ALL ABOUT ARRAYS

Ultimate JavaScript Arrays

WHAT ARE ARRAYS?

Collection
- Pieces of data are collected

Storage
- Data must be organized

Processing
- Conclusions are derived from data
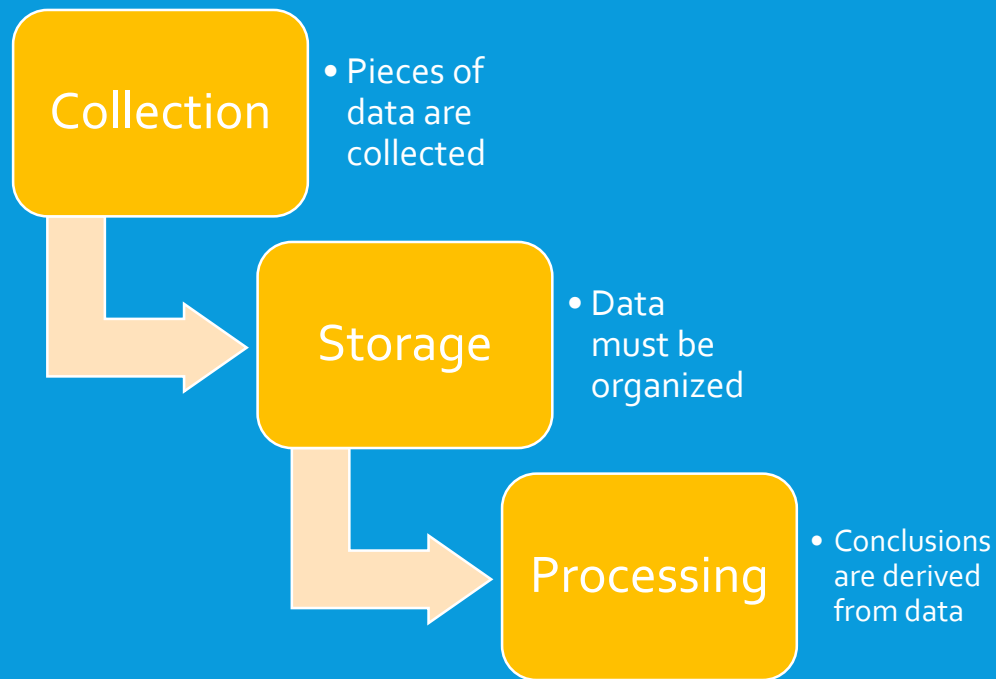
- Arrays are simple
- An array is a *list of items* when *the order matters*
- Sometimes, arrays have fixed size (in JavaScript they don't usually)
- Conceptually used to refer to a *list* or a *sequence* of things
- An array represents a *reference* to a group of things, not the things itself

WHAT DO YOU MEAN, REFERENCE?

Wise man points to the moon ➡ Moon is unchanged ➡ Pointing finger only reference

- Arrays point to strings, numbers, etc. in memory

- Copies of numbers and strings are created when an array refers to them

- Objects are not copied, therefore multiple arrays referring to them, or the same array pointing to them in multiple

- Crossing Milk off a shopping list does not wipe that milk from existence (unless your shopping list is a page of a Death Note)

HOW ARRAYS ARE USED IN REAL LIFE

Lists

Cooking

Music
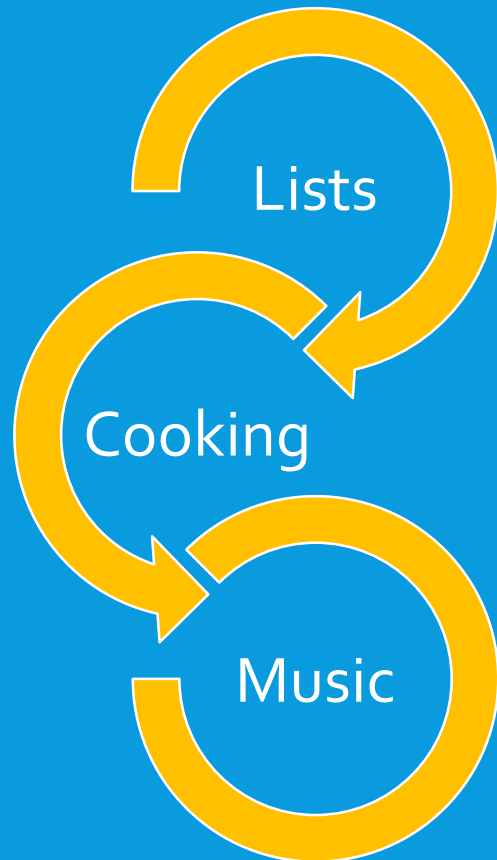
- Making a shopping list for ingredients
- Keeping track of steps in a recipe for plain white sauce
- Spelling words in a spelling bee
- Playing solitaire alone in a dimly lit room
- Representing collections of data on Facebook, Twitter, Instagram
- Playing a song on piano with your friends and coworkers

WHAT MAKES A JAVASCRIPT ARRAY SPECIAL?

- Array has no fixed size, can be expanded / shrunk on the fly

- Array values can be accessed by number but also, surprisingly, by strings

- JavaScript arrays have been called "array-like objects" instead of arrays, and for good reason

- Arguably the most flexible array by far of any programming language

- Has many useful built-in functions

- JavaScript arrays can have some values hidden from iterators

- Can have any kind of object / any combination of types

ARRAYS VS OBJECTS IN JAVASCRIPT

Arrays

- Elements of array can always be accessed in consistent order

- Can be iterated over with for or for-each loops, as well as built-in methods

- Can hold any number of references

- Good for any collection where the elements tend to need to be accessed in order or all at once

Objects

- Order of object properties not guaranteed

- Can be iterated via the for-in loop

- Can hold any number of references

- Best for collections where each element has a unique key and order is not important

CONCLUSION

- Arrays represent a list of references to things

- The order of elements in arrays is important

- JavaScript arrays are very flexible and can be of any size

- The differences between arrays and objects can be ambiguous in JavaScript

- Arrays hold references to objects, but copy strings, numbers and booleans

JAVASCRIPT OBJECTS AND ARRAYS QUICK REFERENCE

	Arrays	Objects
Fixed order for elements	Yes – order always same	No – no way to predict loop order
Iterable keys	Only integers	Integers and strings
Appropriate loop	For Loop	For In Loop
Built In Methods	Map, Filter, Reduce, Etc.	Keys, Create, etc.
Cam run constructor on initialization	No – only a plain list of elements	Yes – OOP possible
Copied on Reference	No – array only exists once in memory	No – object only exists once in memory