Rails from the Ground Up!

with Jared Richardson
RoleModel Software

Start of Day 3

Ruby
Part Two
Commonly Used Classes

attr_accessor

Shortcut	*Effect*
`attr_reader :v`	`def v; @v; end`
`attr_writer :v`	`def v=(value); @v=value; end`
`attr_accessor :v`	`attr_reader :v; attr_writer :v`
`attr_accessor :v, :w`	`attr_accessor :v; attr_accessor :w`

http://www.rubyist.net/~slagell/ruby/accessors.html

The Day One Review

Command line

brew

git

rvm

ruby 1.9.3

basic language features

Day 2 Review

Control flow

Loops

Ranges

Iterators

Fizz Buzz! (and modulo)

Class of class

Classes

Methods

Classes vs instances

Monkey patching

Inheritance

Control Flow

```
if/end

if/else/end

if/elsif/elsif/end

<code> if <condition>
```

Loops

```
loop{..}

loop{ .. break}

while <condition> { .. }

while <condition> do ... end

until <condition> ... end

until <condition> do ... end

for i in (range) ... end

5.times do ... end
```

Ranges

```
1..10

"a".."z"

"A".."Z"
```

Iterators

```
(1..10).each{| x | ... }
```

Classes

```
class Shopping_Cart ... end
```

Methods

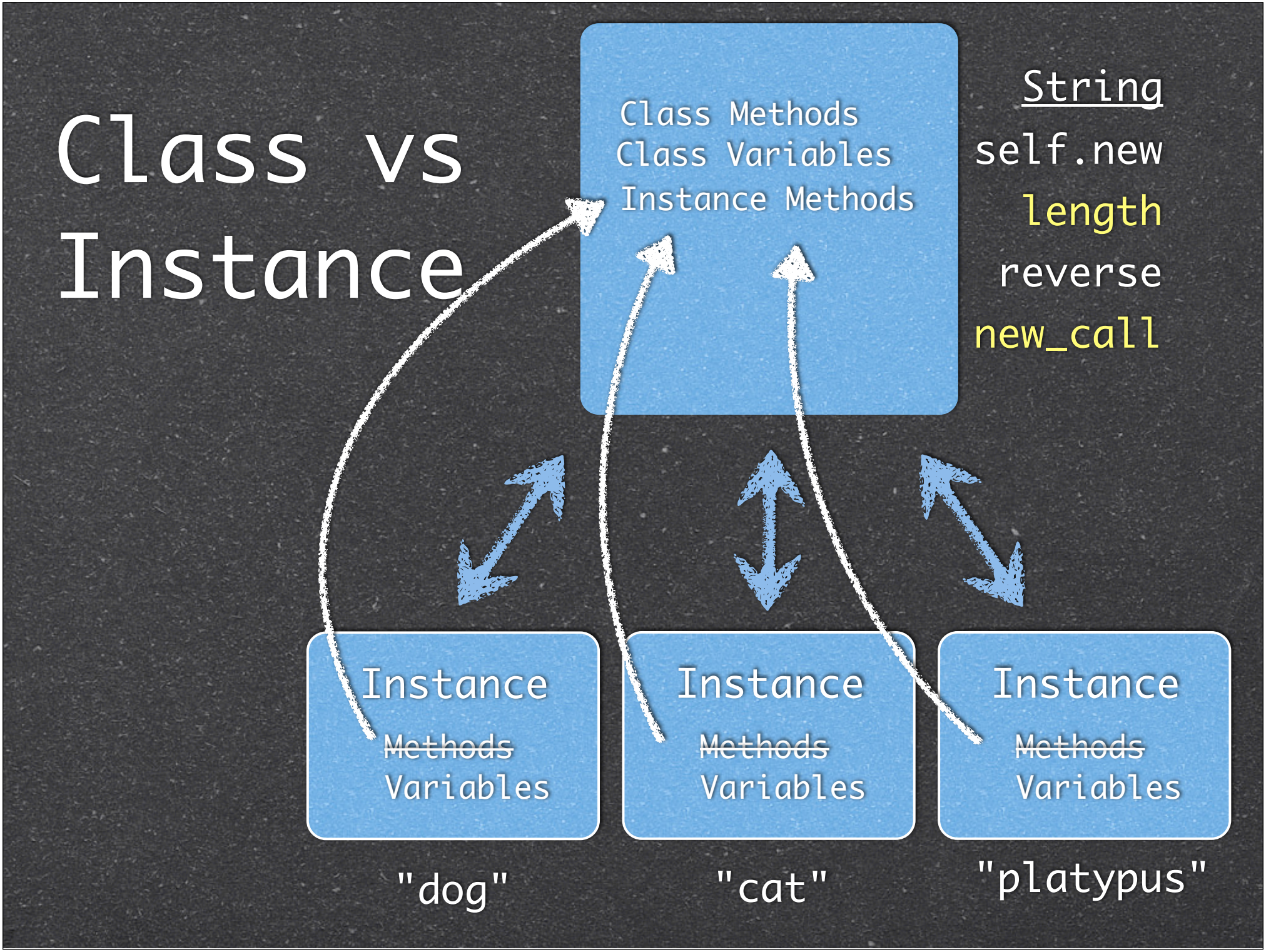
```
def checkout( items ) ... end

def initialize ... end # for class.new

def checkout ... return total end

... return items, total, time
```

Class vs Instance



Monkey Patching

Classes are open

Methods & classes can be redefined`

Inheritance

```
Dog < Animal

Ford < Automobile

Lady Gaga <  ???
```

Ready?

Commonly Used Classes

- Array
- Hash
- File
- Regexp
- Symbol
- Time

Array

```
ary = Array.new

ary = Array.new(16)

ary = Array.new(16, “a”)

ary = []

ary = [ “a”, 7, nil ]
```

Array Usage

```
ary << “a”

ary << “b”

ary << [“a”, “sub-Array”]

ary.length

ary.sort

ary.each
```

*

aka splat

It can perform ...

Array creations

```
def hello( first_person, *the_rest)
h = hello("Jay", "Matthew", "Dave")
the_rest = ["Matthew", "Dave"]
```

*

aka splat

It can perform ...

Array to method arg conversion

```
the_rest = ["Matthew", "Dave"]

h = say( "hello", *the_rest )
```

*

aka splat

It can perform ...

Array breakdowns

```
first, *list = [1, 2, 3, 4]
```

```
*list, last = [1, 2, 3, 4]
```

```
first, *list, last = [1, 2, 3, 4]
```

*

aka splat

It can perform ...

Array coercion

```
str_ary = *"Some string"

str_ary = *"First string ", "other"

num_ary = *1, 2, 3, 4
```

Array has the Each Iterator

```
ary.each{ | item |
  puts item
}
```

```
[2,4,6,8,10].each { |value|
    print "#{value} "
}
```

each_index

```
ary = ["7", "abc", 72, [1, 4, 1] ]
ary.each_index{ | idx |
 puts "#{idx}) #{ary[idx]} "
}
```

Print and Puts

```
puts “Hello World!”

print “Hello again.”

n = 7

puts “The number is #{n}”

puts ‘The number is #{n}”

puts ‘The number is ‘+ n

puts ‘The number is ‘+ n.to_s
```

Array as Stack

```
ary.push(“a”)
ary.push “b”
ary.pop
ary.pop
ary.pop
```

Array as Queue

```
ary.first

ary.last
```

Breaking in Line

```
ary.insert(<position>, <value>)

ary.insert(2, "breaker")
```

Already Broke In?

```
ary.include? “17”
ary.index 17
```

Self Learning

```
ary.methods.sort.each{ | m |
  puts m
}
```

http://apidock.com/ruby/browse

http://www.ruby-doc.org/core-1.9.3/Array.html

Your Turn

create an array with all the odd numbers from 1 to 100

sort and print

reverse sort and print

create a new array from the sorted and unsorted arrays

sort and print

Hashes

Collection of key => value pairs

Creation

```
h = Hash.new

h = {}

h = { “a” => 3, “b” => 17 }
```

Access

```
h.keys

h.values

h[“a”]

h[:a] = 17

h.key?(“a”)

h.value?(“3”)
```

Other Hash Methods

```
h.store("c", 42)

h.flatten

h.include?("c")

h.invert

h.delete("c")
```

Your Turn

Create a new hash with names and favorite colors

```
{ :Jay => "blue", :Jared => "blue", :Matt => "Orange", :Dave => "black"}
```

print the keys

print the values

print the keys : values

File

```
f = File.new(“nails.txt”, “r+”)

File.exist?(“file name.txt”)

File.const_get(:SEPARATOR)
```

Access Modes

```
r  Read Only
r+ Read-Write
w  Write Only
w+ Read-Write, erasing existing file
a  Write Only
a+ Read-Write (creates)
```

Usage

```
counter = 1
File.open("list.txt", "r") do |file|
  while (line = file.gets)
    puts "#{counter}: #{line}"
    counter += 1
  end
end
```

What's This Do?

```
result = File.foreach("list.txt").collect do |line|
  *search, replace = line.strip.split("|", -1)
  [Regexp.new(search.join("|")), replace]
end
```

Bonus Points

```
result = File.foreach("list.txt").collect do |line|
  *search, replace = line.strip.split("|", -1)
  [Regexp.new(search.join("|")), replace]
end
```

list.txt ->

```
<p[^>]*>|<p>
<\/?(font|span)[^>]*>|
<\/u>\s*<u>|
<\/u>\s*<i>\s*<u>|<i>
```

Your Turn!

```
back to RubyFromTheGroundUp

cd exercise_two

Read input_file.txt

Add up the numbers in the file
```

And Again...

Print the sorted numbers

Print the square root of each number

Print each odd number

Third Time's a Charm

Print the average

Max

Min

RegExp

Regular Expressions

Pattern match against strings

Creating a Regexp

```
/.../

/hay/.class

%r{...}

%r{hay}

Regexp.new(“hay”)
```

Use

```
=~

/hay/ =~ “needle in a haystack”

"in the haystack" =~ /hay/

re = /hay/

re =~ “haystack”

re =~ “no hit”
```

More Information

http://www.ruby-doc.org/core-1.9.3/Regexp.html

Your Turn!

cd exercise_three

Read input_file.txt

Count the number of times “Hello” occurs

Save each matching line in an Array after changing "Hello" to "Howdy"

Sort and print

Symbol

:Hello vs “Hello”

:”Hello World”

Immutable

Runtime wide constant

Usage

```
hash = { :a => 7, :b => 12 }
```

Time

Date/Time abstraction

Usage

```
t = Time.now

t.year

t.month

t.day

t.tuesday?

t.isdst
```

```
require 'date'

Date.new(2001,2,3)          #=> #<Date: 2001-02-03 ...>
Date.jd(2451944)            #=> #<Date: 2001-02-03 ...>
Date.ordinal(2001,34)       #=> #<Date: 2001-02-03 ...>
Date.commercial(2001,5,6)   #=> #<Date: 2001-02-03 ...>
Date.parse('2001-02-03')    #=> #<Date: 2001-02-03 ...>
Date.strptime('03-02-2001',
              '%d-%m-%Y')   #=> #<Date: 2001-02-03 ...>
Time.new(2001,2,3).to_date #=> #<Date: 2001-02-03 ...>
```

from http://ruby-doc.org/stdlib-1.9.3/libdoc/date/rdoc/Date.html

Your Turn

What day will it be in 374 days?

What day was it 253 days ago?

What year will it be in 13,453 days?

What month?

eval

Code running code

```
eval("2 + 7")
```

Build Up Code

in irb:

```
str = "while true \n"
str += " puts 'loopy' \n"
str += "end"
eval str
```

Your Turn

Build up a string that:

- contains a method that accepts a string
- loops 10 times and ...
- prints "Hello " and the string

Still Your Turn

Read and run from file this string:

```
for i in (1..10)
  acc *= i
  puts "#{i} => #{i * i}  => #{acc}
end
```

What Went Wrong?

```
acc = 0
for i in (1..10)
  acc *= i
  puts "#{i} => #{i * i}  => #{acc}
end
```

Still Broken?

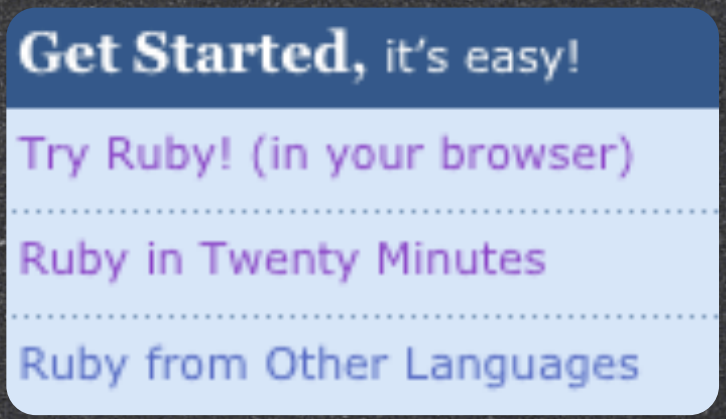
```
acc = 1
for i in (1..10)
  acc *= i
  puts "#{i} => #{i * i}  => #{acc}
end
```

One More Exercise!

Go to http://ruby-lang.org

On the right hand side

Try Ruby! (in your browser)



Ruby Koans

http://rubykoans.com/

https://github.com/edgecase/ruby_koans

Next...

Thinking in objects...