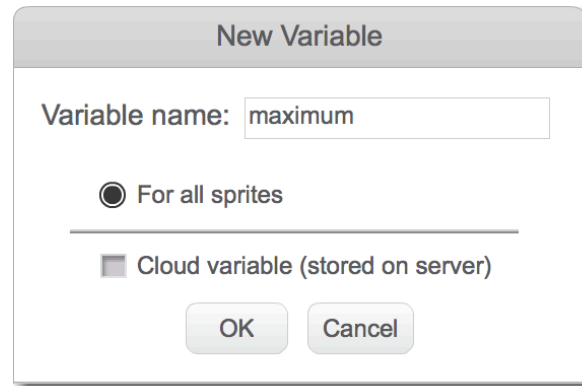
Sensing

Operators

More Blocks

Make a Variable

Make a List



The 'New Variable' dialog box is shown. The variable name is 'maximum'. The 'For all sprites' radio button is selected. The 'Cloud variable (stored on server)' checkbox is unchecked. There are 'OK' and 'Cancel' buttons.

New Variable

Variable name: maximum

For all sprites

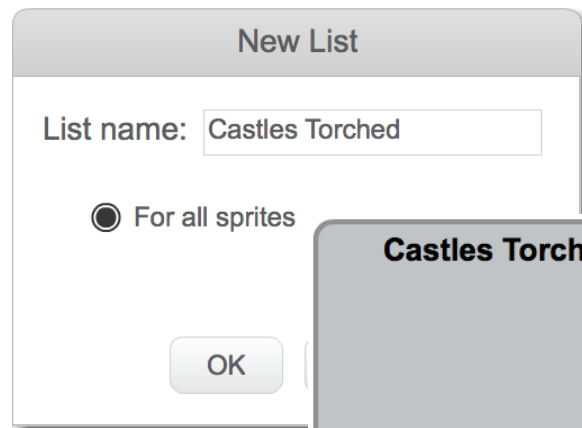
Cloud variable (stored on server)

OK Cancel



The variable monitor for 'maximum' is shown with a value of 0.

maximum 0



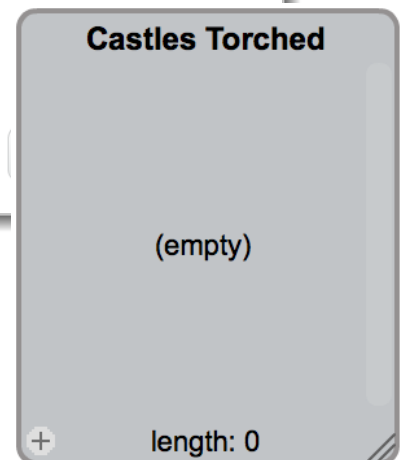
The 'New List' dialog box is shown. The list name is 'Castles Torched'. The 'For all sprites' radio button is selected. There is an 'OK' button.

New List

List name: Castles Torched

For all sprites

OK



The list monitor for 'Castles Torched' is shown. It is empty and has a length of 0.

Castles Torched

(empty)

length: 0

Dragon Sprite – Script

The screenshot displays the Scratch IDE interface. The project title is "Torching Castles" by camille_mccue (shared). The dragon sprite is currently on the stage at coordinates x: 126, y: -180. The script area contains the following code:

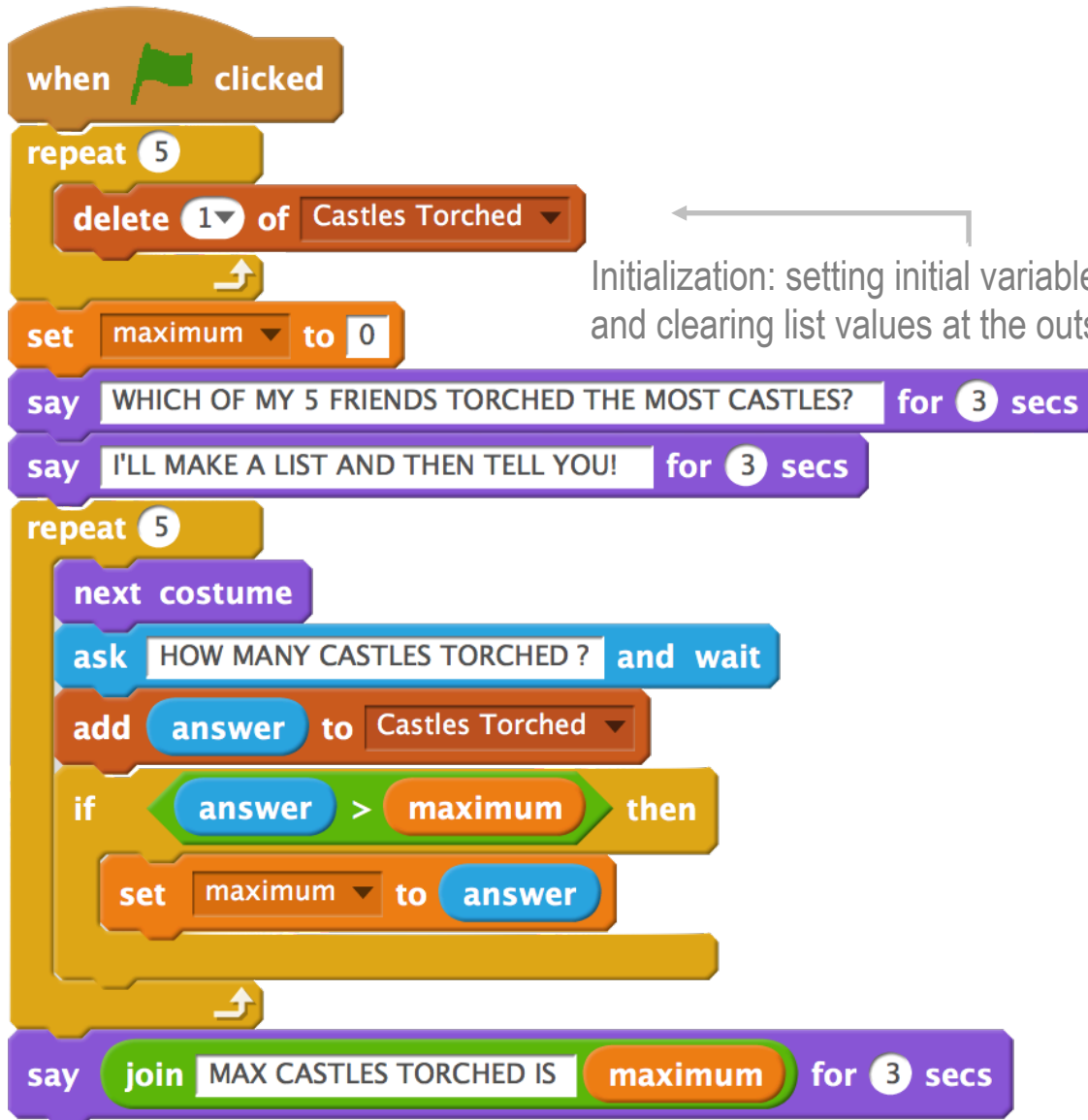
```
when green flag clicked
  repeat (5)
    delete 1 of Castles Torched
  set maximum to 0
  say WHICH OF MY 5 FRIENDS TORCHED THE MOST CASTLES? for 3 secs
  say I'LL MAKE A LIST AND THEN TELL YOU! for 3 secs
  repeat (5)
    next costume
    ask HOW MANY CASTLES TORCHED? and wait
    add answer to Castles Torched
    if answer > maximum then
      set maximum to answer
  say join MAX CASTLES TORCHED IS maximum for 3 secs
```

The "Data" block menu is open, showing the following options:

- Make a Variable
 - maximum
 - set maximum to 0
 - change maximum by 1
 - show variable maximum
 - hide variable maximum
- Make a List
 - Castles Torched
 - add thing to Castles Torched
 - delete 1 of Castles Torched
 - insert thing at 1 of Castles Torched
 - replace item 1 of Castles Torched

Torching Castles

Dragon Sprite – Script Closeup



Initialization: setting initial variables (often to zero) and clearing list values at the outset of a program

Extend It

Torching Castles features a specific number of castles, namely five. You wrote the program to handle this specific case.

Can you generalize this program to handle n number of castles, a number that may change on each execution of the program? For example, *ask* the user to enter numbers until a trigger letter, such as "x" is entered, indicating the user is done.

In computer programming, moving from a specific case (a list of five items) to a general case that is useful in more circumstances (lists of different lengths) can be considered one definition of abstraction. (Another definition of abstraction: you want to include all of the relevant information in the program, but none of the extraneous information.)