

Ruby - Feature #6682

Add a method to return an instance attached by a singleton class

07/01/2012 07:22 PM - ryoqun (Ryo Onodera)

Status:	Assigned	
Priority:	Normal	
Assignee:	shyouhei (Shyouhei Urabe)	
Target version:		
Description =begin Currently, there is no easy way to get the attached instance from a singleton class. For MRI, we have to resort to writing an C extension. So it'll be useful to add an instance method to Class to return the attached instance if the given class object is a singleton class. I'll show what I want in the code-wise with the following code snippet: text = "I love Ruby." klass = text.singleton_class => #<Class:#String:0x000000027383e8> klass.singleton_instance # <= This is the new method. => "I love Ruby." String.singleton_instance # <= This should return nil because String isn't a singleton class and there is no singleton instance, rather there will be many instances. => nil As for use cases, in my case, I wanted to create a module to add class methods. And it has some state, so must be initialized properly. And it can equally be used by Class#extend and Class#include like this: module Countable attr_reader(:count) class << self def extended(extended_class) p("extending #{extended_class}") super initialize_state(extended_class) end def included(included_class) p("including #{included_class}") super if included_class.singleton_instance # <= Currently, I can't do this. initialize_state(included_class.singleton_instance) end end private def initialize_state(object) p("initializing state of #{object}") object.instance_variable_set(:@count, 0) end end end		

```
class Person
  extend(Countable)
end
```

```
class Book
  class << self
    include(Countable)
  end
end
```

```
p(Person.count)
p(Book.count)
```

=> "extending Person"

=> "initializing state of Person"

=> "including #[Class:Book](#)"

=> "initializing state of Book"

=> 0

=> 0

Others wanted this functionality as shown by ([this stackoverflow page|URL: http://stackoverflow.com/questions/7053455/given-a-ruby-metaclass-how-do-i-get-the-instance-to-which-it-is-attached>](#)). Also, I found several actual C-extensions for this kind of functionality on the wild browsing ([a search result|URL: https://github.com/search?q=rb_iv_get+_attached_&repo=&langOverride=&start_value=1&type=Code&language=C>](#)) on github.

- ([eigen|URL: https://github.com/elliottcable/refinery/blob/853dcc2254557200d1d6be4cb9c105e8fa9d01a9/ext/eigen/eigen.c#L12>](#))
- ([mult|URL: https://github.com/banister/mult/blob/6a1d0bdd383e7e231c5b7c2c718204dfb6ba28ca/ext/mult/mult.c#L43>](#))

Thanks for creating a great language. Especially I love its meta-programming capability. I'd wish this feature to lead to better meta-programming capability of Ruby.

=end

History

#1 - 07/09/2012 07:57 AM - ryoqun (Ryo Onodera)

I opened a pull request for this feature: <https://github.com/ruby/ruby/pull/142>

#2 - 09/25/2012 09:06 PM - ryoqun (Ryo Onodera)

=begin
There is a problem in the original proposal. It is that we can't determine whether a given class is singleton or not by checking an object returned from ([Class#singleton_instance](#))) in some cases. Consider this example:

String IS NOT singleton

String.singleton_instance => nil

NilClass IS singleton

NilClass.singleton_instance => nil

([NilClass](#))) is a singleton class and returning ([nil](#))) from ([Class#singleton_instance](#))) is completely legitimate.

Thus, I refined the behavior of [Class#singleton_instance](#) a bit.

```
String.singleton_instance => raises TypeError
NilClass.singleton_instance => nil
```

#3 - 11/19/2012 08:43 AM - zzak (zzak _)

- File `class_singleton_instance.patch` added

- Assignee set to *shyouhei* (Shyouhei Urabe)

I've added Ryo's patch from github: <https://github.com/ruby/ruby/pull/142>

Shyouhei, could you review this?

Thanks

#4 - 11/19/2012 06:04 PM - ryoqun (Ryo Onodera)

=begin

zzak, thanks for updating this feature request.

I add more explanation.

First of all, I'll clarify my intention: I want any kind of modules to be interchangeably used in either of the following 2 ways:

(1) Extend inside a class (This is used preferably when there is no class method for (`Person`)))

```
class Person
  extend(Countable)
```

```
  def foo
    ..
  end
```

```
  ...
end
```

(2) Include inside a singleton class (This is used preferably when there are class methods for (`Person`))). This is used to group all of code related to class methods for readability)

```
class Person
  def foo
    ..
  end
```

```
  ...
```

```
  class << self
    include(Countable)
```

```
    def foo
      ..
    end
```

```
    ...
  end
end
```

As a library author, I want my library users to be able to choose how to use my library modules as above.

I'm assuming that extending inside a class is functionally equivalent with including inside a singleton class. And I think it should be. If this assumption isn't valid and I'm wrong, I'll close this feature request.

For ordinary modules, there is no issue. However, for state-full modules, currently, we can only use such a module by extending inside a class not by including inside a singleton class.

To accomplish this, there are two approaches.

(1) Add (`Class#singleton_instance`)) (this feature request)

(2) Add a hook like (`singleton_included`)) akin to (`singleton_method_added`)) (proposed by n0kada)

I don't case which approach is adapted.

I personally discussed about this with n0kada in the past. This is summary of that discussion.

=end

#5 - 11/24/2012 11:12 AM - mame (Yusuke Endoh)

- Status changed from Open to Assigned
- Target version set to 2.6

#6 - 12/25/2017 06:15 PM - naruse (Yui NARUSE)

- Target version deleted (2.6)

Files

class_singleton_instance.patch	4.29 KB	11/19/2012	zzak (zzak _)
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