Ruby master - Bug #15551

The behavior of FIX2INT and FIX2UINT differs by platform

01/20/2019 02:38 PM - Eregon (Benoit Daloze)

Status:	Open		
Priority:	Normal		
Assignee:			
Target version:			
ruby -v:	ruby 2.4.5p335 (2018-10-18 revision 65137) [x64-mingw32]	**Backport:**	2.4: UNKNOWN, 2.5: UNKNOWN, 2.6: UNKNOWN

Description

For instance, when sizeof(int) < sizeof(long) (such as on Linux), then

```
FIX2INT(nil)
```

raises TypeError.
But when sizeof(int) == sizeof(long) (such as on Windows), then it returns 4.

So the behavior changes from a call to rb_fix2int() to a raw shift without any checks.
I think it should be consistent between platforms.

Also, the code in ruby.h defining FIX2INT is fairly complicated with conditions like #if SIZEOF_INT < SIZEOF_LONG
spanning many lines, which makes it fairly hard to follow.

See https://github.com/ruby/spec/blob/c661c0ba6a602be6e06768a319bd7d87b2a8eda6/optional/capi/fixnum_spec.rb
and https://ci.appveyor.com/project/eregon/spec-x948i/builds/21753809/job/ed8e8k97m8syp4r7 for more differences.

History

#1 - 01/20/2019 09:21 PM - Eregon (Benoit Daloze)

FWIW, sizeof(int) == sizeof(long) is also the case on i686 Linux:
https://travis-ci.org/ruby/ruby/jobs/482143545

#2 - 07/30/2019 08:55 PM - jeremyevans0 (Jeremy Evans)

- File fix2int-consistent.patch added

I consider this an implementation detail and not a bug. I'm guessing the reason for this behavior is if sizeof(int) == sizeof(long), then all Fixnums are convertible to int (since all Fixnums are convertible to long). This is different than the sizeof(int) < sizeof(long) case, where not all Fixnums are convertible to int. It is possible to add checks that a Fixnum value is passed, but doing so would hurt performance.

Note that FIX2LONG is always a pure shift, so FIX2LONG(Qnil) never raises. By attempting to make the FIX2INT behavior consistent across platforms, you make FIX2LONG inconsistent with FIX2INT in both of the cases instead of just one.

If we still feel like this is a good idea, we could try the attached patch. I did some basic testing of this on OpenBSD-i386, where sizeof(int) == sizeof(long). However, I recommend we keep things as they are.

Files

fix2int-consistent.patch	1017 Bytes	07/30/2019	jeremyevans0 (Jeremy Evans)