# John Romero Programming Proverbs

- 12. “Only program for a few minutes and test code immediately. Try not to code for even as long as 30 minutes. This is will help to avoid debugging because you will catch bugs sooner, and won’t have as wide an area of code to look through for the bug.”

- John Romero, “The Early Days of Id Software - John Romero @ WeAreDevelopers Conference 2017”

# Implementing an array datatype in Python

- python has a number of builtin data types: strings, lists, dictionaries, float, int
    - noticable by its absense is the array data type

- this datatype would be useful in touchmap to maintain a grid of buttons and a grid of the characters to be exported

# Implementing an array datatype in Python

- it is possible to build an array datatype from a class (and a number of lists)

# array2d.py

- array2d.py implements a very simple 2D array in Python
- and is used by touchmap.py to create cell_array and button_array
- **$HOME/Sandpit/touchmap-0.2/array2d.py**

```
#  the contents will be written to the file and is the complete 2D map
cell_array = array2d (0, 0, " ")
#  contains just the 2D array of cells (buttons) visible on the tablet
button_array = array2d (0, 0, [None])
```

# array2d.py

- `array2d` takes three parameters the initial size of the array `x` and `y` and lastly the default element value which must be a list

- `array2d` is implemented as a class and has a number of public methods
  - `set_contents` set array [x, y] to value
  - `get` get value held at position, [x, y]
  - `high` return the maximum indices in the 2d array
  - `inRange` return True if, x, y can index into the array.

# array2d.py

- the array will dynamically grow to fit an assigned value

- for example

-
  ```
  cell_array = array2d (0, 0, " ")

  cell_contents.set_contents (4, 2, "a")
  ```

- will create `cell_array`
  - and then store `a` at index `4,2` having grown the `cell_array` from entry `0,0` up to but not including entry `4,2` with spaces

# array2d.py

- remember that a string is a list of characters in Python

- which is why the button array is declared using

-
  ```
  button_array = array2d (0, 0, [None])
  ```