Going International

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Transifex

Unicode

Bits & Bytes

100100011001011101100110110011011110101100010000010101111101111111001011011001100100010000100010100

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1001000110010111011001101100110111101011000100000101011111011111100101101100110010001000010001010

Encodings

Character encoding

A character encoding system consists of a code that pairs each character from a given repertoire with something else.

Wikipedia

ASCII

- 7-bit code
- Characters for the English alphabet.

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Unicode

Assign every possible character a unique *code point*.

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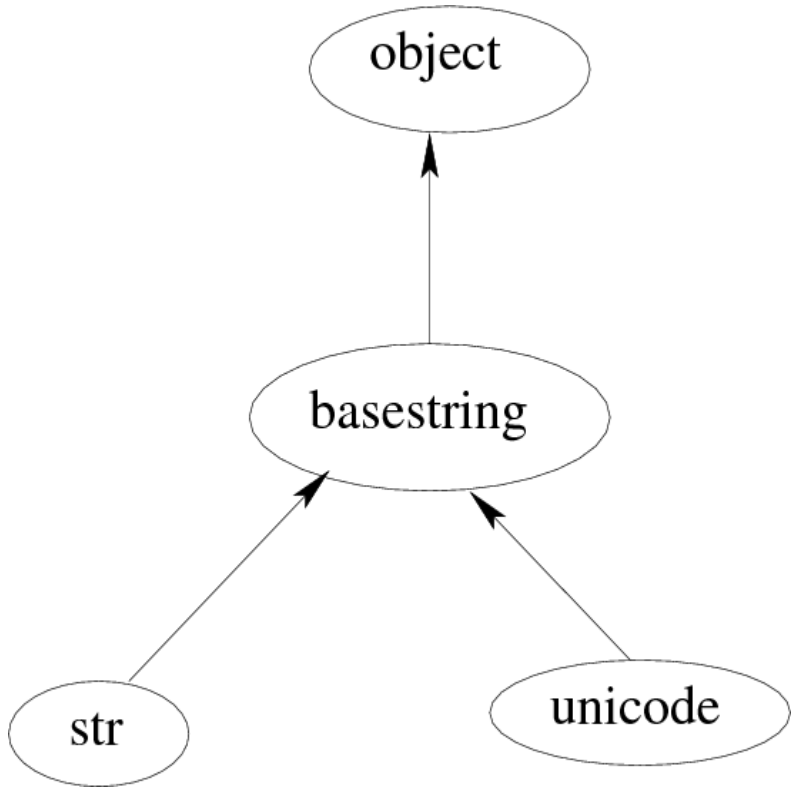
- ➜ A $\rightarrow$ U+0041
- ➜ a $\rightarrow$ U+0061

UTF-8

Just another character encoding for Unicode.

Python 2.x



str

```
s = 'A string'
```

➜ *Encoded* strings.

➜ ASCII by default.

unicode

```
# -*- coding: utf-8 -*-
u = u'A string'
```

➜ Strings stored in the internal representation.

➜ Unicode literals

Conversion

```
u.encode('UTF-8').decode('UTF-8')
```

Best practices

- ➜ Always use unicode strings.
- ➜ Decode in input and encode in output.
- ➜ Test against unicode strings.

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```
import codecs
codecs.open(filename, encoding=encoding)
```

Python 3

➜ Strings and bytes

Python 3

➜ Strings and bytes *(Unicode literals are back in 3.3)*

Python 3

- Strings and bytes *(Unicode literals are back in 3.3)*
- No need to use the `codecs` module any more.

i18n & l10n

Formats

- Gettext (PO files)
- TS files (Qt)
- YAML

Choice?

Use a real format:

- ➜ Plurals support
- ➜ Context
- ➜ Comments
- ➜ Suggestions

Gettext

- ➜ Mark translation strings.
- ➜ Extract them (PO files).
- ➜ Translate them.
- ➜ Compile them (MO files).
- ➜ Load in the application.

Source code

https://github.com/mpessas/going_international/

Initialization

```
import gettext

# Set up message catalog access
t = gettext.translation(
    'myapplication', 'locale', fallback=True
)
_ = t.ugettext
```

Usage

```
def greet_user(user):
    print _(u'Hello, %s.') % user
```

Plurals

```
children = {'John': 1, 'Mary': 3}

def report_children(user):
    print t.ungettext(
        u'You have %s child',
        u'You have %s children',
        children[user]
    ) % children[user]
```

Extract

```
xgettext -d myapplication -o app.pot l10n.py
vim app.pot
```

POT file headers

```
#, fuzzy
msgid ""
msgstr ""
"Project-Id-Version: 0.1\n"
"Report-Msgid-Bugs-To: http://github.com/mpessas/
    going_international/issues\n"
"POT-Creation-Date: 2012-06-30 09:45+0300\n"
"PO-Revision-Date: YEAR-MO-DA HO:MI+ZONE\n"
"Last-Translator: FULL NAME <EMAIL@ADDRESS>\n"
"Language-Team: LANGUAGE <LL@li.org>\n"
"Language: \n"
"MIME-Version: 1.0\n"
"Content-Type: text/plain; charset=UTF-8\n"
"Content-Transfer-Encoding: 8bit\n"
"Plural-Forms: nplurals=INTEGER; plural=EXPRESSION;\n"
```

POT file content

```
#: l10n.py:10
#, python-format
msgid "Hello, %s."
msgstr ""

#: l10n.py:17
#, python-format
msgid "You have %s child"
msgid_plural "You have %s children"
msgstr[0] ""
msgstr[1] ""
```

PO files

```
mkdir -p locale/en/LC_MESSAGES/
msginit -i app.pot -o locale/en/LC_MESSAGES/en.po -l en
msgfmt locale/en/LC_MESSAGES/en.po -o \
    locale/en/LC_MESSAGES/myapplication.mo

mkdir -p locale/el/LC_MESSAGES/
msginit -i app.pot -o locale/el/LC_MESSAGES/el.po -l el
vim locale/el/LC_MESSAGES/el.po
msgfmt locale/el/LC_MESSAGES/el.po -o \
    locale/el/LC_MESSAGES/myapplication.mo

mkdir -p locale/it/LC_MESSAGES/
msginit -i app.pot -o locale/it/LC_MESSAGES/it.po -l it
vim locale/it/LC_MESSAGES/it.po
msgfmt locale/el/LC_MESSAGES/el.po -o \
    locale/el/LC_MESSAGES/myapplication.mo
```

PO header

```
msgid ""
msgstr ""
"Project-Id-Version: 0.1\n"
"Report-Msgid-Bugs-To: \
    http://github.com/mpessas/going_international/issues\n"
"POT-Creation-Date: 2012-06-30 09:45+0300\n"
"PO-Revision-Date: 2012-06-30 09:51+0300\n"
"Last-Translator:  <mpessas@transifex.com>\n"
"Language-Team: Italian\n"
"Language: it\n"
"MIME-Version: 1.0\n"
"Content-Type: text/plain; charset=UTF-8\n"
"Content-Transfer-Encoding: 8bit\n"
"Plural-Forms: nplurals=2; plural=(n != 1);\n"
```

PO content

```
#: l10n.py:10
#, python-format
msgid "Hello, %s."
msgstr "Ciao, %s."

#: l10n.py:17
#, python-format
msgid "You have %s child"
msgid_plural "You have %s children"
msgstr[0] ""
msgstr[1] ""
```

Execution

```
bash> LANG=it python2 l10n.py
Ciao, John.
You have 1 child
Ciao, Mary.
You have 3 children
```

Plural equation for arabic

$$
\begin{aligned}
&n == 0 \quad ? \quad 0 : \\
&n == 1 \quad ? \quad 1 : \\
&n == 2 \quad ? \quad 2 : \\
&n \,\%\, 100 >= 3 \;\&\&\; n \,\%\, 100 <= 10 \quad ? \quad 3 : \\
&n \,\%\, 100 >= 11 \;\&\&\; n \,\%\, 100 <= 99 \quad ? \quad 4 : \\
&5
\end{aligned}
$$

Timezone handling

The mess with timezones

- ➜ Daylight Saving Time (DST)
- ➜ Past changes

UTC

- ➜ Coordinated Universal Time
- ➜ All timezones are based on that.

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Internally, only use times based on UTC. Convert them to localtime on output.

datetime

- ➜ Naive (does not have timezone information attached)
- ➜ Aware (has timezone information attached)

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The two do not work together.

pytz

- ➜ Timezone database
- ➜ Saner conversions

Usage

```
import pytz
from datetime import datetime
u = datetime.utcnow().replace(tzinfo=pytz.utc)
r = u.astimezone(pytz.timezone('Europe/Rome'))
```

Questions?