Related Topics

Documentation overview
- Modules
  - Previous: Modules
  - Next: Objects, Fields and Methods

This Page

Show Source

Quick search

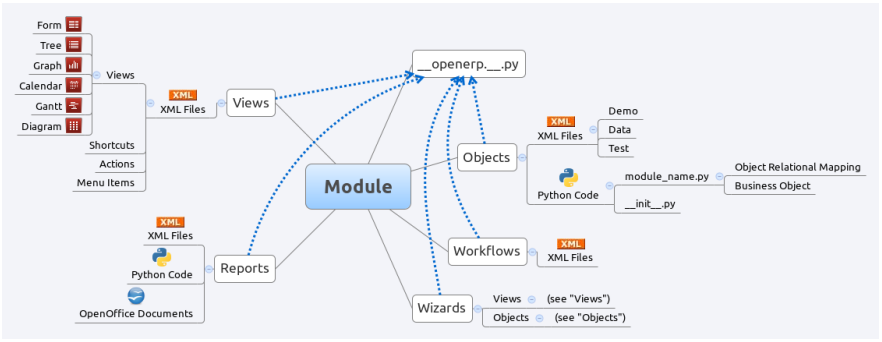
Go

Enter search terms or a module, class or function name.

Module structure

A module can contain the following elements:

- **Business object** : declared as Python classes extending the class osv.Model, the persistence of these resource is completly managed by OpenERP's ORM.
- **Data** : XML/CSV files with meta-data (views and workflows declaration), configuration data (modules parametrization) and demo data (optional but recommended for testing),
- **Reports** : RML (XML format). HTML/MAKO or OpenOffice report templates, to be merged with any kind of business data, and generate HTML, ODT or PDF reports.



Module composition

Each module is contained in its own directory within either the server/bin/addons directory or another directory of addons, configured in server installation. To create a new module for example the 'OpenAcademy' module, the following steps are required:

- create a `openacademy` subdirectory in the source/addons directory
- create the module import file `__init__.py`
- create the module manifield file `__openerp__.py`
- create **Python** files containing **objects**
- create **.xml files** holding module data such as views, menu entries or demo data
- optionally create **reports** or **workflows**

Python import file __init__.py

The `__init__.py` file is the Python import file, because an OpenERP module is also a regular Python module. The file should import all the other python file or submodules.

For example, if a module contains a single python file named `openacademy.py`, the file should look like:

```
import openacademy
```

Manifest file __openerp__.py

In the created module directory, you must add a **__openerp__.py** file. This file, which must be a Python dict literal, is responsible to

1. determine the *XML files that will be parsed* during the initialization of the server, and also to
2. determine the *dependencies* of the created module.
3. declare additional meta data

This file must contain a Python dictionary with the following values:

```
name            The name of the module in English.
version         The version of the module.
summary         Short description or keywords
description     The module description (text).
category        The categrory of the module
author          The author of the module.
website         URL of the website of the module.
license         The license of the module (default: AGPL-3).
depends         List of modules on which this module depends beside base.
data            List of .xml files to load when the module is installed or updated.
demo            List of additional .xml files to load when the module is
                installed or updated and demo flag is active.
installable     True or False. Determines whether the module is installable
                or not.
auto_install    True or False (default: False). If set to ``True``, the
                module is a link module. It will be installed as soon
                as all its dependencies are installed.
```

For the `openacademy` module, here is an example of `__openerp__.py` declaration file:

v: latest

```
{
    'name' : "OpenAcademy",
    'version' : "1.0",
    'author' : "OpenERP SA",
    'category' : "Tools",
    'depends' : ['mail'],
    'data' : [
        'openacademy_view.xml',
        'openacademy_data.xml',
        'report/module_report.xml',
        'wizard/module_wizard.xml',
    ],
    'demo' : [
        'openacademy_demo.xml'
    ],
    'installable': True,
}
```

Objects

All OpenERP resources are objects: invoices, partners. Metadata are also object too: menus, actions, reports... Object names are hierarchical, as in the following examples:

- account.transfer : a money transfer
- account.invoice : an invoice
- account.invoice.line : an invoice line

Generally, the first word is the name of the module: account, stock, sale.

Those object are declared in python be subclassing osv.Model

The ORM of OpenERP is constructed over PostgreSQL. It is thus possible to query the object used by OpenERP using the object interface (ORM) or by directly using SQL statements.

But it is dangerous to write or read directly in the PostgreSQL database, as you will shortcut important steps like constraints checking or workflow modification.

XML Files

XML files located in the module directory are used to initialize or update the the database when the module is installed or updated. They are used for many purposes, among which we can cite :

- initialization and demonstration data declaration,
- views declaration,
- reports declaration,
- workflows declaration.

General structure of OpenERP XML files is more detailed in the xml-serialization section. Look here if you are interested in learning more about *initialization* and *demonstration data declaration* XML files. The following section are only related to XML specific to *actions*, *menu entries*, *reports*, *wizards* and *workflow*s declaration.

Data can be inserted or updated into the PostgreSQL tables corresponding to the OpenERP objects using XML files. The general structure of an OpenERP XML file is as follows:

```
<?xml version="1.0"?>
<openerp>
  <data>
    <record model="model.name_1" id="id_name_1">
      <field name="field1"> "field1 content" </field>
      <field name="field2"> "field2 content" </field>
      (...)
    </record>
    <record model="model.name_2" id="id_name_2">
        (...)
    </record>
    (...)
  </data>
</openerp>
```

<record>

Defines a new record in a specified OpenERP model.

`@model` (required)

Name of the model in which this record will be created/inserted.

`@id` (optional)

external ID for the record, also allows referring to this record in the rest of this file or in other files (through `field/@ref` or the **`ref(`**

v: latest

A record tag generally contains multiple `field` tags specifying the values set on the record's fields when creating it. Fields left out will be set to their default value unless required.

<field>

In its most basic use, the `field` tag will set its body (as a string) as the value of the corresponding `record`'s `@name` field.

Extra attributes can either preprocess the body or replace its use entirely:

`@name` (mandatory)

Name of the field in the containing `record`'s model

`@type` (optional)

One of `char`, `int`, `float`, `list`, `tuple`, `xml` or `html`, `file` or `base64`. Converts the `field`'s body to the specified type (or validates the body's content)

- `xml` will join multiple XML nodes under a single `<data>` root
- in `xml` and `html`, external ids can be referenced using `%(id_name)s`
- `list` and `tuple`'s element are specified using `<value>` sub-nodes with the same attributes as `field`.
- `file` expects a module-local path and will save the path prefixed with the current module's name, separated by a `,` (comma). For use with **`get_module_resource()`**.
- `base64` expects binary data, encodes it to base64 and sets it. Mostly useful with `@file`

`@file`

Can be used with types `char` and `base64`, sources the field's content from the specified file instead of the field's text body.

`@model`

Model used for `@search`'s search, or registry object put in context for `@eval`. Required if `@search` but optional if `@eval`.

`@eval` (optional)

A Python expression evaluated to obtain the value to set on the record

`@ref` (optional)

Links to an other record through its external id. The module prefix may be ommitted to link to a record defined in the same module.

`@search` (optional)

Search domain (evaluated Python expression) into `@model` to get the records to set on the field.

Sets all the matches found for m2m fields, the first id for other field types.

Example

```
<record model="ir.actions.report.xml" id="l0">
     <field name="model">account.invoice</field>
     <field name="name">Invoices List</field>
     <field name="report_name">account.invoice.list</field>
     <field name="report_xsl">account/report/invoice.xsl</field>
     <field name="report_xml">account/report/invoice.xml</field>
</record>
```

Let's review an example taken from the OpenERP source (base_demo.xml in the base module):

```
<record model="res.company" id="main_company">
    <field name="name">Tiny sprl</field>
    <field name="partner_id" ref="main_partner"/>
    <field name="currency_id" ref="EUR"/>
</record>
```

```
<record model="res.users" id="user_admin">
    <field name="login">admin</field>
    <field name="password">admin</field>
    <field name="name">Administrator</field>
    <field name="signature">Administrator</field>
    <field name="action_id" ref="action_menu_admin"/>
    <field name="menu_id" ref="action_menu_admin"/>
    <field name="address_id" ref="main_address"/>
    <field name="groups_id" eval="[(6,0,[group_admin])]"/>
    <field name="company_id" ref="main_company"/>
</record>
```

This last record defines the admin user :

- The fields login, password, etc are straightforward.
- The ref attribute allows to fill relations between the records :

v: latest

```
<field name="company_id" ref="main_company"/>
```

The field **company_id** is a many-to-one relation from the user object to the company object, and **main_company** is the id of to associate.

- The **eval** attribute allows to put some python code in the xml: here the groups_id field is a many2many. For such a field, "[(6,0,[group_admin])]" means : Remove all the groups associated with the current user and use the list [group_admin] as the new associated groups (and group_admin is the id of another record).
- The **search** attribute allows to find the record to associate when you do not know its xml id. You can thus specify a search criteria to find the wanted record. The criteria is a list of tuples of the same form than for the predefined search method. If there are several results, an arbitrary one will be chosen (the first one):

```
<field name="partner_id" search="[]" model="res.partner"/>
```

This is a classical example of the use of **search** in demo data: here we do not really care about which partner we want to use for the test, so we give an empty list. Notice the **model** attribute is currently mandatory.

Function tag

A function tag can contain other function tags.

model : *mandatory*
: The model to be used

name : *mandatory*
: the function given name

eval
: should evaluate to the list of parameters of the method to be called, excluding cr and uid

Example

```
<function model="ir.ui.menu" name="search" eval="[[('name','=','Operations')]]"/>
```

Views

Views are a way to represent the objects on the client side. They indicate to the client how to lay out the data coming from the objects on the screen.

There are two types of views:

- form views
- tree views

Lists are simply a particular case of tree views.

A same object may have several views: the first defined view of a kind (*tree*, *form*, ...) will be used as the default view for this kind. That way you can have a default tree view (that will act as the view of a one2many) and a specialized view with more or less information that will appear when one double-clicks on a menu item. For example, the products have several views according to the product variants.

Views are described in XML.

If no view has been defined for an object, the object is able to generate a view to represent itself. This can limit the developer's work but results in less ergonomic views.

Usage example

When you open an invoice, here is the chain of operations followed by the client:

- An action asks to open the invoice (it gives the object's data (account.invoice), the view, the domain (e.g. only unpaid invoices)).
- The client asks (with XML-RPC) to the server what views are defined for the invoice object and what are the data it must show.
- The client displays the form according to the view

To develop new objects

The design of new objects is restricted to the minimum: create the objects and optionally create the views to represent them. The PostgreSQL tables do not have to be written by hand because the objects are able to automatically create them (or adapt them in case they already exist).

Reports

OpenERP uses a flexible and powerful reporting system. Reports are generated either in PDF or in HTML. Reports are designed on the principle of separation between the data layer and the presentation layer.

Reports are described more in details in the Reporting chapter.

Workflow

The objects and the views allow you to define new forms very simply, lists/trees and interactions between them. But that is not enough, you must define the dynamics of these objects.

v: latest

A few examples:

- a confirmed sale order must generate an invoice, according to certain conditions
- a paid invoice must, only under certain conditions, start the shipping order

The workflows describe these interactions with graphs. One or several workflows may be associated to the objects. Workflows are not mandatory; some objects don't have workflows.

Below is an example workflow used for sale orders. It must generate invoices and shipments according to certain conditions.

In this graph, the nodes represent the actions to be done:

- create an invoice,
- cancel the sale order,
- generate the shipping order, ...

The arrows are the conditions;

- waiting for the order validation,
- invoice paid,
- click on the cancel button, ...

The squared nodes represent other Workflows;

- the invoice
- the shipping

i18n

Changed in version 5.0.

Each module has its own `i18n` folder. In addition, OpenERP can now deal with `.po` [1] files as import/export format. The translation files of the installed languages are automatically loaded when installing or updating a module.

Translations are managed by the Launchpad Web interface. Here, you'll find the list of translatable projects.

Please read the FAQ before asking questions.

[1] http://www.gnu.org/software/autoconf/manual/gettext/PO-Files.html#PO-Files

© Copyright 2012, OpenERP s.a. Created using Sphinx and a modified Flask theme.

v: latest