Ruby master - Bug #6538
Mutability of Rational and Complex
06/03/2012 07:20 AM - marcandre (Marc-Andre Lafortune)

**Status:** Rejected
**Priority:** Normal
**Assignee:** tadf (tadayoshi funaba)
**Target version:**
**Backport:**

**Description**
I hesitated to report this, but there is a "hole" in the immutability of Rational & Complex:

```ruby
r = Rational(0) # Rationals are immutable
r.freeze        # but let's be certain and freeze it!
magic_trick(r)  # r is now changed:
r               # => (1/42)
```

The same thing occurs with Complex. I've left out the definition of magic_trick for anyone who wants to try and figure it out, but it's here: [http://pastie.org/4016117](http://pastie.org/4016117)

Is this worth fixing?

**Related issues:**
Precedes Ruby master - Bug #6541: marshal_load discards frozen objects

**History**

**#1 - 06/03/2012 09:35 AM - nobu (Nobuyoshi Nakada)**
- Status changed from Open to Assigned
- Assignee set to tadf (tadayoshi funaba)

**#2 - 06/03/2012 10:32 AM - tadf (tadayoshi funaba)**
- Status changed from Assigned to Closed

anyway forbade it.
this is not a magic.
but this trick seems also effective to others.

```ruby
r = Random.new
#=> #Random:0xb87a6d50
a = r.marshal_dump
#=> [...]r.freeze
#=> #Random:0xb87a6d50
r.frozen?
#=> true
(0..10).map{r.rand}.to_a
#=> [0.31439277627295725, 0.22940914020883507, 0.1255127954343639, 0.22394641311330976, 0.5371394957199308, 0.6576211090277115, 0.7280552862872753, 0.4931093631805644, 0.6286785684826635, 0.6649446272706543, 0.32721416961292293]
r.marshal_load(a)
#=> #Random:0xb87a6d50
(0..10).map{r.rand}.to_a
#=> [0.31439277627295725, 0.22940914020883507, 0.1255127954343639, 0.22394641311330976, 0.5371394957199308, 0.6576211090277115, 0.7280552862872753, 0.4931093631805644, 0.6286785684826635, 0.6649446272706543, 0.32721416961292293]
```

**#3 - 06/03/2012 12:41 PM - marcandre (Marc-Andre Lafortune)**
- Status changed from Closed to Open
I see that this trick won't work if it's frozen after your commit, but the the freeze part was just more fun, sorry. It's the immutability of Rational and Complex that is at stake here.

```ruby
r = Rational(0)
magic_trick(r)
r #=> (1/42)
```

This should not be possible, ideally, no?

Rationals and Complex are expected to be immutable. Also, not all logic is applied to marshal_load. There are all sorts of nasty tricks that one could play with this.

```ruby
c = Complex(1)
r = Rational(0).marshal_load([1, c])
c.marshal_load([0,0])
r #=> (1/(0+0i))
```

The fix would be ugly. Complex and Rational should not have marshal_load/dump methods. Using _load and _dump would break marshal format across versions, so Marshal.load(dump) would need to make special cases for Complex and Rational.

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#4 - 06/03/2012 07:29 PM - tadf (tadayoshi funaba)
- Assignee set to tadf (tadayoshi funaba)

class IM
  def initialize(s) @s = s end
  attr :s
end

i = IM.new(1)
i.s #=> 1
i.instance_eval{@s = 100}
i.s #=> 100

is this a mutable?

#5 - 06/03/2012 11:19 PM - nobu (Nobuyoshi Nakada)
=begin
Marshal compatibilities for (({Complex})) and (({Rational})) are already broken, since the time they were built in.
=end

#6 - 06/03/2012 11:27 PM - nobu (Nobuyoshi Nakada)
- Status changed from Open to Assigned
=begin
What about adding "uninitialized (just allocated) flag" and checking if it is set in ([{marshal_load}]) method?
=end

#7 - 06/03/2012 11:55 PM - tadf (tadayoshi funaba)
i thought it first.
but it is cheap trick too (or nils filled instead).
i doubt about this issue.
really need?

#8 - 06/04/2012 01:12 AM - marcandre (Marc-Andre Lafortune)
Hi,
nobu (Nobuyoshi Nakada) wrote:

Marshal compatibilities for (({Complex})) and (({Rational})) are already broken, since the time they were built in.

---

I didn't know. Changing from #marshal_load to .load would break marshalling between 1.9 and 2.0 though. Unless marshal changes to handle both cases similarly? I mean, why are there two different codes for marshalling done via #marshal_dump vs _dump? It could be the same, if _load exists,
it is called, otherwise the object is constructed and __marshal_load__ is called?

 tadf (tadayoshi funaba) wrote:

 i doubt about this issue.
 really need?

 I have doubts too, which is why I asked "Is this worth fixing?"

 #9 - 06/04/2012 04:22 AM - tadf (tadayoshi funaba)
 - Status changed from Assigned to Rejected

 ok, it's unnecessary.

 #10 - 06/04/2012 10:24 PM - nobu (Nobuyoshi Nakada)
 - File 0001-compatible-marshal-loader.patch added

 An alternative way is "marshal format compatibility layer".

 Files

<table>
<thead>
<tr>
<th>File Name</th>
<th>Size</th>
<th>Date</th>
<th>Author</th>
</tr>
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<tr>
<td>0001-compatible-marshal-loader.patch</td>
<td>5.6 KB</td>
<td>06/04/2012</td>
<td>nobu (Nobuyoshi Nakada)</td>
</tr>
</tbody>
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