

Ruby trunk - Feature #4539

Array#zip_with

03/30/2011 06:21 AM - citizen428 (Michael Kohl)

Status:	Assigned	
Priority:	Normal	
Assignee:	matz (Yukihiro Matsumoto)	
Target version:		
Description		
Inspired by Haskell's zipWith function, I hacked on together for Ruby:		
<pre>[1,2,3].zip_with([6,5,4], :+) #=> [7, 7, 7] [1,2,3].zip_with([6,5,4]) { a,b 3*a+2*b } #=> [15, 16, 17]</pre>		
So far I only have a Ruby version of it:		
https://gist.github.com/731702b90757e21cadcb		
My questions:		
<ol style="list-style-type: none">1. Would this method be considered a worthwhile addition to Array?2. I've never hacked on the C side of Ruby (read some parts of the source though) and my C is quite rusty. I'd like to change that, would somebody be willing to help me turn this into a proper patch?		
Related issues:		
Related to Ruby trunk - Feature #5044: #zip with block return mapped results		Rejected
Related to Ruby trunk - Feature #6817: Partial application		Open

History

#1 - 04/05/2011 03:55 PM - naruse (Yui NARUSE)

- Status changed from Open to Assigned

- Assignee set to matz (Yukihiro Matsumoto)

#2 - 04/05/2011 08:23 PM - Eregon (Benoit Daloze)

<http://redmine.ruby-lang.org/issues/4539>

Author: Michael Kohl

Inspired by Haskell's zipWith function, I hacked on together for Ruby:

```
[1,2,3].zip_with([6,5,4], :+) #=> [7, 7, 7]
[1,2,3].zip_with([6,5,4]) { |a,b| 3*a+2*b } #=> [15, 16, 17]
```

So far I only have a Ruby version of it:

<https://gist.github.com/731702b90757e21cadcb>

My questions:

1. Would this method be considered a worthwhile addition to Array?
2. I've never hacked on the C side of Ruby (read some parts of the source though) and my C is quite rusty. I'd like to change that, would somebody be willing to help me turn this into a proper patch?

Hello,

I'm answering here since redmine won't answer to my requests (even got a 500).

I think this new method would be redundant with `Array#zip`.
But I agree doing `c.zip(d).map { |a,b| a+b }` is a bit long.

So I propose to change the return value of `Array#zip` (and `Enumerable#zip`) with a block from `nil` to the result of `#map` would give (so an Array of all yielded elements).

An unconditional `nil` is anyway not useful here, the only concern I see might be the cost of creating this Array.
But I think many cases with block simulate `#map` and it would avoid creating the intermediate Array in `a.zip(b).map {}`.

This would not address the case with a Symbol, which could be easily detected as last argument as it is not Enumerable.
But blocks simplified by Symbol have rarely been accepted and I think only changing the return value would already improve `#zip` a lot.

Here is a gist with a Ruby implementation of the modifications for `Array#zip`: <https://gist.github.com/903388>
I'm wishing to do a C implementation if this feels right for others, but I'd like to have opinions first.

What do you think?

#3 - 04/09/2011 06:23 PM - mrkn (Kenta Murata)

=begin
Hi,

On 2011-04-05 at 19:50, Benoit Daloze wrote:

Here is a gist with a Ruby implementation of the modifications for `Array#zip`: <https://gist.github.com/903388>
I'm wishing to do a C implementation if this feels right for others, but I'd like to have opinions first.
I implemented the features in C, and wrote tests for them.
Please see the following diffs:
<https://github.com/mrkn/ruby/commit/9c7ead0e385b6a17dafa5bc8b4389e1baf2e3040>

I will commit this if matz will approve.

--
Kenta Murata
Sent with Sparrow
=end

#4 - 04/09/2011 10:23 PM - matz (Yukihiro Matsumoto)

=begin
Hi,

In message "Re: [ruby-core:35673] Re: [Ruby 1.9 - Feature #4539][Assigned] Array#zip_with"
on Sat, 9 Apr 2011 17:29:28 +0900, Kenta Murata muraken@gmail.com writes:

I implemented the features in C, and wrote tests for them.
Please see the following diffs:
<https://github.com/mrkn/ruby/commit/9c7ead0e385b6a17dafa5bc8b4389e1baf2e3040>

I will commit this if matz will approve.

I am not sure whether adding new `zip_with` or adding `zip` with symbol at last would be better. Any opinion?

matz.

=end

#5 - 04/09/2011 11:23 PM - Eregon (Benoit Daloze)

=begin
Hi,

On 9 April 2011 10:29, Kenta Murata muraken@gmail.com wrote:

Hi,

2011/4/5 Benoit Daloze eregontp@gmail.com:

An unconditional nil is anyway not useful here, the only concern I see might be the cost of creating this Array.

It is actually a problem.
I have used Array#zip with block for iteration many times.

```
big_ary1.zip(big_ary2) do |x, y|
  p [x, y]
end
```

The change requires some people (including me) to *rewrite* such a code as follows:

```
big_ary1.size.times do |i|
  x, y
=end
```

#9 - 04/10/2011 10:23 PM - aprescott (Adam Prescott)

```
=begin
On Sat, Apr 9, 2011 at 2:13 PM, Yukihiro Matsumoto matz@ruby-lang.org wrote:
```

I am not sure whether adding new zip_with or adding zip with symbol at last would be better. Any opinion?

matz.

An issue I have with zip taking a symbol is that ary1.zip(ary2, :+) doesn't actually return a zipped array (of arrays). In that respect, the result and the name "zip" don't align, with the additional argument.

Is there such a need for this in core that we need a shortcut around ary1.zip(ary2).map { |a, b| a + b }?
=end

#10 - 04/11/2011 07:23 AM - mrkn (Kenta Murata)

```
=begin
Hi,
```

On 2011-04-10 at 11:56, Marc-Andre Lafortune wrote:

On Sat, Apr 9, 2011 at 4:29 AM, Kenta Murata muraken@gmail.com wrote:

I implemented the features in C, and wrote tests for them.
Please see the following diffs:
<https://github.com/mrkn/ruby/commit/9c7ead0e385b6a17dafa5bc8b4389e1baf2e3040>

Looks good, but is there a reason to use rb_funcall for the reduce?
Typically MRI calls directly the C implementation wherever possible, and I would suggest doing that here too.
The patch was updated:
<https://github.com/mrkn/ruby/commit/fe79bb11e7d1173e31ae7a6e5472ac10eac9316>

This changes add a new public function of libruby, rb_enum_inject_with_symbol.
So we should discuss whether the function is acceptable as a public function.

```
--
Kenta Murata
Sent with Sparrow
=end
```

#11 - 04/24/2011 01:01 PM - jvoorhis (Jeremy Voorhis)

```
=begin
I think it's worth having Enumerable#zip_with as a new public method. zip_with is the generalization of zip (you can define zip = zipWith (,) in Haskell). Because zip_with can be implemented directly via inject, it's possible to provide an implementation with a lower complexity than zip composed with map. With respect to the comment about a method ending in a preposition, the Haskell standard provides a good precedent, and a
```

worthy addition to the collection of languages that influenced Ruby.
=end

#12 - 07/18/2011 11:58 PM - trans (Thomas Sawyer)

@Endoh Why would you have to rewrite? You can still iterate, just don't use the return result.

#13 - 07/19/2011 12:00 AM - trans (Thomas Sawyer)

[matz \(Yukihiro Matsumoto\)](#) is symbol really needed?

```
class Array
  def zip(a, &b1)
    if b
      r = []
      b2 = lambda{ |x| r << b1.call(*x) }
      super(a, &b2)
      r
    else
      super(a)
    end
  end
end
```

end

```
[1,2,3].zip([5,6,7], &:+) #=> [6,8,10]
```

#14 - 07/19/2011 12:06 AM - trans (Thomas Sawyer)

[adam \(Adam M\)](#) Perhaps you are right. Perhaps the real issue is why #map can't take optional "zipping" arguments?

#15 - 07/20/2011 12:59 PM - mame (Yusuke Endoh)

Hello,

2011/7/18 Thomas Sawyer transfire@gmail.com:

@Endoh Å Why would you have to rewrite? You can still iterate, just don't use the return result.

I have used Array#zip in hot-path code to avoid unused array generation. So I don't want it to generate a unused and big array. But this is just my personal opinion, not a decision. If matz says ok, it is ok.

BTW, ko1 is now studying optimization to avoid unnecessary object generation by using escape analysis. If it is achieved, my concern will be pointless.

--

Yusuke Endoh mame@tsg.ne.jp

#16 - 07/21/2011 08:53 PM - aprescott (Adam Prescott)

On Mon, Jul 18, 2011 at 4:06 PM, Thomas Sawyer transfire@gmail.com wrote:

[adam \(Adam M\)](#) Perhaps you are right. Perhaps the real issue is why #map can't take optional "zipping" arguments?

I believe there is a suggestion from ruby-talk to call it map_with, instead. I agree with leaning towards #map instead of #zip, whatever happens.

#17 - 10/27/2012 11:53 PM - yhara (Yutaka HARA)

- Description updated

- Target version set to 2.6

#18 - 12/25/2017 06:14 PM - naruse (Yui NARUSE)

- Target version deleted (2.6)

#19 - 02/20/2018 08:54 AM - nobu (Nobuyoshi Nakada)

- Description updated