Ruby master - Feature #12996

Optimize Range#===

12/02/2016 05:09 AM - ksss (Yuki Kurihara)

<table>
<thead>
<tr>
<th>Status:</th>
<th>Closed</th>
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<td>Priority:</td>
<td>Normal</td>
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<tr>
<td>Assignee:</td>
<td></td>
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<td>Target version:</td>
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</table>

Description
The proposal is that Range#=== optimize by reducing method calls.

Benchmark

```ruby
$ cat t.rb
i = 0
while i < 1_000_000
  case i
  when 1..1000
    end
  i += 1
end

$ time ./miniruby -e 1
./miniruby -e 1  0.01s user 0.00s system 85% cpu 0.013 total

Before

$ time ./miniruby t.rb
./miniruby t.rb  0.60s user 0.00s system 99% cpu 0.605 total

After

$ time ./miniruby t.rb
./miniruby t.rb  0.41s user 0.00s system 99% cpu 0.420 total

Important point

Break compatibility in this case.

https://github.com/ruby/ruby/blob/80045bc2a9e12012d6d16517ea5cb037e67eb2c1/test/ruby/test_range.rb#L333-L355

I don't know how to fix this issue.
But I think, This is a key sentence maybe.

https://github.com/ruby/ruby/blob/8130ee5c9dea6d1323d41271cc01c8dc5d8b5c5d/range.c#L1176

Related issues:
Related to Ruby master - Feature #12612: Switch Range#=== to use cover? inste... Rejected
Related to Ruby master - Feature #14575: Switch Range#=== to use cover? inste... Closed

History

#1 - 12/02/2016 11:20 AM - nobu (Nobuyoshi Nakada)

Yuki Kurihara wrote:

**Important point**

Break compatibility in this case.

https://github.com/ruby/ruby/blob/80045bc2a9e12012d6d16517ea5cb037e67eb2c1/test/ruby/test_range.rb#L333-L355

I don't know how to fix this issue.
But I think, This is a key sentence maybe.
Use alias.

```ruby
rb_define_alias(rb_cRange, "===", "include?");
```

instead of

```ruby
rb_define_method(rb_cRange, "===", range_include, 1);
```

#2 - 12/04/2016 01:49 AM - ksss (Yuki Kurihara)

Yes, I tried alias way.
But it was vary slow.

```bash
$ time ./miniruby t.rb
./miniruby t.rb 1.80s user 0.02s system 98% cpu 1.842 total
```

And another issue appeared.

```bash
$ make test-all TESTS="test/ruby/test_range.rb"
```

#3 - 12/20/2016 03:34 AM - shyouhei (Shyouhei Urabe)

- Related to Feature #12612: Switch Range#=== to use cover? instead of include? added

#4 - 02/22/2017 05:54 AM - matz (Yukihiro Matsumoto)

Sounds reasonable. We'd like to see how big incompatibility is.

Matz.

#5 - 05/17/2017 02:14 PM - ksss (Yuki Kurihara)

- File range_eqq2.patch added

I updated the patch (range_eqq2.patch).

It optimize only special cases.

## Range with Fixnum

08/27/2022
```ruby
i = 0
while i < 10_000_000
  case i
    when 1..1000
      end
  i += 1
end
```

**Before**

$ time ./miniruby t.rb
./miniruby t.rb 5.27s user 0.02s system 98% cpu 5.354 total

**After**

$ time ./miniruby t.rb
./miniruby t.rb 4.45s user 0.04s system 96% cpu 4.644 total

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**Range with String**

```ruby
i = 0
while i < 10_000_000
  case "c"
    when "a".."z"
      end
  i += 1
end
```

**Before**

$ time ./miniruby t.rb
./miniruby t.rb 8.45s user 0.02s system 99% cpu 8.534 total

**After**

$ time ./miniruby t.rb
./miniruby t.rb 3.80s user 0.01s system 98% cpu 3.874 total

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Of course, test-all passed.

$ make test-all TESTS=test/ruby/test_range.rb
./tool/ifchange "--timestamp=.rbconfig.time" rbconfig.rb rbconfig.tmp
rbconfig.rb unchanged
creating verconf.h
verconf.h updated
compiling loadpath.c
linking static-library libruby.2.5.0-static.a
/Applications/Xcode.app/Contents/Developer/Toolchains/XcodeDefault.xctoolchain/usr/bin/ranlib: file: libruby.2.5.0-static.a(debug_counter.o) has no symbols
linking shared-library libruby.2.5.0.dylib
linking ruby
Run options: "--ruby=./miniruby -I./Lib -I.-I.ext/common ./tool/runruby.rb --extout=.ext -- --disable-gems" --excludes-dir=./test/excludes --name=!/memory_leak/

# Running tests:
Finished tests in 2.777357s, 14.7622 tests/s, 144652.6320 assertions/s.
41 tests, 401752 assertions, 0 failures, 0 errors, 0 skips

#6 - 05/17/2018 07:08 AM - matz (Yukihiro Matsumoto)
- Related to Feature #14575: Switch Range#=== to use cover? instead of include? added

#7 - 10/15/2021 10:41 PM - jeremyevans0 (Jeremy Evans)
- Status changed from Open to Closed
<table>
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<th>Author</th>
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<td>1.35 KB</td>
<td>12/02/2016</td>
<td>kss (Yuki Kurihara)</td>
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<td>05/17/2017</td>
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