throw_data passed to rescue through require

When we throw in a require it's incorrectly considered as a raise, making the T_IMEMO throw_data object accessible via rescue (in a contrived case). In regular usage this is unlikely to cause an issue because Module#=== immediately returns false for objects with klass == 0.

With test_throw.rb:

```ruby
throw :extdep, 42

class Anything < Exception
  def self.===(_); true; end
end

catch(:extdep) do
  begin
    require "./test_throw"
    rescue Anything => e
      p e
  end
end
```

We get

```
in 'p': method inspect' called on unexpected T_IMEMO object (0x00007f5e1486b130 flags=0x10000301a) (NotImplementedError)
```

I've proposed a fix via PR [https://github.com/ruby/ruby/pull/5513](https://github.com/ruby/ruby/pull/5513)

Associated revisions

Revision c79d2e54 - 02/06/2022 02:10 AM - jhawthorn (John Hawthorn)
Fix TAG_THROW through require [Bug #18562]

Previously this was being incorrectly swapped with TAG_RAISE in the next line. This would end up checking the T_IMEMO throw_data to the exception handling (which calls Module#===). This happened to not break existing tests because Module#=== returned false when klass is NULL.

This commit handles throw from require correctly by jumping to the tag retaining the TAG_THROW state.

Revision 807dd047 - 02/07/2022 11:08 AM - naruse (Yui NARUSE)
merge revision(s) c79d2e54748f52c5023b0a1ee441561df9826c17: [Backport #18562]

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load.c | 2 +-
test/ruby/test_exception.rb | 21 ++++++++++++++++++++++
2 files changed, 22 insertions(+), 1 deletion(-)

Revision 0bd3e346 - 03/13/2022 06:16 AM - nagachika (Tomoyuki Chikanaga)
merge revision(s) c79d2e54748f52c5023b0a1ee441561df9826c17: [Backport #18562]
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---
load.c | 2 +-
test/ruby/test_exception.rb | 21 ++++++++++++++++++++++
2 files changed, 22 insertions(+), 1 deletion(-)

Revision 19fec939 - 03/19/2022 01:45 PM - NAKAMURA Usaku
merge revision(s) c79d2e54748f52c5023b0a1ee441561df9826c17: [Backport #18562]
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load.c | 2 +-
test/ruby/test_exception.rb | 21 ++++++++++++++++++++++
2 files changed, 22 insertions(+), 1 deletion(-)

History
#1 - 02/06/2022 02:10 AM - jhawthorn (John Hawthorn)
- Status changed from Open to Closed

Applied in changeset git|c79d2e54748f52c5023b0a1ee441561df9826c17.

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---
load.c | 2 +-
test/ruby/test_exception.rb | 21 ++++++++++++++++++++++
2 files changed, 22 insertions(+), 1 deletion(-)

#2 - 02/06/2022 10:55 AM - byroot (Jean Boussier)
- Backport changed from 2.6: UNKNOWN, 2.7: UNKNOWN, 3.0: UNKNOWN, 3.1: UNKNOWN to 2.6: DONTNEED, 2.7: DONTNEED, 3.0: DONTNEED, 3.1: DONTNEED

@jhawthorn (John Hawthorn) that was a master only issue right? I could repo it with any released version.

#3 - 02/06/2022 06:43 PM - jhawthorn (John Hawthorn)
- Backport changed from 2.6: DONTNEED, 2.7: DONTNEED, 3.0: DONTNEED, 3.1: DONTNEED to 2.6: DONTNEED, 2.7: REQUIRED, 3.0: REQUIRED, 3.1: REQUIRED
Thanks for checking. I didn't realize this before, but it seems that this needs `--disable-gems` to reproduce, but with that I see the issue on 2.7, 3.0, and 3.1.

```ruby
$ ruby --disable-gems -e 'puts RUBY_DESCRIPTION; class Anything < Exception; def self.===(_); true; end; end; catch(:extdep) do; begin; require "./test-throw"; rescue Anything => e; p e; end; end'
```

I added REQUIRED for 2.7 and up, but I think it's unlikely anyone will run into this bug in real usage, so I don't feel strongly that it needs a backport if it's complicated.

#4 - 02/07/2022 11:08 AM - naruse (Yui NARUSE)
- Backport changed from 2.6: DONTNEED, 2.7: REQUIRED, 3.0: REQUIRED, 3.1: REQUIRED to 2.6: DONTNEED, 2.7: REQUIRED, 3.0: REQUIRED, 3.1: REQUIRED

```
ruby_3_1 807dd0479267a067e8208a2053b446fa13a2e66f merged revision(s) c79d2e54748f52c5023b0a1ee441561df9626c17.
```

#5 - 03/13/2022 06:43 AM - nagachika (Tomoyuki Chikanaga)
- Backport changed from 2.6: DONTNEED, 2.7: REQUIRED, 3.0: REQUIRED, 3.1: DONE to 2.6: DONTNEED, 2.7: REQUIRED, 3.0: DONE, 3.1: DONE

```
ruby_3_0 0bd3e436e27c048933133bc19f63c954ed3e3a6 merged revision(s) c79d2e54748f52c5023b0a1ee441561df9626c17.
```

#6 - 04/07/2022 02:28 PM - usa (Usaku NAKAMURA)
- Backport changed from 2.6: DONTNEED, 2.7: REQUIRED, 3.0: DONE, 3.1: DONE to 2.6: DONTNEED, 2.7: DONE, 3.0: DONE, 3.1: DONE