Software Internationalization (i18n) with *GNU gettext*

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25th October 2009

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Agenda

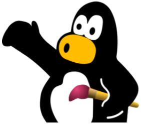
1 About
2 Internationalization
3 gettext
4 Task of developer/translator
5 Flow of the translation process
6 Codes
7 Tools
8 Route of PO to MO
9 Issues with package generated by gettext
10 Conclusion

About the speaker

- KDE Subversion committer and original translator to ms_MY

About the speaker

- KDE Subversion committer and original translator to ms_MY
- Translation CVS committer for Tuxpaint project



About the speaker

- KDE Subversion committer and original translator to ms_MY
- Translation CVS committer for Tuxpaint project
- Occasionally sending translation for GNU ms_MY, (Munsyi Project), lead by Sharuzzaman

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Internationalization

What actually internationalization is:

- Software going global

Internationalization

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- Software going global
- Software package getting “world” acceptance, thus people willing to localize it

Internationalization

What actually internationalization is:

- Software going global
- Software package getting “world” acceptance, thus people willing to localize it
- Needs i18n support first!

The differences. . .

Localization

- Done by translator
- It can be by the user/Developer
- Submit to package maintainer
- Get credit

The differences. . .

Localization

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Internationalization

- Developer
- Prepare package
- Merge package
- Update package
- Announce new package
- Give proper credit

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gettext

gettext's features

- Part of GNU packages
- Enables internationalization of software
- Enables the creation of Portable Object (PO) file

Portable Object?

Gettext features

Why gettext?

- Supports major characters encoding . . .
- UTF-8 for an example
- KDE,Gnome, Squirrelmail use it
- Relatively to update and maintain

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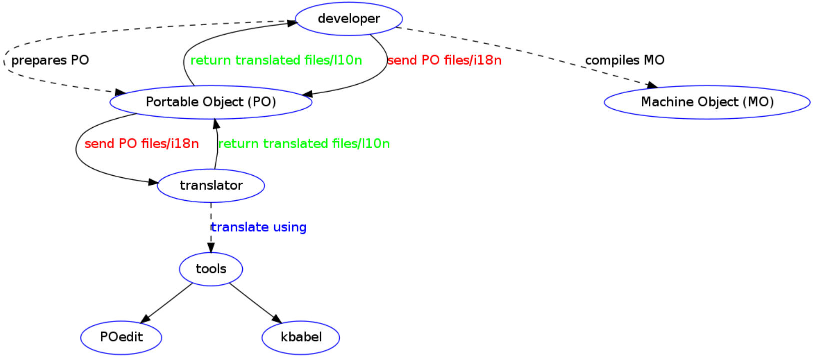
What developers and translators should do?



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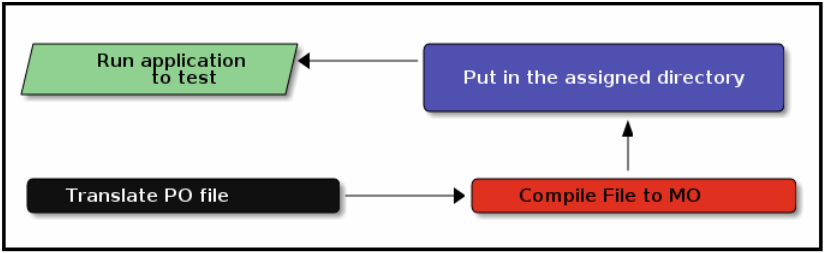
Flow of Translation



Portable Object (PO) files

PO file's features

- It's a raw, untranslated file
- Created automatically using gettext package
- Ready to be translated

Machine Object (MO) files

MO file's features

- Compiled file, derived from PO
- It's a binary, thus *machine readable*

Default & customized location

- By default Linux refers to

  `/usr/share/locale`

- Customized directory

  ```
  najmi@notre-dame:/var/www$ tree ms
  ms
  `-- LC_MESSAGES
      |-- greetings.mo
      |-- index.mo
      `-- messages.mo
  ```

Generating Machine Object file

How?

- Use msgfmt - message format
- This will generate default name, message.mo, unless you specify it
- You can trash it out, given you just want to check the localized stats to `/dev/null`
- It can be reverted back, use msgunfmt

Intro to locale

Locale

- Locale is the local setting of a particular country, race, venue etc
- For Bahasa Melayu, the assigned locale is ms_MY, where ms is for Malay, and MY is for Malaysia
- As for now, since Indonesia is using “id” , so sometimes ms is just fine
- Date sequence, for .eg dd/mm/yyyy is also fall under locale . We also do not have Daylight Saving Time(DST), that is also locale

Locale can be simply viewed by typing `$locale`

Some stuffs on chartset

Charset?

- Different charset support different language, characters
- Includes Roman, Arabic, CJK and etc
  - UTF-8, UTF-16 etc
- I don't really know on this stuffs, only know Roman based and Arabic based chars

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How's the *C++* file looks like?

```
#include <iostream>
#include <libintl.h>
#include <locale>
using namespace std;

int main()
{
        setlocale( LC_ALL, "" );
        bindtextdomain( "hello", "/usr/share/locale" );
        textdomain( "hello" );
        cout<< gettext( "Hello,␣world!" ) <<endl;
        cout<< gettext( "How␣are␣you?" ) <<endl;
        return 0;
}
```

Executable output

```
$ ./hello
Hello, world!
How are you?
```

Executable output

```
$ ./hello
Hello, world!
How are you?
```

```
$ export LC_ALL=ms_MY.UTF-8
```

Executable output

```
$ ./hello
Hello, world!
How are you?
```

```
$ export LC_ALL=ms_MY.UTF-8

$ ./hello
Assalamualaikum, dunia!
Awak apa khabar?
```

About xgettext

- Part of gettext
- Extracting translatable strings from source code

```
xgettext -d lang lang.php
```

This will create lang.po, with respect to strings in lang.php

How's the *raw* POT file looks like?

```
# SOME DESCRIPTIVE TITLE.
# Copyright (C) YEAR THE PACKAGE'S COPYRIGHT HOLDER
# This file is distributed under the same license as the PACKAGE package.
# FIRST AUTHOR <EMAIL@ADDRESS>, YEAR.
#
#, fuzzy
msgid ""
msgstr ""
"Project-Id-Version: PACKAGE VERSION\n"
"Report-Msgid-Bugs-To: \n"
"POT-Creation-Date: 2009-10-23 22:08+0800\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"
"MIME-Version: 1.0\n"
"Content-Type: text/plain; charset=CHARSET\n"
"Content-Transfer-Encoding: 8bit\n"

#: hello.cpp:11
msgid "Hello, world!"
msgstr ""

#: hello.cpp:12
msgid "How are you?"
msgstr ""
```

How’s the *translated* PO file looks like?

```
# translation of hello.po to Malay
# Muhammad Najmi bin Ahmad Zabidi <najmi.zabidi@gmail.com>, 2009.
msgid ""
msgstr ""
"Project-Id-Version: hello\n"
"Report-Msgid-Bugs-To: \n"
"POT-Creation-Date: 2009-10-23 22:08+0800\n"
"PO-Revision-Date: 2009-10-19 18:32+0800\n"
"Last-Translator: Muhammad Najmi bin Ahmad Zabidi <najmi.zabidi@gmail.com>\n"
"Language-Team: Malay <translation-team-ms@lists.sourceforge.net>\n"
"MIME-Version: 1.0\n"
"Content-Type: text/plain; charset=UTF-8\n"
"Content-Transfer-Encoding: 8bit\n"
"X-Generator: KBabel 1.11.4\n"

#: hello.cpp:11
msgid "Hello, world!"
msgstr "Assalamualaikum, dunia!"

#: hello.cpp:12
msgid "How are you?"
msgstr "Awak apa khabar?"
```

python!

```
import gettext
gettext.bindtextdomain('piton', '/usr/share/locale')
gettext.textdomain('piton')
_ = gettext.gettext
# ...
print _('python␣is␣simple')
print _('as␣simple␣as␣this')
```

Traslatable strings from Python file

```
# translation of piton.po to Malay
# Copyright (C) YEAR THE PACKAGE'S COPYRIGHT HOLDER
# This file is distributed under the same license as the PACKAGE package.
#
# Muhammad Najmi bin Ahmad Zabidi <najmi.zabidi@gmail.com>, 2009.
msgid ""
msgstr ""
"Project-Id-Version:␣piton\n"
"Report-Msgid-Bugs-To:␣\n"
"POT-Creation-Date:␣2009-10-24␣20:56+0800\n"
"PO-Revision-Date:␣2009-10-24␣20:57+0800\n"
"Last-Translator:␣Muhammad␣Najmi␣bin␣Ahmad␣Zabidi␣<najmi.zabidi@gmail.com>\n"
"Language-Team:␣Malay␣<kedidiemas@yahoogroups.com>\n"
"MIME-Version:␣1.0\n"
"Content-Type:␣text/plain;␣charset=UTF-8\n"
"Content-Transfer-Encoding:␣8bit\n"
"X-Generator:␣KBabel␣1.11.4\n"

#: piton.py:6
msgid "python␣is␣simple"
msgstr "python␣mudah"

#: piton.py:7
msgid "as␣simple␣as␣this"
msgstr "semudah␣ini"
```

Python executable

Python executable

```
$ python piton.py
python mudah
semudah ini
```

Python executable

```
$ python piton.py
python mudah
semudah ini
```

```
$ export LC_ALL=C
```

Python executable

```
$ python piton.py
python mudah
semudah ini
```

```
$ export LC_ALL=C
```

```
$ python piton.py
python is simple
as simple as this
```

Let’s see for PHP

```
<?
$language=ms_MY;
setlocale(LC_ALL,"$language");
bindtextdomain("index","/usr/share/locale/");
textdomain("index");
bind_textdomain_codeset("index", 'UTF–8');

echo _("Welcome\n");
echo "<br>";
echo _("Bye<br>");
echo gettext("The␣settings␣of␣").$language._("␣is␣working␣fine");
?>
```

Let’s see for PHP

- The following is the example of snipped file - without header

```
#: lang.php:8
msgid "Welcome\n"
msgstr ""

#: lang.php:10
msgid "Bye<br>"
msgstr ""

#: lang.php:11
msgid "The settings of "
msgstr ""

#: lang.php:11
msgid " is working fine"
msgstr ""
```

Avoid confusing translator

- Try to put strings in a minimal line
- Avoid separation of sentence

```
<?
$language=ms_MY;
setlocale(LC_ALL,"$language");
bindtextdomain("index","/usr/share/locale/");
textdomain("index");
bind_textdomain_codeset("index", 'UTF-8');

echo _("Welcome\n");
echo "<br>";
echo _("Bye<br>");
//echo _("The settings of ").$language._(" is working fine");
echo sprintf(_("The settings of %s is working fine"),$language);
?>
```

Use “sprintf”

Use the following . . .

```
echo sprintf(_(‘‘The settings of %s is working fine’’),$language);
```

instead of . . .

```
echo _(‘‘The settings of ’’).$language._(‘‘ is working fine”);
```

Separated into two

```
echo _(``The settings of '').$language._(`` is working fine");
```

will generate...

```
#: lang.php:11
msgid ``The settings of ''
msgstr ``

#: lang.php:11
msgid '' is working fine``
msgstr ''``''
```

which separates sentence into two different strings...

```
echo sprintf(_(``The settings of %s is working fine''),$language);
```

since this will generate. . .

```
msgid ``The settings of %s is working fine''
msgstr ``
```

What if we have plural noun. . .

- Plural is when you have different noun for singular and plural

Singular

- cat

Plural

- cats

Singular-Malay

Plural-Malay

What if we have plural noun. . .

- Plural is when you have different noun for singular and plural

Singular

- cat
- boy

Plural

- cats
- boys

Singular-Malay

Plural-Malay

What if we have plural noun. . .

- Plural is when you have different noun for singular and plural

Singular

- cat
- boy
- man

Plural

- cats
- boys
- men

Singular-Malay

Plural-Malay

What if we have plural noun. . .

- Plural is when you have different noun for singular and plural

Singular

- cat
- boy
- man

Plural

- cats
- boys
- men

Singular-Malay

- basikal

Plural-Malay

- basikal-basikal

What if we have plural noun. . .

- Plural is when you have different noun for singular and plural

Singular

- cat
- boy
- man

Plural

- cats
- boys
- men

Singular-Malay

- basikal
- pensil

Plural-Malay

- basikal-basikal
- pensil-pensil

What if we have plural noun. . .

- Plural is when you have different noun for singular and plural

Singular	Plural
cat	cats
boy	boys
man	men

Singular-Malay	Plural-Malay
basikal	basikal-basikal
pensil	pensil-pensil
komputer	komputer-komputer

However, as far as I know, plural issue in Malay languge is non trivial issue, so for the sake of easiness (perhaps, lazy?) plural = 0

ngettext

```php
<?php
$n = 2;
echo sprintf(ngettext("%d boy is eating", "%d boys are eating", $n), $n);
echo "<br>";
$n=1;
echo sprintf(ngettext("%d cat falls", "%d cats fall", $n), $n);
echo "<br>";
$n=1;
echo sprintf(ngettext("%d tingkap ditutup", "%d tetingkap ditutup", $n), $n);
echo "<br>";
$n=4;
//if it goes without parameter %d, no sprintf is fine
echo ngettext("File is good","Files are good",$n);
?>
```

```
2 boys are eating
1 cat falls
1 tingkap ditutup
Files are good
```

Sample PO

```
#: nplural.php:3
#, php-format
msgid "%d boy is eating"
msgid_plural "%d boys are eating"
msgstr[0] ""
msgstr[1] ""

#: nplural.php:6
#, php-format
msgid "%d cat falls"
msgid_plural "%d cats fall"
msgstr[0] ""
msgstr[1] ""

#: nplural.php:9
#, php-format
msgid "%d tingkap ditutup"
msgid_plural "%d tetingkap ditutup"
msgstr[0] ""
msgstr[1] ""

#: nplural.php:13
msgid "File is good"
msgid_plural "Files are good"
msgstr[0] ""
msgstr[1] ""
```

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Internationalization tools

- gted (very recent)
- html2po / po2html

Localization tools

- POedit
- Kbabel (now lokalize)
- VI? Emacs ... the list may infinite up to *n* # of tools
- Incoming . . . wish for PO Live Edit, prototype is webl10n by gandalf
- Pootle

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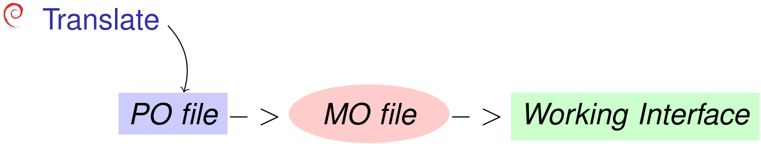
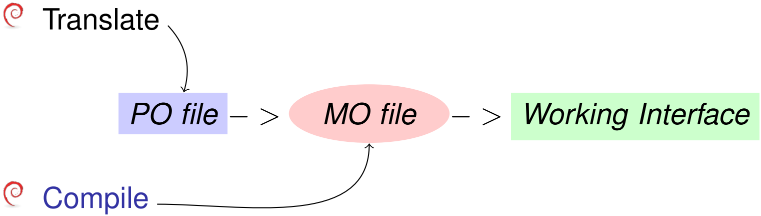
PO to MO journey



- Translate

PO file $->$ *MO file* $->$ *Working Interface*

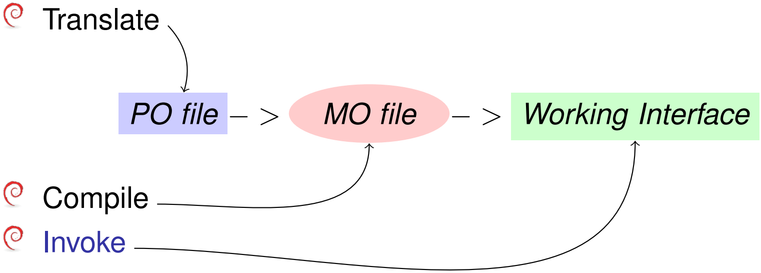
PO to MO journey



- Translate
- Compile

PO file – > *MO file* – > *Working Interface*

PO to MO journey



- Translate
- Compile
- Invoke

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Issues

What are the issues?

- Software may become bloated

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- Mozilla has its own way. . .
  - I saw moz2po and po2moz . . . a good news, perhaps?
  - Bug filed #501988 seems a good news

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Issues

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- Software may become bloated
- So, the user may not install *everything* in the first place!
- Mozilla has its own way. . .
  - I saw moz2po and po2moz . . . a good news, perhaps?
  - Bug filed #501988 seems a good news
- I also have problem with UTF-8 on console.. garbled characters
  - Then, I `export LC_ALL=C`, of course I'm not happy with this
  - But most of the time, it works. . .

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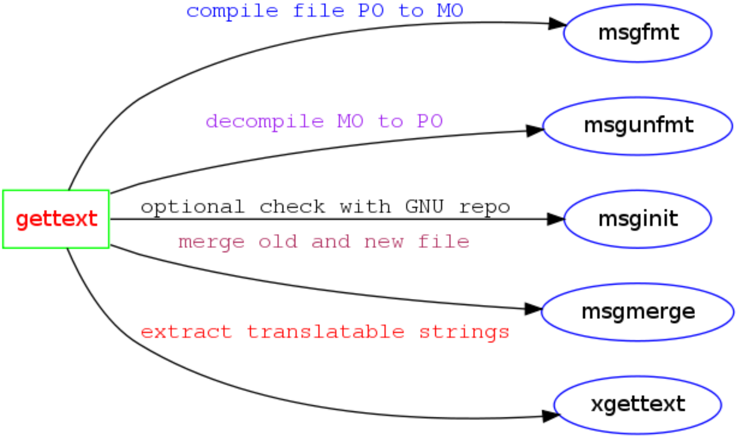
gettext rules



fin()

Questions?

هَل عِندَكُم السُّؤَال؟

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