

Ruby trunk - Bug #12860

Splatting an argument does not obey left-to-right execution order

10/21/2016 02:29 PM - headius (Charles Nutter)

Status:	Closed	
Priority:	Normal	
Assignee:		
Target version:		
ruby -v:	2.3.1	Backport: 2.1: REQUIRED, 2.2: DONE, 2.3: DONE
Description		
<p>Ruby evaluates arguments left to right, but it does not appear to handle construction of the eventual argument list from left to right.</p> <p>Take this example:</p> <pre>def foo(*args) p args end ary = [1,2] foo(*ary, ary.shift)</pre> <p>With left-to-right execution, the ary value should be splatted (1, 2), and THEN shifted (1) producing args == [1, 2, 1].</p> <p>However, on MRI, the shift occurs <i>before</i> the splat, so args == [2, 1].</p> <p>This is counter-intuitive. At the moment in time the splat is encountered, ary is still [1, 2]. So the first two arguments should be (1, 2). THEN the shift happens, producing a third argument of (1).</p> <p>This affects JRuby running Rails because they have a small piece of code that depends on this unusual behavior: https://github.com/rails/rails/blob/master/activerecord/lib/active_record/callbacks.rb#L411-L425</p> <p>This code appears to have been introduced into Rails recently, and I will file a separate issue to change it to be more explicit about ordering.</p>		

Associated revisions

Revision a078bbcc - 12/27/2016 09:34 AM - usa (Usaku NAKAMURA)

merge revision(s) 56469: [Backport #12860]

```
* compile.c (setup_args): duplicate splatting array if more
arguments present to obey left-to-right execution order.
[ruby-core:77701] [Bug# 12860]
```

git-svn-id: svn+ssh://ci.ruby-lang.org/ruby/branches/ruby_2_2@57210 b2dd03c8-39d4-4d8f-98ff-823fe69b080e

Revision 57210 - 12/27/2016 09:34 AM - usa (Usaku NAKAMURA)

merge revision(s) 56469: [Backport #12860]

```
* compile.c (setup_args): duplicate splatting array if more
arguments present to obey left-to-right execution order.
[ruby-core:77701] [Bug# 12860]
```

Revision 3032b62d - 01/16/2017 06:59 PM - nagachika (Tomoyuki Chikanaga)

merge revision(s) 56469: [Backport #12860]

```
* compile.c (setup_args): duplicate splatting array if more
arguments present to obey left-to-right execution order.
[ruby-core:77701] [Bug# 12860]
```

git-svn-id: svn+ssh://ci.ruby-lang.org/ruby/branches/ruby_2_3@57342 b2dd03c8-39d4-4d8f-98ff-823fe69b080e

Revision 57342 - 01/16/2017 06:59 PM - nagachika (Tomoyuki Chikanaga)

merge revision(s) 56469: [Backport #12860]

```
* compile.c (setup_args): duplicate splatting array if more
arguments present to obey left-to-right execution order.
[ruby-core:77701] [Bug# 12860]
```

History

#1 - 10/21/2016 02:39 PM - headius (Charles Nutter)

Rails PR (which unpacks via multi-assign to avoid this bug) filed here: <https://github.com/rails/rails/pull/26854>

#2 - 10/21/2016 02:42 PM - headius (Charles Nutter)

This behavior appears to go back as far as Ruby 1.9.3. Ruby 1.8.7 and earlier could not have regular arguments after a splat.

#3 - 10/21/2016 02:44 PM - headius (Charles Nutter)

It is worth mentioning that if the splatted value is not an array, we can see that `to_a` does get called before `shift`. That makes this even more unintuitive, since the calls happen in proper order but the assembly of the args list happens in the wrong order.

```
a = Object.new
```

```
a.instance_variable_set :@ary, [1, 2]
```

```
def a.to_a
  p :to_a
  @ary
end
```

```
def a.shift
  p :shift
  @ary.shift
end
```

```
def f(*x)
  p x
end
```

```
f(*a, a.shift)
```

```
__END__
```

Output on MRI:

```
:to_a
:shift
[2, 1]
```

Output on JRuby:

```
:to_a
:shift
[1, 2, 1]
```

All implementations I tested output `to_a` before `shift`. However, as with the plain array, MRI delays the application of the splat until *after* the `shift` call.

#4 - 11/23/2016 12:57 AM - nobu (Nobuyoshi Nakada)

- Backport changed from 2.1: UNKNOWN, 2.2: UNKNOWN, 2.3: UNKNOWN to 2.1: REQUIRED, 2.2: REQUIRED, 2.3: REQUIRED

- Status changed from Open to Closed

#5 - 12/27/2016 09:34 AM - usa (Usaku NAKAMURA)

- Backport changed from 2.1: REQUIRED, 2.2: REQUIRED, 2.3: REQUIRED to 2.1: REQUIRED, 2.2: DONE, 2.3: REQUIRED

ruby_2_2 r57210 merged revision(s) 56469.

#6 - 01/16/2017 06:59 PM - nagachika (Tomoyuki Chikanaga)

- Backport changed from 2.1: REQUIRED, 2.2: DONE, 2.3: REQUIRED to 2.1: REQUIRED, 2.2: DONE, 2.3: DONE

