Can't create a valid Cyrillic-named class. If I have a file мир.rb:

```ruby
# Content of мир.rb:
class Мир
  def приветствовать
    "Привет, Мир!"
  end
end
```

and do in bash:

```
ruby мир.rb
```

I get the error (SyntaxError):

```
мир.rb:1: class/module name must be CONSTANT
```

Same error with module creating and same behavior in irb (please, see attachment). At the same time Cyrillic-named constants and methods work fine.

It is expected that creating Cyrillic-named class/modules should work without error.

**Related issues:**
- Related to Ruby master - Bug #11859: Regexp matching with \p{Upper} and \p{Lo...
  - Rejected
- Has duplicate Ruby master - Bug #15524: Unicode not Supported in Class Names
  - Rejected

**Associated revisions**

Revision f852af0e - 04/10/2018 12:41 AM - nobu (Nobuyoshi Nakada)

symbol.c: non-ASCII constant names
  - symbol.c (rb_sym_constant_char_p): support for non-ASCII constant names. [Feature #13770]
  - object.c (rb_mod_const_get, rb_mod_const_defined): support for non-ASCII constant names.

git-svn-id: svn+ssh://ci.ruby-lang.org/ruby/trunk@63130 b2dd03c8-39d4-4d8f-98ff-823fe69b080e

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- object.c (rb_mod_const_get, rb_mod_const_defined): support for non-ASCII constant names.

History

#1 - 07/26/2017 12:46 PM - nobu (Nobuyoshi Nakada)
Constant names must start with an upper case in ASCII.

#2 - 07/26/2017 02:25 PM - matz (Yukihiro Matsumoto)
And maybe it's time to relax the limitation for Non-ASCII capital letters to start constant names.
Matz.

#3 - 07/26/2017 05:32 PM - shevegen (Robert A. Heiler)
Martin Dürst could then create classes for all Emojis in Unicode. :D

#4 - 07/27/2017 12:40 AM - shyouhei (Shyouhei Urabe)
matz (Yukihiro Matsumoto) wrote:

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What do you think of Titlecase? Are they allowed?
http://unicode.org/faq/casemap_charprop.html#4

#5 - 07/27/2017 06:19 AM - phluid61 (Matthew Kerwin)
shyouhei (Shyouhei Urabe) wrote:

matz (Yukihiro Matsumoto) wrote:

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Isn't titlecase a mapping property, rather than an attribute? That is, how a character would be converted to titlecase is orthogonal to whether it's uppercase.

#6 - 07/27/2017 06:27 AM - shyouhei (Shyouhei Urabe)
phluid61 (Matthew Kerwin) wrote:

shyouhei (Shyouhei Urabe) wrote:

matz (Yukihiro Matsumoto) wrote:

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Can I ask you whether U+01C8 is a valid Constant name or not in your opinion? and why?
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Can I ask you whether U+01C8 is a valid Constant name or not in your opinion? and why?

Oh, you're right, I had misread the documentation.

I think that if Ruby accepts all Lu characters as constants, it could also accept all Lt. In the case of U+01C8 I'm not overly concerned because it's not common any more (but I think Ljudevit is just as valid as Ljudevit); however for U+01F2 it could be reasonable for someone in Macedonia to name a constant Dze, for example.

OK, I see. Thank you.

Martin Dürst could then create classes for all Emojis in Unicode. :D

Well, it's unclear whether emoji (note the Japanese plural!) are upper-case or lower-case. I thought maybe we could make a distinction between children (lower-case) and adults (upper-case), but there are not many children, tons of adults, and tons of other stuff (not to say gunk).

And maybe it's time to relax the limitation for Non-ASCII capital letters to start constant names.

I agree. Here are some pointers for implementation:

The distinction between constants (tCONSTANT) and identifiers (tIDENTIFIER) is made at parse.c:7830 using macro ISUPPER. Some other uses of ISUPPER (but not all of them) seem to be related to this distinction, e.g. the one at symbol.c:281.

ISUPPER is defined using rb_isupper in include/ruby/ruby.h, the later being defined inline in the same file, as 'A' <= c && c <= 'Z'. This would have to be replaced with a call to ONIGENC_IS_CODE_CTYPE or so, which would work for legacy encodings. For Unicode-based encodings, where we want to into account titlecase (thanks, Shyouhei!), it may be slightly more complicated.

A question we might want to check for is if there's any code out there that currently uses non-ASCII upper-case variable names.

Another question is whether we might want to have some convention for Japanese, e.g. Katakana for class names. Just thinking out loud (and ducking).

To distinguish non-ASCII upper/lower cases would lead non-ASCII punctuations too. ASCII punctuations cannot be a part of identifiers, will non-ASCII versions be same?

BTW, I think Japanese has no or little concept of plural, except that some words imply "many" and some suffixes.

I'm uncertain about the usage of mbc_case_fold.

diff --git i/parse.y w/parse.y
index 02d9412a2c..96f25d893e 100644
--- i/parse.y
+++ w/parse.y
@@ -7790,6 +7790,8 @@ parse_atmark(struct parser_params *parser, const enum lex_state_e last_state)
     return result;
 }

+int rb_enc_const_id_char_p(const char *name, const char *end, rb_encoding *enc);
static enum yttokentype
parse_ident(struct parser_params *parser, int c, int cmd_state)
{
 @@ -7827,7 +7829,9 @@ parse_ident(struct parser_params *parser, int c, int cmd_state)
 pushback(c);
 }
- if (result == 0 && ISUPPER(tok()[0])) {
+ if (result == 0 &&
+   (ISUPPER(tok()[0]) ||
+    rb_enc_const_id_char_p(tok(), tok()+toklen(), current_enc))){
 result = tCONSTANT;
 }
 else {
 diff --git i/symbol.c w/symbol.c
index f4516ebbe4..490cae0127 100644
--- i/symbol.c
+++ w/symbol.c
@@ -198,6 +198,28 @@ rb_enc_symname_p(const char *name, rb_encoding *enc)
     return rb_enc_symname2_p(name, strlen(name), enc);
 }
+int
+rb_enc_const_id_char_p(const char *name, const char *end, rb_encoding *enc)
+{
+   int c, len;
+   if (end <= name) return FALSE;
+   if (ISASCII(*name)) return ISUPPER(*name);
+   c = rb_enc_codepoint_len(name, end, &len, enc);
+   if (c < 0) return FALSE;
+   if (rb_enc_isupper(c, enc)) return TRUE;
+   {
+     OnigUChar fold[ONIGENC_GET_CASE_FOLD_CODES_MAX_NUM];
+     const OnigUChar *beg = (const OnigUChar *)name;
+     int r = enc->mbc_case_fold(ONIGENC_CASE_FOLD,
+                                 &beg, (const OnigUChar *)end,
+                                 fold, enc);
+     if (r > 0 && (r != len || memcmp(fold, name, r)))
+        return TRUE;
+   }
+   return FALSE;
+}

#define IDSET_ATTRSET_FOR_SYNTAX ((1U<<ID_LOCAL)|(1U<<ID_CONST))
#define IDSET_ATTRSET_FOR_INTERN (~(~0U<<(1<<ID_SCOPE_SHIFT)) & ~(1U<<ID_ATTRSET))

@@ -278,7 +300,7 @@ rb_enc_symname_type(const char *name, long len, rb_encoding *enc, unsigned int a
 break;
     type = ISUPPER(*m) ? IDCONST : IDLOCAL;
     id:
+   if (m >= e || (*m != '_' && !ISALPHA(*m) && ISASCII(*m))) {
+     if (len > 1 && *(e-1) == '=')
+       if (rb_enc_islower(c, enc)) return FALSE;

 #13 - 08/01/2017 11:21 AM - nobu (Nobuyoshi Nakada)
 - Backport deleted (2.2: UNKNOWN, 2.3: UNKNOWN, 2.4: UNKNOWN)
 - ruby -v deleted (2.4.1p111 (2017-03-22 revision 58053) [x86_64-linux])
 - Tracker changed from Bug to Feature

 #14 - 08/18/2017 12:41 PM - nobu (Nobuyoshi Nakada)
 - Assignee set to matz (Yukihiro Matsumoto)
 - Status changed from Open to Assigned

 #15 - 08/31/2017 09:06 AM - duerst (Martin Dürst)
 In the patch, I suggest adding something like

 if (rb_enc_islower(c, enc)) return FALSE;
immediately before or after

if (rb_enc_isupper(c, enc)) return TRUE;

#16 - 09/06/2017 09:45 AM - duerst (Martin Dürst)
I have checked for upper-case letters without corresponding lower-case letters, with the following short script:

```ruby
ruby -n -e 'l=$_.split(/;/); if l[2]="Lu" && l[13]=="" then puts l[1];end' <UnicodeData.txt
```

Somewhat contrary to my expectations, this turned up quite a number of characters (471 of them). Most are MATHEMATICAL symbols in the range U+1D400 to U+1D7FF. My understanding is that they don't have mappings because mathematicians use upper-case and lower-case symbols with different meanings.

There are some other upper-case characters without defined lower-case equivalents, but most of the correspond to empty slots in the MATHEMATICAL symbols charts.

The above patch would treat all identifiers starting with upper-case, even MATHEMATICAL symbols, as class names. Unless we want to forbid such characters in identifiers, I think that's the right thing to do.

What's more important for the above patch is that there are no title-case characters without lower-case mappings, so

```
+ if (r > 0 && (r != len || memcmp(fold, name, r)))
+    return TRUE;
+}
```
in the patch will work correctly.

What is more important for the above patch is whether

#17 - 09/06/2017 09:54 AM - duerst (Martin Dürst)
sb (Sergey Borodanov) wrote:

```
Same error with module creating and same behavior in irb (please, see attachment). At the same time Cyrillic-named constants and methods work fine.
```

Methods indeed should work fine, because currently all non-ASCII characters are lumped together as lower-case. But I don't think constants work fine; it may only look so.

Please try e.g.

```ruby
ruby -e 'Мир = 55; Мир = 77'
```

You should get a warning saying the the constant was already initialized. I don't get such a warning, which means that Мир here is treated as a variable, not as a constant.

#18 - 09/06/2017 10:02 AM - duerst (Martin Dürst)

As mentioned at the last committers’ meeting, I think the patch will not work e.g. for upper-case characters in three-byte EUC-JP (characters from JIS X 0212) because the necessary data isn’t there (see #11859).

#20 - 09/07/2017 12:12 PM - nobu (Nobuyoshi Nakada)
duerst (Martin Dürst) wrote:

```
In the patch, I suggest adding something like

if (rb_enc_islower(c, enc)) return FALSE;

immediately before or after

if (rb_enc_isupper(c, enc)) return TRUE;
```

I changed these code as followings:

```
if (rb_enc_isalpha(c, enc)) {
  /* non-lower case alphabet should be upper/title case */
  if (!rb_enc_islower(c, enc)) return TRUE;
```

**Status changed from Assigned to Closed**

Applied in changeset trunk|r63130.

symbol.c: non-ASCII constant names

- symbol.c (rb_sym_constant_char_p): support for non-ASCII constant names. [Feature #13770]

- object.c (rb_mod_const_get, rb_mod_const_defined): support for non-ASCII constant names.

**Has duplicate Bug #15524: Unicode not Supported in Class Names added**

**Files**

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<tr>
<td>Screenshot from 2017-07-26 19-08-14.png</td>
<td>64.2KB</td>
<td>07/26/2017</td>
<td>sb (Sergey Borodanov)</td>
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</tbody>
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