Programming for Everybody

4. Arrays & Hashes

le wagon

Arrays

a **collection** of Ruby data that stores a list of values (called **elements**) in a single variable

arrays can contain: **numbers** (in any order, repeated or not), **strings**, **boleeans, symbols** and even… **other arrays**! :)
(arrays of arrays are called *multidimensional arrays*)

arrays are defined by assigning a variable to values, separated by commas, stored between square brackets [ ]

```
one_array = [“Bob”, “Joe”, “Zack”]

another_array = [1, 7, 16]
```

Arrays (cont.)

creating new arrays

my_array = [ ]

my_other_array = [1, 2, 3, 7, 10]

each element in the array has what's called an **index** - > the first element is at index **0**, the next is at index 1, the following is at index 2, etc.

Arrays (cont.)

access / **read** elements from array
- end: array.last
- beginning: array.first
- chosen index: array[index]

add elements to array
- end: array.push(new element)
- beginning: array.unshift(new element)
- chosen index: array.insert(index, new element)

Arrays (cont.)

delete elements from array

- end: array.pop
- beginning: array.shift
- by index: array.delete_at(index)
- by value: array.delete(value)

modify elements from array

```
my_array = [“Mariana”, “Zoe”, “Maria”, “Lucas”]
my_array[0] = “João”
puts my_array
(returns [“João”, “Zoe”, “Maria”, “Lucas”])
```

Hashes

a **collection** of Ruby data that stores a list of **key-value pairs** in a single variable

values can be repeated but keys are unique

we can use **any** Ruby object as a key or value

values are assigned to keys using **=>**

```
hash_name = {
  key1 => value1,
  key2 => value2,
  key3 => value3
}
```

Hashes (cont.)

creating new hashes

```
my_hash = {
  “cat" => “Garfield”,
  “dog” => “Snoopy”
}
```

or

```
my_hash = Hash.new
my_hash[“cat”] = “Garfield”
my_hash[“dog”] = “Snoopy”
```

Hashes (cont.)

access / **read** a key-value pair

```
my_hash[my_key]
```

add key-value pairs

```
my_hash[my_new_key] = my_new_value
```

Hashes (cont.)

delete key-value pairs

```
my_hash.delete(key)
```

updating key-value pairs

```
my_hash = {
  “cat" => “Garfield”,
  “dog” => “Snoopy”
}
my_hash[“cat”] = “Kitty”
```

Iterating… again!

we can loop over an array or a hash, in which case we say we're **iterating** over them

Iterating… again!

1. Iterating over an Array

```
my_array = [“Bob, “Joe”, “Zack”]

my_array.each do | names |
   puts names
end
```

or

```
my_array.each { | names | puts names }
```

(both will print out Bob, Joe, Zack)

Iterating… again!

2. Iterating over a Multidimensional Array

my_array = [[“Bob, “Joe”, “Zack”], [“Zoe”, “Nina", “Chloe”]]

```
my_array.each do | sub_array |
   sub_array.each do | names |
       puts names
    end
end
```

(prints out Bob, Joe, Zack, Zoe, Nina, Chloe)

Iterating… again!

3. Iterating over a Hash

we need **two placeholders** to represent each key/value pair:

```
students_grades = {
  "Zack" => 7,
  "Zoe" => 10
}

students_grades.each do |student, grade|
  puts "#{student}: #{grade}"
end

(prints out Zack: 7, Zoe: 10)
```

Thank you! :)

le wagon