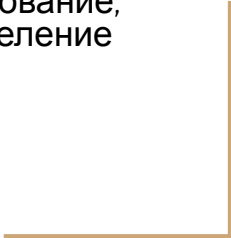




# Классы в Ruby

Создание классов, наследование,  
инкапсуляция, переопределение  
методов



# Инициализация класса

```
1  class Vehicle
2    MAX_SPEED = 150
3
4    def initialize(number)
5      @number = number
6      @color = 'white'
7    end
8
9    def number
10     @number
11   end
12
13   def color
14     @color
15   end
16
17   def color=(new_color)
18     @color = new_color
19   end
20
21   def max_speed
22     MAX_SPEED
23   end
24 end
25
26 vehicle = Vehicle.new('aa123e')
27 puts "Car with number: #{vehicle.number}, color: #{vehicle.color}, max_speed: #{vehicle.max_speed}"
28 #=> Car with number: aa123e, color: white, max_speed: 150
29
30 vehicle.color = 'blue'
31 puts vehicle.color #=> blue
```

# Геттеры и сеттеры

```
1 class Vehicle
2   MAX_SPEED = 150
3
4   attr_reader :number
5   attr_accessor :color
6   attr_writer :fuel_value
7
8   def initialize(number, fuel_value = 0)
9     @number = number
10    # number = number #=> wrong
11    @color = 'white'
12    @fuel_value = fuel_value
13  end
14
15  def has_fuel?
16    @fuel_value.positive?
17    # fuel_value.positive? #=> NameError
18  end
19
20  def max_speed
21    MAX_SPEED
22  end
23
24  def to_s
25    "Number: #{number}, Color: #{@color}, Max speed: #{max_speed}" #=> @number - ok; color - ok
26  end
27 end
28
29 vehicle = Vehicle.new('aa123e')
30 puts vehicle #=> Number: aa123e, Color: white, Max speed: 150
31
32 vehicle.color = 'blue'
33 puts vehicle.color #=> blue
34
35 vehicle.fuel_value = 20
36 puts vehicle.has_fuel? #=> true
```

# Переменные класса

```
1 class Vehicle
2   MAX_SPEED = 150
3
4   @@number_of_vehicles = 0
5
6   attr_reader :number
7   attr_accessor :color
8   attr_writer :fuel_value
9
10  def initialize(number, fuel_value = 0)
11    @number = number
12    @color = 'white'
13    @fuel_value = fuel_value
14    @@number_of_vehicles += 1
15  end
16
17  def has_fuel?
18    | @fuel_value.positive?
19  end
20
21  def max_speed
22    | MAX_SPEED
23  end
24
25  def to_s
26    | "Number: #{number}, Color: #{@color}, Max speed: #{max_speed}, Technical id: #{technical_id}"
27  end
28
29  def self.number_of_vehicles
30    | @@number_of_vehicles
31  end
32
33  private
34
35  def technical_id
36    | "#{number}##{@number_of_vehicles}"
37  end
38 end
39
40 vehicle = Vehicle.new('aa123e')
41 puts vehicle #=> Number: aa123e, Color: white, Max speed: 150, Technical id: aa123e#1
42 # puts vehicle.technical_id #=> private method `technical_id' called (NoMethodError)
43
44 puts Vehicle.new('bb345t') #=> Number: bb345t, Color: white, Max speed: 150, Technical id: bb345t#2
45 puts Vehicle.new('cc145t') #=> Number: cc145t, Color: white, Max speed: 150, Technical id: cc145t#3
46
47 puts Vehicle.number_of_vehicles #=> 3
```

# Наследование

```
1 require_relative 'vehicle'
2
3 class Car < Vehicle
4   end
5
6   class Motorbike < Vehicle
7     end
8
9   class Bicycle < Vehicle
10    end
11
12    puts Car.new('aa123g') #=> Number: aa123e, Color: white, Max speed: 150, Technical id: aa123e#1
13    puts Motorbike.new('bb123t') #=> Number: bb345t, Color: white, Max speed: 150, Technical id: bb345t#2
14    puts Bicycle.new('aa456r') #=> Number: cc145t, Color: white, Max speed: 150, Technical id: cc145t#3
15
16    puts Car.number_of_vehicles #=> 6
```

```
→ Documents ruby car.rb
Number: aa123e, Color: white, Max speed: 150, Technical id: aa123e#1
Number: bb345t, Color: white, Max speed: 150, Technical id: bb345t#2
Number: cc145t, Color: white, Max speed: 150, Technical id: cc145t#3
3
Number: aa123g, Color: white, Max speed: 150, Technical id: aa123g#4
Number: bb123t, Color: white, Max speed: 150, Technical id: bb123t#5
Number: aa456r, Color: white, Max speed: 150, Technical id: aa456r#6
6
```

# Загрузка кода из отдельного файла

```
1 require_relative 'vehicle' # == require './vehicle'
```

```
3.1.1 :001 > $LOAD_PATH
=>
[/Users/alex/.rvm/gems/ruby-3.1.1/gems/reline-0.3.1/lib",
"/Users/alex/.rvm/rubies/ruby-3.1.1/lib/ruby/site_ruby/3.1.0",
"/Users/alex/.rvm/rubies/ruby-3.1.1/lib/ruby/site_ruby/3.1.0/arm64-darwin21",
"/Users/alex/.rvm/rubies/ruby-3.1.1/lib/ruby/site_ruby",
"/Users/alex/.rvm/rubies/ruby-3.1.1/lib/ruby/vendor_ruby/3.1.0",
"/Users/alex/.rvm/rubies/ruby-3.1.1/lib/ruby/vendor_ruby/3.1.0/arm64-darwin21",
"/Users/alex/.rvm/rubies/ruby-3.1.1/lib/ruby/vendor_ruby",
"/Users/alex/.rvm/rubies/ruby-3.1.1/lib/ruby/3.1.0",
"/Users/alex/.rvm/rubies/ruby-3.1.1/lib/ruby/3.1.0/arm64-darwin21"]
```

```
1 load './vehicle.rb'
2 load './vehicle.rb'
```

```
→ Documents ruby car.rb
Number: aa123e, Color: white, Max speed: 150, Technical id: aa123e#1
Number: bb345t, Color: white, Max speed: 150, Technical id: bb345t#2
Number: cc145t, Color: white, Max speed: 150, Technical id: cc145t#3
3
/Users/alex/Documents/vehicle.rb:2: warning: already initialized constant Vehicle::MAX_SPEED
/Users/alex/Documents/vehicle.rb:2: warning: previous definition of MAX_SPEED was here
Number: aa123e, Color: white, Max speed: 150, Technical id: aa123e#1
Number: bb345t, Color: white, Max speed: 150, Technical id: bb345t#2
Number: cc145t, Color: white, Max speed: 150, Technical id: cc145t#3
3
Number: aa123g, Color: white, Max speed: 150, Technical id: aa123g#4
Number: bb123t, Color: white, Max speed: 150, Technical id: bb123t#5
Number: aa456r, Color: white, Max speed: 150, Technical id: aa456r#6
6
```

# Переопределение констант

```
1  require_relative 'vehicle'
2
3  class Car < Vehicle
4  end
5
6  class Motorbike < Vehicle
7    MAX_SPEED = 200
8
9    def max_speed
10     MAX_SPEED
11   end
12 end
13
14 class Bicycle < Vehicle
15   MAX_SPEED = 60
16 end
17
18 puts Car.new('aa123g') #=> Number: aa123e, Color: white, Max speed: 150, Technical id: aa123e#1
19 puts Motorbike.new('bb123t') #=> Number: bb345t, Color: white, Max speed: 200, Technical id: bb345t#2
20 puts Bicycle.new('aa456r') #=> Number: cc145t, Color: white, Max speed: 150, Technical id: cc145t#3
```

```
def max_speed
  self.class::MAX_SPEED #=> MAX_SPEED
end
```

```
Number: aa123g, Color: white, Max speed: 150, Technical id: aa123g#4
Number: bb123t, Color: white, Max speed: 200, Technical id: bb123t#5
Number: aa456r, Color: white, Max speed: 60, Technical id: aa456r#6
```

# Изменение логики методов

```
1  require_relative 'vehicle'
2
3  class Car < Vehicle
4  end
5
6  class Motorbike < Vehicle
7    MAX_SPEED = 200
8  end
9
10 class Bicycle < Vehicle
11   MAX_SPEED = 60
12
13   def initialize
14     super(nil)
15   end
16
17   def has_fuel?
18     true
19   end
20
21   def to_s
22     technical_id # 0k
23     self.technical_id # 0k since Ruby 2.7
24     "Color: #{@color}, Max speed: #{max_speed}, Technical id: #{technical_id}"
25   end
26 end
27
28 puts Car.new('aa123g') #=> Number: aa123e, Color: white, Max speed: 150, Technical id: aa123e#4
29 puts Motorbike.new('bb123t') #=> Number: bb345t, Color: white, Max speed: 200, Technical id: bb345t#5
30 puts Bicycle.new #=> Number: cc145t, Color: white, Max speed: 60, Technical id: #6
```



# Модификаторы доступа метода

```
24 def to_s
25   | "Number: #{number}, Color: #{@color}, Max speed: #{max_speed}, Technical id: #{technical_id}"
26 end
27
28 def compare_tech_ids(other_vehicle)
29   | technical_id <=> other_vehicle.technical_id
30 end
31
32 def compare_colors(other_vehicle)
33   | 'Different' if @color != other_vehicle.color
34 end
35
36 def self.number_of_vehicles
37   | @@number_of_vehicles
38 end
39
40 protected # attr_reader :color
41
42 def color
43   | @color
44 end
45
46 private
47
48 def technical_id
49   | "#{number}##{@number_of_vehicles}"
50 end
51 end
52
53 vehicle = Vehicle.new('aa123e')
54
55 other_vehicle = Vehicle.new('bb345g')
56 other_vehicle.color = 'red'
57
58 # puts vehicle.compare_tech_ids(other_vehicle) #=> private method `technical_id' called
59 # puts vehicle.color #=> protected method `color' called
60
61 puts vehicle.compare_colors(other_vehicle) #=> Different
--
```

# Полезные ссылки

<https://medium.com/@iamrealnurs/ruby-ооп-классы-объекты-взаимодействия-69e70ea9112a> – Создание небольшого класса;

<https://www.rubyguides.com/2019/02/ruby-class/> – Про классы, с полезными ссылками в конце статьи;

[https://ballaerospace.github.io/cosmos-website/news/2017/11/13/require\\_vs\\_load/](https://ballaerospace.github.io/cosmos-website/news/2017/11/13/require_vs_load/) – Сравнение require и load методов;

<https://tadhao.medium.com/private-vs-protected-in-ruby-3ae230cc9f37> – Сравнение private и protected методов.

Конец! Спасибо!