



vtlib – vtiger development library
version 2.1

DISCLAIMER:

The vtlib library development is in progress and subject to change. While we make every effort to make sure modules developed using vtlib will be compatible with future versions of vtiger CRM, some incompatible changes may be required for the next release of vtiger. In which case you will have to re-create your modules with an upgraded version of vtlib for the specific version of vtiger CRM.

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API Version History

Version	Release Date	Highlights
2.1		<ul style="list-style-type: none">* Installing Language Pack, Extension module using Module Manager* ModuleDir was re-organized to be specific to a vtiger version* Module Manager handles License agreement before installation.* Basic support added for module upgrades with Module Manager.* Ability to add custom web links for a module.* Support added to allow help information for the module fields.* Added vtiger_imageurl API
2.0	2008-11-26	<ul style="list-style-type: none">* API provided to related modules (related list)* API changes for creating fields, blocks, module* UI type 10 was added for generic popup field
1.4	2008-09-29	<ul style="list-style-type: none">* Exporting and Importing was added to Module Manager
1.3	2008-09-01	<ul style="list-style-type: none">* Module Manager was added for Administrators to install and enable/disable the new modules developed using vtlib.* API to setup Picklist values
1.2	2008-08-29	<ul style="list-style-type: none">* Sharing Access API was added
1.1	2008-08-27	<ul style="list-style-type: none">* API's to enable and disable tools like Export, Import were added
1.0	2008-08-19	<ul style="list-style-type: none">* Basic API was added to created fields, blocks, module

About vtlib

vtlib is a library to ease new module development for vtiger CRM. vtlib includes APIs to create or modify the backend elements for a module. These APIs help make the necessary changes to the database.

vtlib includes Module Manager which allows new modules to be packaged into zip files that other vtiger CRM installations can easily install and use.

For vtiger 5.0.4, vtlib is available as a download. This package needs to be installed by developers as well as users who intend to install modules developed using vtlib.

vtlib will be integrated in vtiger CRM version 5.1 download.

vtlib Installation

vtlib Installation requires the following steps.

1. vtiger 5.0.4 should be installed.
2. Take a backup of your complete vtiger CRM Source directory.
3. Unpack the vtlib-x.y.zip into your vtiger CRM source directory.

NOTE: Source directory in this document refers to the, vtiger CRM source installation.
If you have used vtiger CRM bundled installation like, .exe or .bin, it will be located in
<vtigercrm_install_directory>\apache\htdocs\vtigerCRM

vtlib API - Quick Reference

vtlib includes the following APIs that can be used to create new modules. For more details please look at the API docs.

- Vtiger_Module
 - name
 - addBlock()
 - addFilter()
 - initTables()
 - setRelatedList()
 - setDefaultSharing()
 - enableTools()
 - disableTools()
 - save()
 - addLink()
- Vtiger_Menu
 - addModule()
- Vtiger_Block
 - label
 - addField()
- Vtiger_Field
 - table
 - column
 - columntype
 - uitype
 - typeofdata
 - setHelpInfo()
 - setEntityIdentifier()
 - setPicklistValues()
 - setRelatedModules()

- Vtiger_Filter
 - name
 - isdefault
 - addField()
 - addRule()
- Vtiger_Event
 - register()

Module Types

vtiger CRM modules can be classified into following types:

1. Entity Module
2. Extension Module
3. Language Pack

Entity Module

Modules in this category will create entity records in vtiger CRM. The module will provide Create view, Edit view, Detail view and List view. You will be able to create filters etc.

Entity modules are recommended for cases where a new type of data object, e.g. Timesheet, needs to be added into the system as part of the new module. These new data objects can be viewed and managed by administrators and users.

Leads, Contacts, Accounts, Payslip etc... are Entity Modules.

Extension Module **New**

Modules in this category need not follow the general behavior of Entity Module. The records created by Entity module could be used to provide a extended functionality or the records creation/editing can be handled in its own way.

Extension modules can be used when add-on functionality is needed, without the need for new kinds of data objects that users view and manage.

Dashboard, Reports, Portal etc... are Extension Modules.

Language Pack **New**

Language Packs for vtiger CRM are also treated as another kind of module by vtlb.

NOTE: Module manager will provide the ability to install these different modules.

Creating a new Entity Module

vtlib simplifies creation of new vtiger CRM modules. Developers can use vtlib to develop vtiger CRM modules that add new functionality to vtiger CRM. These modules can then be packaged for easy installation by the Module Manager.

NOTE: In this document we will explain the process of creating a new module by building an example 'Payslip' Module. This example code is included as part of vtlib package, and can be used as a starting point to create new modules. Please refer to the 'Using the example code provided with the vtlib API' section in this document for more information.

The following are important steps that should be followed to get a basic working module. The backend section covers database level changes for the module, and the frontend section covers the UI files.

Backend

- Step 1 Create module instance, create database tables, and add it to Menu
- Step 2 Add UI blocks for the module.
- Step 3 Add fields and associate it to blocks. Set at-least one field as entity identifier.
- Step 4 Create default list view and additional filters (make sure to create a filter named All which is the default filter)
- Step 5 Create Related List (to show in the "More information" tab)
- Step 6 Setting Sharing Access Rules
- Step 7 Setting Module Tools options (i.e., Import/Export)

FrontEnd

- Step 8 Creating Module directory and files

Packaging

- Step 9 Packaging

Additional Options

- ➔ Module Templates (to customize Form, List View, and Settings UI)
- ➔ Module Settings (to allow administrators to configure your module)
- ➔ Module Events (only available in vtiger CRM version 5.1)

These steps are explained in detail in the course of this section.

We are using the example module 'Payslip' to explain the use of vtlib APIs.

About Payslip Module **New**

It will have the ability to create, edit, delete payslip records. You can create Custom Filters for the Listview, which displays the list of payslip instances.

We shall associate this module with the Tools menu.

Step 1: Creating Module

Class Vtiger_Module provides an API to work with vtiger CRM modules.

```
include_once('vtlib/Vtiger/Module.php');

$moduleInstance = new Vtiger_Module();
$moduleInstance->name = 'Payslip';
$moduleInstance->save();

$moduleInstance->initTables();

$menuInstance = Vtiger_Menu::getInstance('Tools');
$menuInstance->addModule($moduleInstance);
```

Vtiger_Module->initTables() API will initialize (create) the 3 necessary tables a module should have as explained below:

Table	Naming convention	Description
Basetable	vtiger_<MODULENAME>	Contains the default fields for the new module
Customtable	vtiger_<MODULENAME>cf	Contains custom fields of the module
Grouptable	vtiger_<MODULENAME>grouprel	Used when records are assigned to a group

Vtiger_Menu->addModule(<ModuleInstance>) API will create menu item which serves as UI entry point for the module.

Step 2: Creating Block (in UI Form)

Class `Vtiger_Block` provides API to work with a Module block, the container which holds the fields together.

The example given below describes the way of creating new blocks for the module created earlier:

```
include_once('vtlib/Vtiger/Module.php');

$blockInstance = new Vtiger_Block();
$blockInstance->label = 'LBL_PAYSLIP_INFORMATION';
$moduleInstance->addBlock($blockInstance);

$blockInstance2 = new Vtiger_Block();
$blockInstance2->label = 'LBL_CUSTOM_INFORMATION';
$moduleInstance->addBlock($blockInstance2);
```

NOTE: `LBL_CUSTOM_INFORMATION` block should always be created to support Custom Fields for a module.

Step 3: Adding Fields

Class `Vtiger_Field` provides API to work with a Module field, which are the basic elements that store and display the module record data.

The example given below describes the way of creating new field for the module created earlier:

```
include_once('vtlib/Vtiger/Module.php');

$fieldInstance = new Vtiger_Field();
$fieldInstance->name = 'PayslipName';
$fieldInstance->table = 'vtiger_payslip';
$fieldInstance->column = 'payslipname';
$fieldInstance->columnType = 'VARCHAR(100)';
$fieldInstance->uiType = 2;
$fieldInstance->typeOfData = 'V~M';
$blockInstance->addField($fieldInstance);
```

NOTE: The `fieldInstance` name is a mandatory value to be set before saving / adding to block. Other values (if not set) are defaulted as explained below:

<code>\$fieldInstance->table</code>	Module's basetable
<code>\$fieldInstance->column</code>	<code>\$fieldInstance->name</code> in lowercase [The table will be altered by adding the column if not present]
<code>\$fieldInstance->columnType</code>	VARCHAR(255)
<code>\$fieldInstance->uiType</code>	1
<code>\$fieldInstance->typeOfData</code>	V~O
<code>\$fieldInstance->label</code>	<code>\$fieldInstance->name</code> [Mapping entry should be present in module language file as well]

Entity Identifier

One of the mandatory field should be set as entity identifier of module once it is created. This field will be used for showing the details in 'Last Viewed Entries' etc...

```
$moduleInstance->setEntityIdentifier($fieldInstance);
```

Set Picklist Values

If the field is of Picklist type (uiType **15**, 16, 33, 55, 111) then you can configure the initial values using the following API:

```
$fieldInstance->setPicklistValues( Array ( 'value1', 'value2' ) );
```

Set Related Module

If the field is of Popup select type (uiType=10), you can configure the related modules which could be selected via Popup using the following API:

```
$fieldInstance->setRelatedModules(Array('otherModule1', 'otherModule2'));
```

To unset the related module you can use the following API:

```
$fieldInstance->setRelatedModules(Array('otherModule2'));
```

Set Help Information **New**

Providing help information for module field will be useful to educate users.

```
include_once('vtlib/Vtiger/Module.php');  
$fieldInstance = new Vtiger_Field();  
$fieldInstance->name = 'LinkTo';  
$fieldInstance->helpinfo = 'Relate to an existing contact';  
$blockInstance->addField($fieldInstance);
```

You can provide set the help text for an existing field using the following API:

```
$fieldInstance->setHelpInfo('HELP CONTENT');
```

NOTE: HELP CONTENT can be plain or rich text.

When a field has help information, helpicon will be shown beside the field label.

The screenshot shows a web form titled 'Basic Information' with a 'Save' and 'Cancel' button. Below it is the 'Payslip Information' section. It contains several fields: '*Payslip Name' (text input), 'Payslip Type' (dropdown menu with 'Employee' selected), 'For Month' (date picker showing '2009-01-02'), 'Assigned To' (radio buttons for 'User' and 'Group', with 'User' selected and a dropdown showing 'admin'), and 'Link To Contacts' (text input with a help icon next to it). The help icon is a small square with a question mark, highlighted by a red rectangular box.

Clicking on it will show the help content as shown:

This screenshot is similar to the previous one, but it shows a tooltip that appears when the help icon is clicked. The tooltip is a small white box with a blue border and a blue header, containing the text 'Relate to an existing contact'. The help icon and the tooltip are both highlighted with red rectangular boxes.

NOTE: Given below is the snippet of code that should be added to EditView.php of existing module to enable Help Icon support.

```
// ...  
  
// Gather the help information associated with fields  
$smarty->assign('FIELDHELPIFNO', vtlib_getFieldHelpInfo($currentModule));  
// END  
  
// ...  
if($focus->mode == 'edit') $smarty->display('salesEditview.tpl');  
else $smarty->display('CreateView.tpl');
```

Step 4: Creating Filters

Class `Vtiger_Filter` provides API to work with a Module's custom view or filter. The list view display is controlled via these filters.

The example given below describes the way of creating new filter for the module:

```
include_once('vtlib/Vtiger/Module.php');

$filterInstance = new Vtiger_Filter();
$filterInstance->name = 'All';
$filterInstance->isdefault = true;
$moduleInstance->addFilter($filterInstance);
```

Configure fields

To add fields to the filter you can use the following API:

```
$filterInstance->addField($fieldInstance, $columnIndex);
```

Where `$columnIndex` (optional) is the order/index at which the field should appear in the list view.

Setup Rules

Once the field is added to filter you can setup rule (condition) for filtering as well using the following API:

```
$filterInstance->addRule($fieldInstance, $comparator, $compareValue,
$columnIndex);
```

Where comparator could be one of the following:

EQUALS
NOT_EQUALS
STARTS_WITH
ENDS_WITH
CONTAINS
DOES_NOT_CONTAINS
LESS_THAN
GREATER_THAN
LESS_OR_EQUAL
GREATER_OR_EQUAL

`$compareValue` is the value against with the field needs to be compared.

`$columnIndex` (optional) is the order at which this rule condition should be applied.

Step 5: Related Lists

One module could be associated with multiple records of other module that is displayed under "More Information" tab on Detail View.

The example given below describes the way of creating a relation between a Payslip and Accounts module:

```
include_once('vtlib/Vtiger/Module.php');  
$moduleInstance = Vtiger_Module::getInstance('Payslip');  
$accountsModule = Vtiger_Module::getInstance('Accounts');  
$relationLabel = 'Accounts';  
$moduleInstance->setRelatedList(  
    $accountsModule, $relationLabel, Array('ADD', 'SELECT')  
);
```

With this you can Add one or more Accounts to Payslip records.

To drop the relation between the modules use the following:

```
$moduleInstance->unsetRelatedList($targetModuleInstance);
```

About setRelatedList API

```
Vtiger_Module->setRelatedList(<TARGET MODULE>[, <HEADER LABEL>, <ALLOWED ACTIONS>,  
<CALLBACK FUNCTION NAME>]);
```

<TARGET MODULE>	Module name to which relation is being setup.
<HEADER LABEL>	Optional (default = <TARGET MODULE>) Label to use on the More Information related list view.
<ALLOWED ACTIONS>	Optional ADD or SELECT (default = false) What buttons should be shown in the related list view while adding records.
<CALLBACK FUNCTION NAME>	Optional (default = get_related_list) The function should be defined in the <SOURCE MODULE> class. This should generate the listview entries for displaying.

NOTE:

This API will create an entry in the vtiger_crmentityrel table to keep track of relation between module records. Standard modules available in vtiger CRM handles the relation in separate tables and performs the JOIN to fetch data specific to each module.

This is an attempt to achieve generic behavior. You can write custom call back functions to handle related list queries that will meet your requirements.

Limitations

Following limitations apply for the related list APIs

1. Standard module class variables are not set as required by the get_related_list vtlib module API. Case handling should be handled @function vtlib_setup_modulevars in include/utlis/VtlibUtils.php
2. get_related_list API added to module class does not handle JOIN on tables where some modules like (Accounts) store information hence complete details are not fetched in the Related List View.
(Example Sorting on the city field on related list view will fail if dieOnError is true)

Step 6: Sharing Access Rules

Sharing access configuration for the module can be done as shown below:

The example given below describes the way to configure the Payslip module as Private

```
include_once('vtlib/Vtiger/Module.php');  
$moduleInstance = Vtiger_Module::getInstance('Payslip');  
$moduleInstance->setDefaultSharing('Private');
```

The <PERMISSION_TYPE> can be one of the following:

Public_ReadOnly
Public_ReadWrite
Public_ReadWriteDelete
Private

Step 7: Module Tools

Features like Import, Export are termed as module tools. Such tools can be enabled or disabled as shown below:

The example given below describes the way to enable and disable the tools for Payslip module

```
include_once('vtlib/Vtiger/Module.php');  
$moduleInstance = Vtiger_Module::getInstance('Payslip');  
$module->enableTools(Array('Import', 'Export'));  
$module->disableTools('Export');
```

Optional Step: Module Events

Eventing API is supported from vtiger 5.1 onwards ([read more here](#)).

To check if your vtiger CRM supports Eventing use the following:

```
include_once('vtlib/Vtiger/Event.php');
boolean Vtiger_Event::isSupported();
```

To register an event for a module, use the following:

```
include_once('vtlib/Vtiger/Event.php');
Vtiger_Event::register('<MODULENAME>', '<EVENTNAME>',
                      '<HANDLERCLASS>', '<HANDLERFILE>');
```

<MODULENAME>	Module for which events should be registered
<EVENTNAME>	vtiger.entity.aftersave vtiger.entity.beforesave
<HANDLERCLASS>	Event handler class, look at the example below
<HANDLERFILE>	File where HANDLERCLASS is defined (should be within vtiger CRM directory)

Example: Registering event callback before and after save.

```
if(Vtiger_Event::hasSupport()) {
    Vtiger_Event::register(
        'Payslip', 'vtiger.entity.aftersave',
        'PayslipHandler', 'modules/Payslip/PayslipHandler.php'
    );
    Vtiger_Event::register(
        'Payslip', 'vtiger.entity.beforesave',
        'PayslipHandler', 'modules/Payslip/PayslipHandler.php'
    );
}
```

modules/Payslip/PayslipHandler.php

```
<?php
class PayslipHandler extends VTEventHandler {
    function handleEvent($eventName, $data) {
        if($eventName == 'vtiger.entity.beforesave') {
            // Entity is about to be saved, take required action
        }
        if($eventName == 'vtiger.entity.aftersave') {
            // Entity has been saved, take next action
        }
    }
}
?>
```

Optional Step: Module Templates

If you would like to customize the list view or have a custom Settings page for the module, then you will need to create a Smarty template accordingly. You will need to have some knowledge of Smarty templates usage before you proceed.

Your module specific Smarty template files should be created under `Smarty/templates/modules/<NewModuleName>`.

Use `vtlib_getModuleTemplate($module, $templateName)` API (`include/Utils/VtlibUtils.php`) as:

```
$smarty->display(vtlib_getModuleTemplate($currentModule, 'MyListview.tpl'));
```

Optional Step: Custom Links **New**

You can add custom web link to the module using the following API:

```
include_once('vtlib/Vtiger/Module.php');  
  
$moduleInstance = Vtiger_Module::getInstance('ModuleName');  
  
$moduleInstance->addLink(<LinkType>, <LinkLabel>, <LinkURL>);
```

LinkType	Type of Link like DETAILVIEW etc..
LinkLabel	Label to use for the link when displaying
LinkURL	URL of the link. <i>You can use variables like \$variablename\$</i>

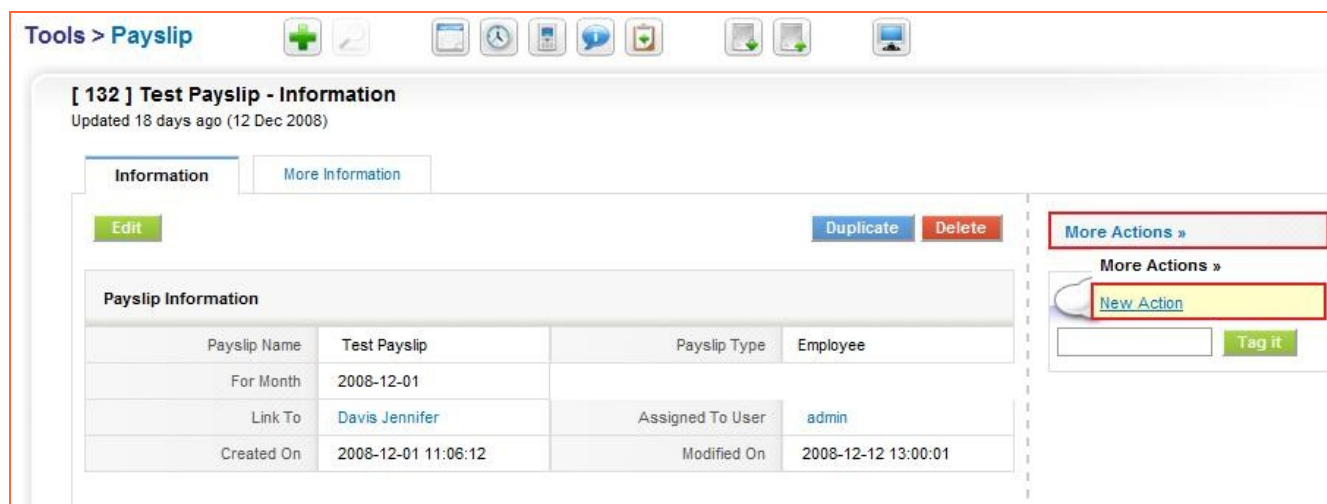
Given below is an example which adds a link to the DetailView of the Module.

```
include_once('vtlib/Vtiger/Module.php');  
  
$moduleInstance = Vtiger_Module::getInstance('Payslip');  
  
$moduleInstance->addLink(  
    'DETAILVIEW',  
    'New Action',  
    'index.php?module=OtherModule&action=SomeAction&src_module=$MODULE$&src_record=$RECORD$'  
);
```

In module's DetailView handler page (*modules/Payslip/DetailView.php*) you will need this piece of code (before the call to `$smarty->display()`) :

```
include_once('vtlib/Vtiger/Link.php');  
  
$customlink_params = Array('MODULE'=>$currentModule, 'RECORD'=>$focus->id, 'ACTION'=>  
    $_REQUEST['action']);  
  
$smarty->assign('CUSTOM_LINKS', Vtiger_Link::getAllByType(getTabId($currentModule),  
    'DETAILVIEW', $customlink_params));
```

On the DetailView page you will find [More Actions](#) link. When you mouse hovers on this all the related custom links will be shown as a drop down. See the screenshot below:



The screenshot shows the Vtiger interface for the 'Payslip' module. The main content area displays 'Test Payslip - Information' with a table of details. On the right side, there is a 'More Actions' dropdown menu that is currently open, showing a list of actions. The 'New Action' link is highlighted in yellow, indicating it is the selected or active option. The interface includes standard Vtiger navigation elements like the top bar with 'Tools > Payslip' and various icons, and a sidebar with tabs for 'Information' and 'More Information'.

Payslip Information			
Payslip Name	Test Payslip	Payslip Type	Employee
For Month	2008-12-01		
Link To	Davis Jennifer	Assigned To User	admin
Created On	2008-12-01 11:06:12	Modified On	2008-12-12 13:00:01

NOTE: The `$MODULE$` and `$RECORD$` variables for the 'New Action' link will be replaced with the values set through DetailView.php

Special LinkType

Following LinkTypes are treated specially while processing for display:

Linktype	Description
HEADERSCRIPT	The link will be treated as a javascript type and will be imported in the head section of the HTML output page as <code><script type='text/javascript' src='linkurl'></script></code>
HEADERCSS	The link will be treated as a CSS type and will be imported in the head section of the HTML output page as <code><link rel='stylesheet' type='text/css' href='linkurl'></code>
HEADERLINK	You can see these link grouped under More on the top header panel. Useful if you want to provide utility tools like Bookmarklet etc.

Final Completed Script (Backend)

Here is the complete script (vtlib.Test.Create.Module1.php) which creates the Payslip module

```
<?php
// Turn on debugging level
$Vtiger_Utills_Log = true;

include_once('vtlib/Vtiger/Menu.php');
include_once('vtlib/Vtiger/Module.php');

// Create module instance and save it first
$module = new Vtiger_Module();
$module->name = 'Payslip';
$module->save();

// Initialize all the tables required
$module->initTables();
/**
 * Creates the following table:
 * vtiger_payslip (payslipid INTEGER)
 * vtiger_payslipcf(payslipid INTEGER PRIMARY KEY)
 * vtiger_payslipgrouprel((payslipid INTEGER PRIMARY KEY, groupname VARCHAR(100))
 */

// Add the module to the Menu (entry point from UI)
$menu = Vtiger_Menu::getInstance('Tools');
$menu->addModule($module);

// Add the basic module block
$block1 = new Vtiger_Block();
$block1->label = 'LBL_PAYSLIP_INFORMATION';
$module->addBlock($block1);

// Add custom block (required to support Custom Fields)
$block2 = new Vtiger_Block();
$block2->label = 'LBL_CUSTOM_INFORMATION';
$module->addBlock($block2);

/** Create required fields and add to the block */
$field1 = new Vtiger_Field();
$field1->name = 'PayslipName';
$field1->table = $module->basetable;
$field1->column = 'payslipname';
$field1->columnType = 'VARCHAR(255)';
$field1->uiType = 2;
$field1->typeOfData = 'V~M';
$block1->addField($field1); /** Creates the field and adds to block */

// Set at-least one field to identifier of module record
$module->setEntityIdentifier($field1);

$field2 = new Vtiger_Field();
$field2->name = 'PayslipType';
$field2->label = 'Payslip Type';
$field2->columnType = 'VARCHAR(100)';
$field2->uiType = 15;
$field2->typeOfData = 'V~O'; // varchar~Optional
$block1->addField($field2); /** table and column are automatically set */

$field2->setPicklistValues( Array ('Employee', 'Trainee') );

$field3 = new Vtiger_Field();
$field3->name = 'Month';
```



```

$field3->uitype = 23;
$field3->typeofdata = 'D~M'; // Date~Mandatory
$block1->addField($field3); /** table, column, label, set to default values */

$field4 = new Vtiger_Field();
$field4->name = 'LinkTo';
$field4->label= 'Link To';
$field4->table = 'vtiger_payslip';
$field4->column = 'linkto';
$field4->columnntype = 'VARCHAR(100)';
$field4->uitype = 10;
$field4->typeofdata = 'V~O';
$field4->helpinfo = 'Relate to an existing contact';
$block1->addField($field4);
$field4->setRelatedModules(Array('Contacts'));

/** Common fields that should be in every module, linked to vtiger CRM core table
*/
$field5 = new Vtiger_Field();
$field5->name = 'assigned_user_id';
$field5->label = 'Assigned To';
$field5->table = 'vtiger_crmentity';
$field5->column = 'smownerid';
$field5->uitype = 53;
$field5->typeofdata = 'V~M';
$block1->addField($field5);

$field6 = new Vtiger_Field();
$field6->name = 'CreatedTime';
$field6->label= 'Created Time';
$field6->table = 'vtiger_crmentity';
$field6->column = 'createdtime';
$field6->uitype = 70;
$field6->typeofdata = 'T~O';
$field6->displaytype= 2;
$block1->addField($field6);

$field7 = new Vtiger_Field();
$field7->name = 'ModifiedTime';
$field7->label= 'Modified Time';
$field7->table = 'vtiger_crmentity';
$field7->column = 'modifiedtime';
$field7->uitype = 70;
$field7->typeofdata = 'T~O';
$field7->displaytype= 2;
$block1->addField($field7);
/** END */

// Create default custom filter (mandatory)
$filter1 = new Vtiger_Filter();
$filter1->name = 'All';
$filter1->isdefault = true;
$module->addFilter($filter1);

// Add fields to the filter created
$filter1->addField($field1)->addField($field2, 1)->addField($field5, 2);

// Create one more filter
$filter2 = new Vtiger_Filter();
$filter2->name = 'All2';
$module->addFilter($filter2);

// Add fields to the filter
$filter2->addField($field1);

```

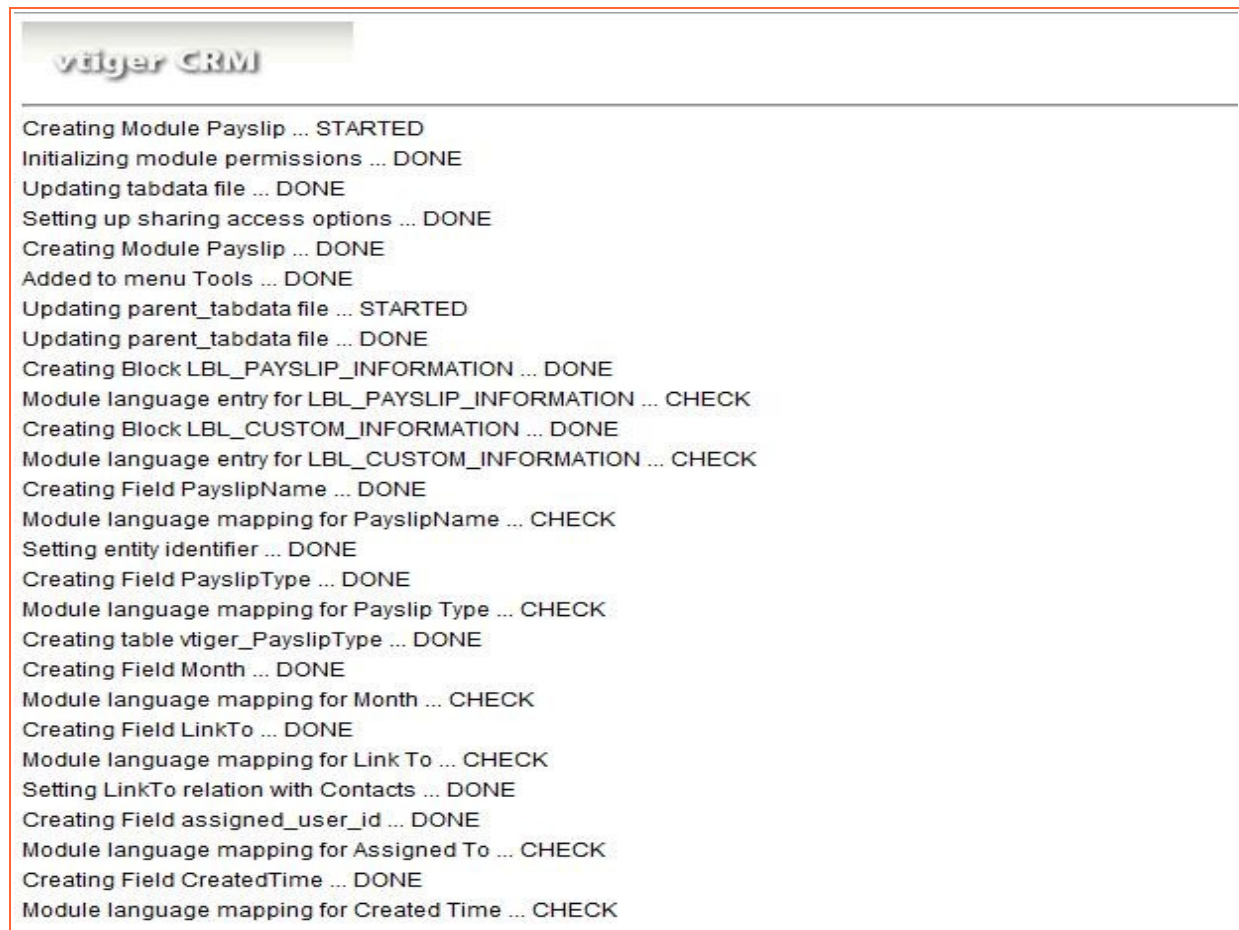
```
$filter2->addField($field2, 1);  
  
// Add rule to the filter field  
$filter2->addRule($field1, 'CONTAINS', 'Test');  
  
/** Associate other modules to this module */  
$module->setRelatedList(Vtiger_Module::getInstance('Accounts'), 'Accounts',  
Array('ADD','SELECT'));  
  
/** Set sharing access of this module */  
$module->setDefaultSharing('Private');  
  
/** Enable and Disable available tools */  
$module->enableTools(Array('Import', 'Export'));  
$module->disableTools('Merge');  
  
?>
```

Executing Module Creation Script

1. To execute the `vtlib.Test.Create.Module1.php` script, open <http://localhost/vtigercrm/vtlib.Test.html>



2. Click on [Create Payslip Module](#) to test creation of Payslip Module



Step 8: Creating module files (Frontend)

Each new module should have a directory under modules/ folder. To help speed up the module code creation, vtlb comes bundled with skeleton module structure based on the 'PaySlip' module. This code is include in vtlb/ModuleDir folder which can be used as a template for new module that is created. It contains source files that needs to be changed as explained below.

NOTE: ModuleDir has sub-directories specific to vtiger version, please make sure to use the right one.

1. Copy ModuleDir/<target_vtiger_version> contents to newly created modules/<NewModuleName> folder.
2. Rename <NewModuleName>/ModuleFile.php as <NewModuleName>/<NewModuleName>.php (as noted in the table below)
3. Rename <NewModuleName>/ModuleFileAjax.php as <NewModuleName>/<NewModuleName>Ajax.php
4. Rename <NewModuleName>/ModuleFile.js to <NewModuleName>/<NewModuleName>.js
5. Edit <NewModuleName>/<NewModuleName>.php
 - a) Rename Class ModuleClass to <NewModuleName>
 - b) Update \$table_name and \$table_index (Module table name and table index column)
 - c) Update \$groupTable
 - d) Update \$tab_name, \$tab_name_index
 - e) Update \$list_fields, \$list_fields_name, \$sortby_fields, \$list_link_field
 - f) Update \$detailview_links
 - g) Update \$default_order_by, \$default_sort_order
 - h) Update \$required_fields
 - i) Update \$customFieldTable
 - j) Rename function ModuleClass to function <NewModuleName> [This is the Constructor Class]

NOTE: Other files under modules/<NewModuleName> need not be changed.

Example ModuleDir	Purpose	File under Payslip
index.php	Module entry point through Menu	index.php
ModuleFile.php	Module class definition file.	Payslip.php
ModuleFileAjax.php	Base file for ajax actions used under Listview etc...	PayslipAjax.php
ModuleFile.js	Module specific javascript function can be written here	Payslip.js
CallRelatedList.php	More Information Detail view handler	CallRelatedList.php
CustomView.php	Custom view or Filter handler	CustomView.php
Delete.php	Module record deletion handler	Delete.php
DetailView.php	Detail view handler	DetailView.php
DetailViewAjax.php	Detail view ajax edit handler	DetailViewAjax.php
EditView.php	Edit view handler	EditView.php
ExportRecords.php	Module record export handler	ExportRecords.php
Import.php	Module records import handler	Import.php
Listview.php	List view handler	ListView.php
Popup.php	Popup selection handler for this module record	Popup.php
QuickCreate.php	Quick creation handler	QuickCreate.php
Save.php	Module record save handler	Save.php

Example ModuleDir	Purpose	File under Payslip
TagCloud.php	Tag cloud handler	TagCloud.php
updateRelations.php	Related list record handler (save/delete)	updateRelations.php

Files specific to vtiger 5.1.0 version.

Example ModuleDir	Purpose	File under Payslip
MassEdit.php	Mass Record Edit handler	MassEdit.php
MassEditSave.php	Mass Edit Record Save handler	MassEditSave.php

New Module Tour

List view

Tools > Payslip

Showing 0 - 0 of 0

Filters: All New | Edit | Delete

No Payslip Found !

You can Create a Payslip now. Click the link below:
-Create a Payslip

Create view

Tools > Payslip

Basic Information

Save Cancel

Payslip Information

*Payslip Name	Test Payslip	Payslip Type	Employee
For Month	2008-11-25 (yyyy-mm-dd)	Link To Contacts	vtiger CRM
Assigned To	User Group admin		

Save Cancel

Detail view

Tools > Payslip

[132] - Information
Updated today (25 Nov 2008)

Information

Edit

DuplicateDelete

Payslip Information

Payslip Name	Test Payslip	Payslip Type	Employee
For Month	2008-11-25	Link To	vtiger CRM
Assigned To User	admin	Created On	2008-11-25 07:58:09
Modified On	2008-11-25 07:58:09		

Edit

DuplicateDelete

TAG CLOUD

Tag it

List view

Tools > Payslip

Delete

Showing 1 - 1 of 1

Filters :

All

New | Edit | Delete

<input type="checkbox"/>	Payslip Name ▾	Payslip Type	Assigned To	Action
<input type="checkbox"/>	Test Payslip	Employee	admin	edit del


Delete

Showing 1 - 1 of 1

vtiger CRM 5.0.4

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Sharing Access

 **Settings > Sharing Access**
Manage module sharing rules & custom sharing rules



1. Organization-level Sharing Rules [Recalculate](#) [Change Privileges](#)

Potentials	★ Public: Read, Create/Edit, Delete	Users can Read, Create/Edit, Delete other users Potentials
Accounts & Contacts	★ Public: Read, Create/Edit, Delete	Users can Read, Create/Edit, Delete other users Accounts & Contacts
Leads	★ Public: Read, Create/Edit, Delete	Users can Read, Create/Edit, Delete other users Leads
Calendar	★ Private	Users cannot access other users Calendar
Trouble Tickets	★ Public: Read, Create/Edit, Delete	Users can Read, Create/Edit, Delete other users Trouble Tickets
Quotes	★ Public: Read, Create/Edit, Delete	Users can Read, Create/Edit, Delete other users Quotes
Purchase Order	★ Public: Read, Create/Edit, Delete	Users can Read, Create/Edit, Delete other users Purchase Order
Sales Order	★ Public: Read, Create/Edit, Delete	Users can Read, Create/Edit, Delete other users Sales Order
Invoice	★ Public: Read, Create/Edit, Delete	Users can Read, Create/Edit, Delete other users Invoice
Campaigns	★ Public: Read, Create/Edit, Delete	Users can Read, Create/Edit, Delete other users Campaigns
Payslip	★ Private	Users cannot access other users

Custom Fields

 **Settings > Custom Field Settings**
Manage your company-wide custom fields.

Custom Fields in "Payslip" Module Select Module: Payslip [New Custom Field](#)

#	Field Label	Field Type	Tools
1	Site	URL	 

[\[Scroll to Top\]](#)

Step 9: Packaging

Package Export

vtlib provides API to export module as a zip (package) file which can be used for importing through Module Manger.

```
require_once('vtlib/Vtiger/Package.php');
require_once('vtlib/Vtiger/Module.php');
$package = new Vtiger_Package();
$package->export('<MODULE Instance>', '<DESTINATION DIR>', '<ZIPFILE NAME>', <DIRECT
DOWNLOAD>);
```

<MODULE Instance>	Vtiger_Module instance to be exported (packaged)
<DESTINATION DIR>	(Optional: Default=test/vtlib) Directory where the zipfile output should be created.
<ZIPFILE NAME>	(Optional: Default=modulename-timestamp.zip) Zipfile name to use for the output file.
<DIRECT DOWNLOAD>	(Optional: Default=false) If true, the zipfile created will be streamed for download and zipfile will be deleted after that.

Example:

```
require_once('vtlib/Vtiger/Package.php');
require_once('vtlib/Vtiger/Module.php');
$package = new Vtiger_Package();
$package->export(
    Vtiger_Module::getInstance('Payslip'),
    'test/vtlib',
    'Payslip-Export.zip',
    true
);
```

NOTE: Please make sure test/vtlib directory exists under vtigercrm root directory and is writeable.

Package Structure

The exported zipfile (package) has the following structure:

```
manifest.xml
modules/
    ModuleName/
        <Module Related Files>
            language/
                en_us.lang.php
            <Other language Files>
templates/
    <Smarty templates of the Module>
```

manifest.xml has the meta information that will be useful during the import process as shown:

```
<?xml version="1.0"?>
<module>
  <exporttime>YYYY-MM-DD hh:mm:ss</exporttime>
  <name>MODULE NAME</name>
  <version>1.0</version>
  <label>MODULE LABEL</label>
  <parent>MENU</parent>

  <dependencies>
    <vtiger_version>VTIGER_VERSION_NUMBER</vtiger_version>
  </dependencies>

  <tables>
    <table>
      <name>TABLENAME</name>
      <sql>TABLE SQL</sql>
    </table>
  </tables>

  <blocks>
    <block>
      <label>BLOCK LABEL</label>
      <fields>
        <field>
          <fieldname>payslipname</fieldname>
          <columnname>payslipname</columnname>
          <uitype>UI TYPE</uitype>
          <tablename>TABLE NAME</tablename>
          <generatedtype>GEN TYPE</generatedtype>
          <fieldlabel>FIELD LABEL</fieldlabel>
          <readonly>READONLY</readonly>
          <presence>PRESENCE</presence>
          <selected>SELECTED</selected>
          <maxlength>MAXLEN</maxlength>
          <typeofdata>TYPEOFDATA</typeofdata>
          <quickcreate>QUICKCREATE</quickcreate>
          <displaytype>DISPTYPE</displaytype>
          <info_type>INFOTYPE</info_type>
          <helpinfo><![CDATA[HELP INFORMATION]]></helpinfo>
        </field>
      </fields>
    </block>
  </blocks>

  <customviews>
    <customview>
      <viewname>VIEWNAME</viewname>
```

```

    <setdefault>0</setdefault>
    <setmetrics>1</setmetrics>
    <fields>
      <field>
        <fieldname>FIELDNAME</fieldname>
        <columnindex>0</columnindex>
      </field>
    </fields>
  </customview>
</customviews>
<sharingaccess>
  <default>private</default>
</sharingaccess>

<actions>
  <action>
    <name>Export</name>
    <status>enabled</status>
  </action>
  <action>
    <name>Import</name>
    <status>enabled</status>
  </action>
</actions>

<customlinks>
  <customlink>
    <linktype>DETAILVIEW</linktype>
    <linklabel>Visit Site</linklabel>
    <linkurl><![CDATA[http://www.vtiger.com]]></linkurl>
    <linkicon><![CDATA[themes/images/vtiger-paw.jpg]]></linkicon>
    <sequence>0</sequence>
  </customlink>
</customlinks>
</module>

```

Package Import

You can import a module from package (zip) file using the following API

```
require_once('vtlib/Vtiger/Package.php');  
$package = new Vtiger_Package();  
$package->import(<MODULE ZIPFILE>, <overwrite>);
```

<MODULE ZIPFILE>	Module zipfile (package).
<overwrite>	(Optional: Default=false) Overwrite the existing module directory if present

The package file should be validated before Importing which can be done using the following API

```
require_once('vtlib/Vtiger/Package.php');  
$package = new Vtiger_Package();  
$package->checkZip(<MODULE ZIPFILE>);
```

<MODULE ZIPFILE>	Module zipfile (package).
------------------	---------------------------

checkZip returns **true** if package structure in zipfile is as specified in the section **Package Export** above.

Detecting Module Name being Imported

```
require_once('vtlib/Vtiger/Package.php');  
$package = new Vtiger_Package();  
$package->getModuleNameFromZip(<MODULE ZIPFILE>);
```

<MODULE ZIPFILE>	Module zipfile (package).
------------------	---------------------------

getModuleNameFromZip returns **ModuleName** if checkZip succeeds.

Example:

```
require_once('vtlib/Vtiger/Package.php');  
require_once('vtlib/Vtiger/Module.php');  
  
$package = new Vtiger_Package();  
$module = $package->getModuleNameFromZip('test/vtlib/Payslip.zip');  
  
$module_exists = false;  
$module_dir_exists = false;  
if($module == null) {  
    echo "Module zipfile is not valid!";  
} else if(Vtiger_Module::getInstance($module)) {  
    echo "$module already exists!";  
    $module_exists = true;  
} else if(is_dir("modules/$module")) {  
    echo "$module folder exists! Overwrite?";  
    $module_dir_exists = true;  
}  
if($module_exists == false && $module_dir_exists == false) {  
    $package->import('test/vtlib/Payslip.zip');  
}
```

Package Upgrade **New**

NOTE: Currently this module upgrade feature does not support deletion and modification of exiting module fields. Before you use this feature, please ensure your modified module does not change or delete existing fields.

You can upgrade a module that was imported earlier using the following API:

```
require_once('vtlib/Vtiger/Package.php');
require_once('vtlib/Vtiger/Module.php');

$package = new Vtiger_Package();
$package->update(<ModuleInstance>, <MODULE ZIPFILE>, <overwrite>);
```

<ModuleInstance>	Vtiger_Module instance which needs to be upgraded.
<MODULE ZIPFILE>	Module zipfile (package).
<overwrite>	(Optional: Default=true) Overwrite the existing module directory if present

Example:

```
require_once('vtlib/Vtiger/Package.php');
require_once('vtlib/Vtiger/Module.php');

$package = new Vtiger_Package();
$moduleInstance = Vtiger_Module::getInstance('Payslip');
$package->update($moduleInstance, 'test/vtlib/Payslip.zip');
```

Limitations

1. Any property change to existing block or field will not applied during module upgrade.

NOTE: Look at [Adding Migration Details](#) section to know more about adding migration information to the package file through manifest.xml

Extension Module **New**

Module Manager lets you install an extension module provided the manifest.xml (in package) has the following information. *This feature is available from vtiger CRM 5.1.0 onwards only.*

manifest.xml

```
<?xml version="1.0"?>
<module>
  <type>extension</type>
  <name>MODULENAME</name>
  <label>MODULE LABEL</label>
  <parent>Tools</parent>
  <version>1.0</version>
  <dependencies>
    <vtiger_version>5.1.0</vtiger_version>
  </dependencies>
  <tables>
    <table>
      <name>TABLE-NAME</name>
      <sql><![CDATA[CREATE_TABLE_SQL]]></sql>
    </table>
  </tables>
  <events>
    <event>
      <eventname>EVENT-NAME</eventname>
      <classname>EVENT HANDLER CLASS</classname>
      <filename>EVENT HANDLER CLASS FILE</filename>
    </event>
  </events>
</module>
```

type	Mandatory	Should have the value extension
name	Mandatory	Module name (should not contain spaces or special characters)
label	Mandatory	Label used to display on the UI
parent	Optional	Menu to which this Module needs to be attached
dependencies (vtiger_version)	Mandatory	Version for which the package is intended for
tables	Optional	Tables that needs to be created during installation of module
events	Optional	Events that needs to be registered during installation of module

Package File

The following file structure is recommended for extension module package (zip file).

```
manifest.xml
modules/
  MODULENAME/
    language/
      en_us.lang.php
  index.php
  <other module files>
templates/
  <smarty templates>
```

Language Pack **New**

Module Manager lets you install language packs to your vtiger CRM installation. The Language package should follow the package structure as explained below:

manifest.xml

```
<?xml version="1.0"?>
<module>
  <type>language</type>
  <name>English</name>
  <label>US English</label>
  <prefix>en_us</prefix>
  <version>1.0</version>
  <dependencies>
    <vtiger_version>5.1.0</vtiger_version>
  </dependencies>
</module>
```

type	Mandatory	Should have the value language
name	Optional	Language pack complete name
label	Mandatory	Label to identify the language on the UI (on login page)
prefix	Mandatory	The filename prefix used for language file. Only these files will be extracted from the package file during installation.
dependencies (vtiger_version)	Mandatory	Version for which the package is intended for.

Package File

The following file structure is recommended for extension language package (zip file).

```
manifest.xml
modules/
  Accounts/
    language/
      <prefix>.lang.php

  Contacts/
    language/
      <prefix>.lang.php

  Leads/
    language/
      <prefix>.lang.php

  ...
```

Adding License **New**

The manifest.xml of the package can contain license information which will be displayed to user during Module Manager installation process. You will need to add **<license>** node in the manifest.xml as described below:

Inline License:

```
<module>
  <name>MODULENAME</name>
  <label>MODULE_LABEL</label>
  <version>1.0</version>

  <dependencies>
    <vtiger_version>5.0.4</vtiger_version>
  </dependencies>
  <license>
    <inline><![CDATA[This is under vtiger Public License ]]></inline>
  </license>
  ...
</module>
```

License from File:

You can specific the LICENSEFILE in the package that contains the License information.

```
<module>
  <name>MODULENAME</name>
  <label>MODULE_LABEL</label>
  <version>1.0</version>
  <dependencies>
    <vtiger_version>5.0.4</vtiger_version>
  </dependencies>
  <license>
    <file>LICENSEFILE</file>
  </license>
  ...
</module>
```


Adding Migration Details **New**

Module Manager supports upgrade of modules built with vtlb. In some cases, custom schema changes and data migration will be required for these module upgrades.

When a new version of a module is released it might have schema changes w.r.t older version.

The upgrade process might not be complete unless required schema changes and data migration are applied. In such cases, you can add the migration information in your manifest.xml as described below:

```
<?xml version="1.0"?>
<module>
  <name>MODULENAME</name>
  <label>MODULE LABEL</label>
  <parent>Tools</parent>
  <version>1.2</version>

  <dependencies>
    <vtiger_version>5.0.4</vtiger_version>
  </dependencies>

  <migrations>
    <migration version='1.0'>
      <tables>
        <table>
          <name>TABLE-NAME</name>
          <sql><![CDATA[ALTER TABLE MyTable ADD COLUMN
NewColumn INT]]></sql>
        </table>
      </tables>
    </migration>
    <migration version='1.1'>
      <tables>
        <table>
          <name>TABLE-NAME</name>
          <sql><![CDATA[UPDATE MyTable SET NewColumn=1 WHERE
NewColumn is NULL]]></sql>
        </table>
      </tables>
    </migration>
  </migrations>

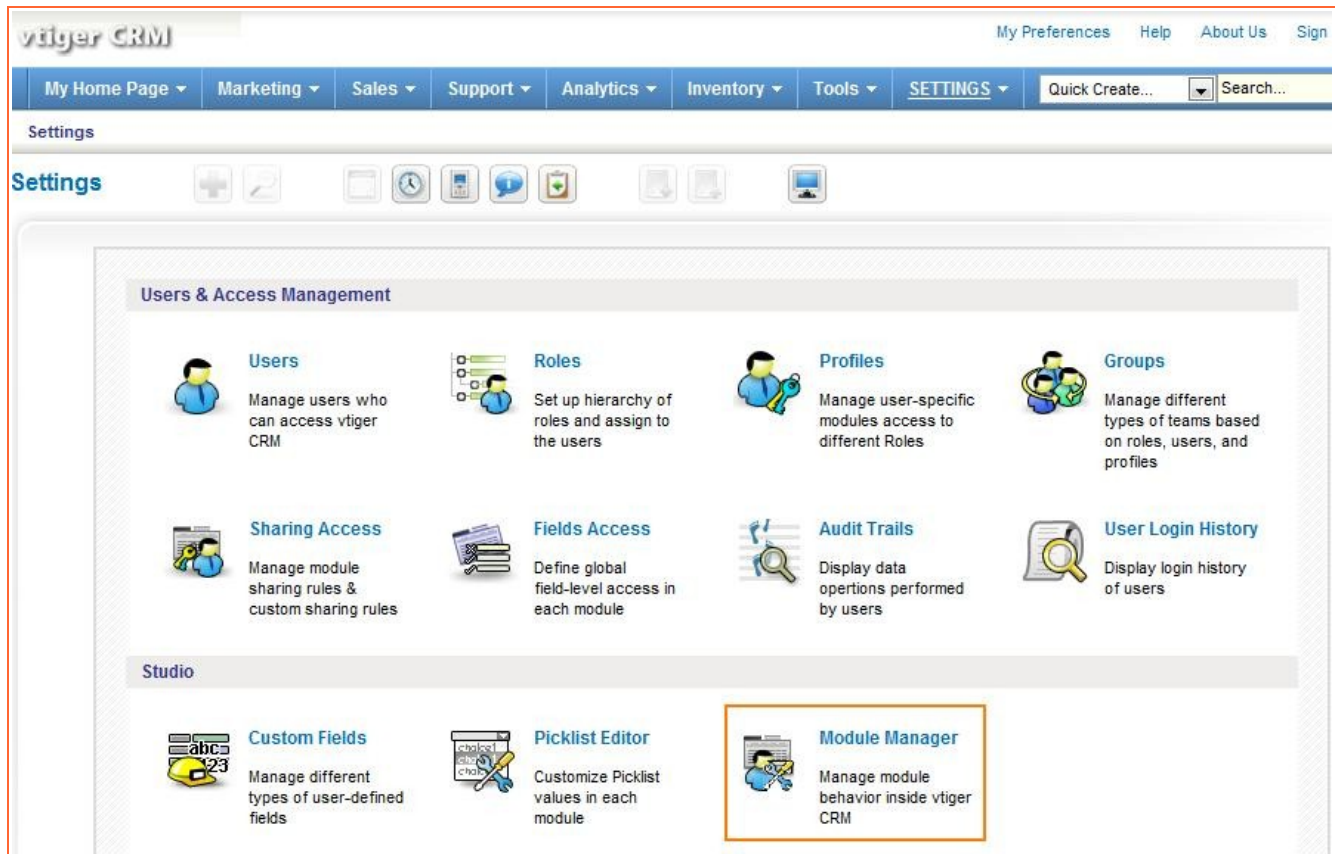
  <tables>
    <table>
      <name>TABLE-NAME</name>
      <sql><![CDATA[CREATE_TABLE_SQL]]></sql>
    </table>
  </tables>
  ...
</module>
```

NOTE: The above snippet of manifest.xml is for version 1.2 of a module. It contains migration information for version 1.0 and 1.1

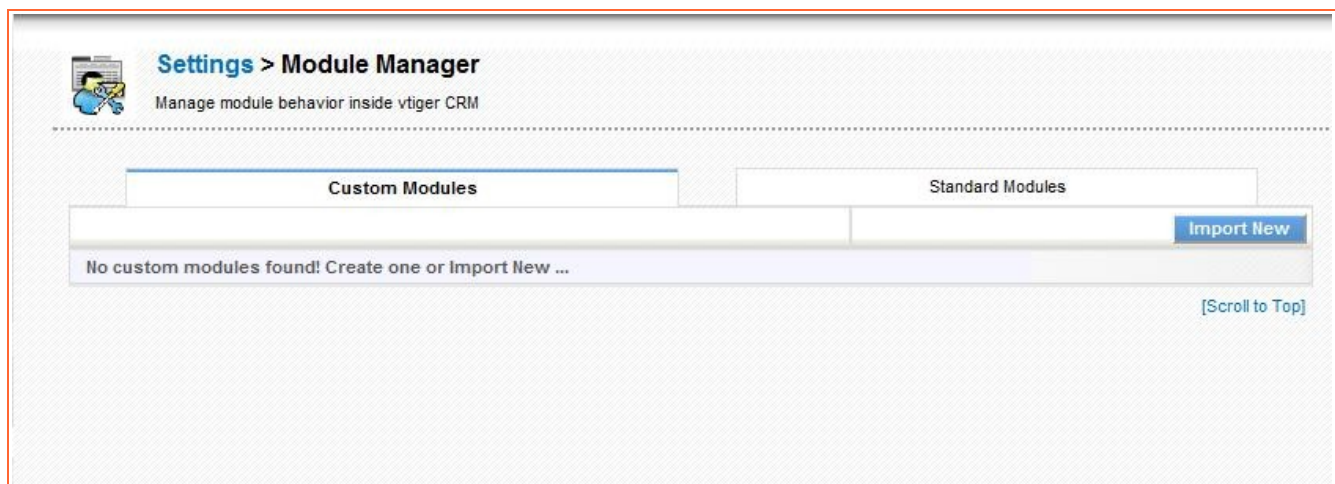
Migration node details	
<migration version='1.0'...	This version indicates the source version (earlier version) for which the migration should be applied.
<tables> <table> <name>... <sql>...	Table name to migrate. SQL to use for migration.

Module Manager

Once vtlib is installed, it provides the Module Manager configuration tool under Settings. With this you can enable, disable or control settings of vtiger CRM modules. On disabling a module, it won't be shown on the Menu and access is restricted (including for the administrator).

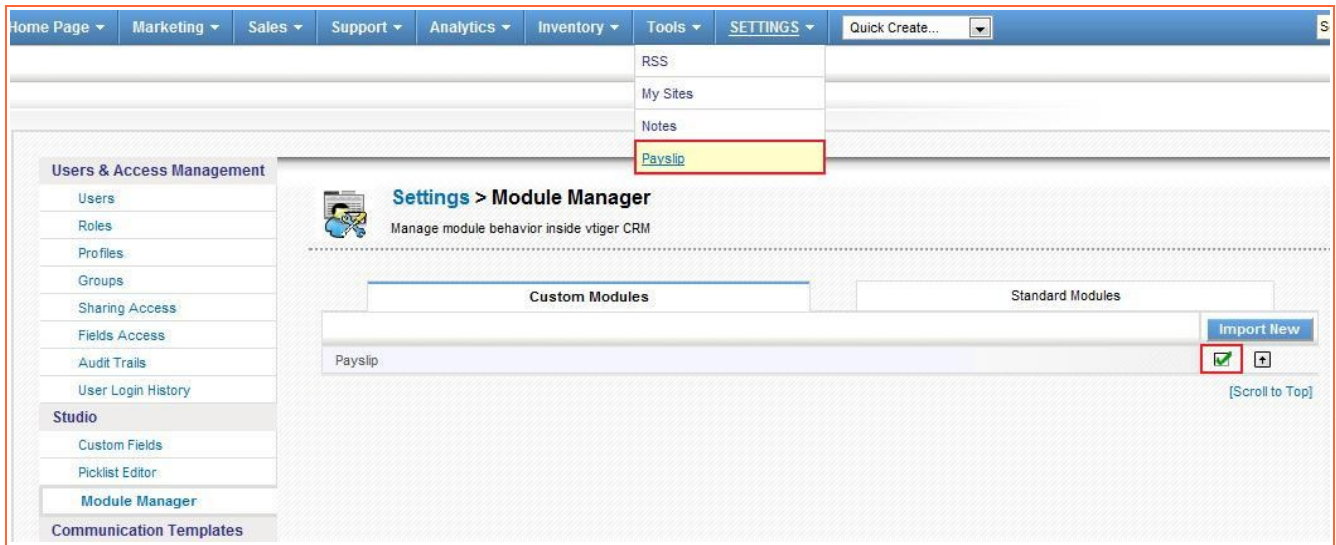


Modules are categorized as Standard (which are provided as a core part of vtiger CRM), and Custom (which you have imported or created)



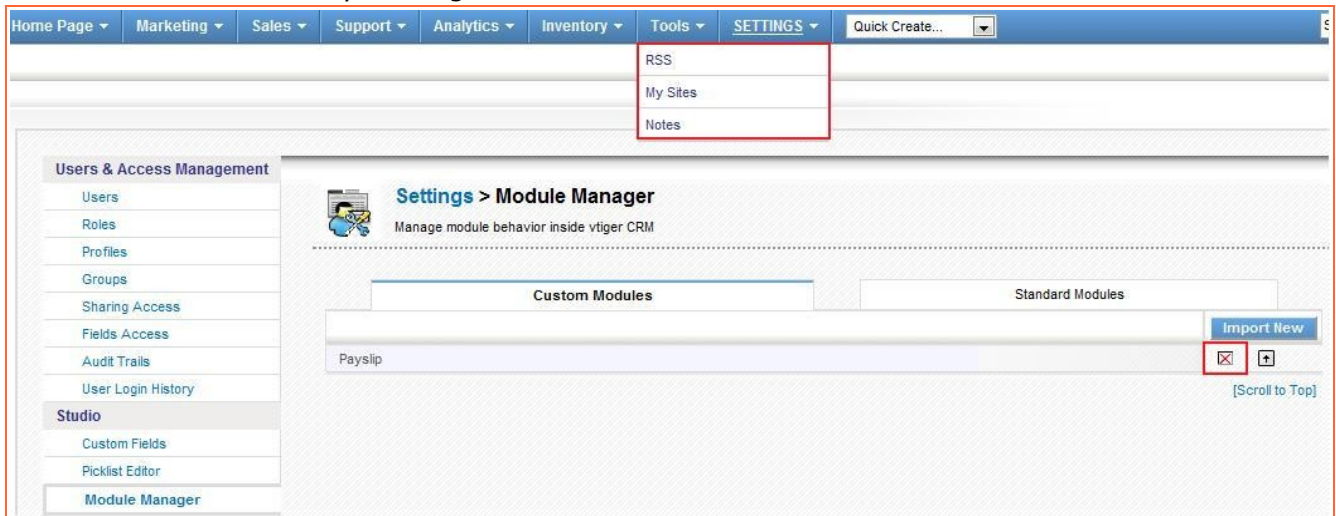
Disabling Module

You can disable module by clicking on the green tick mark icon.



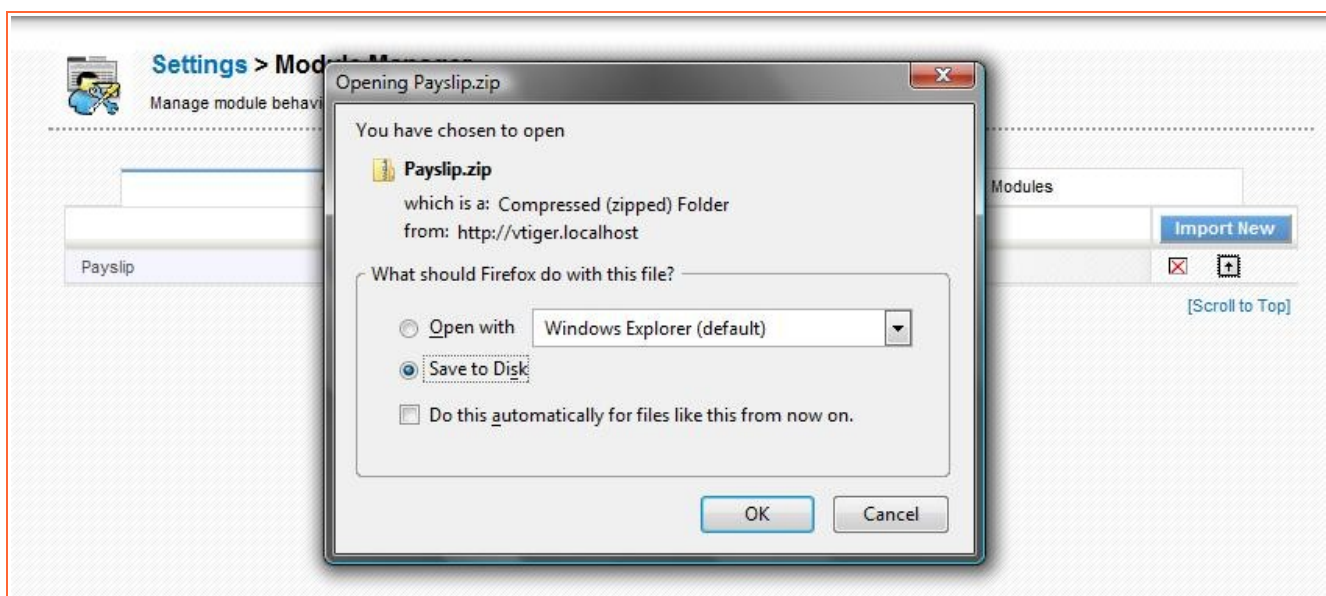
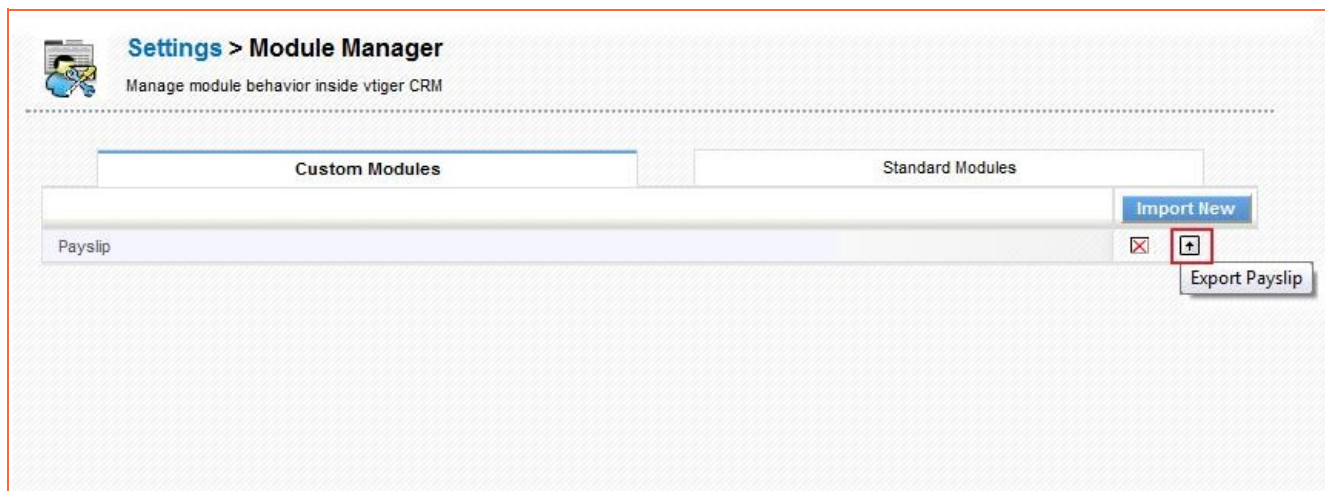
Enabling Module

You can enable module by clicking on the red tick mark icon.



Exporting Module

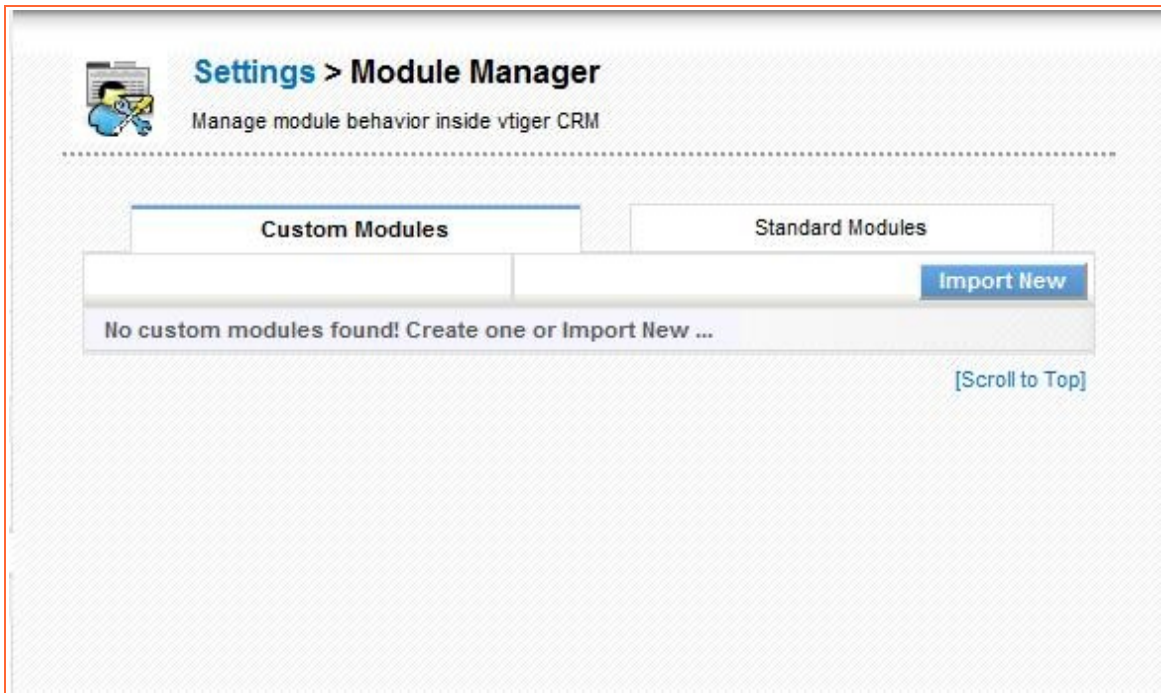
Click on the UP arrow icon in the module manager, which will export the module as a zip file.



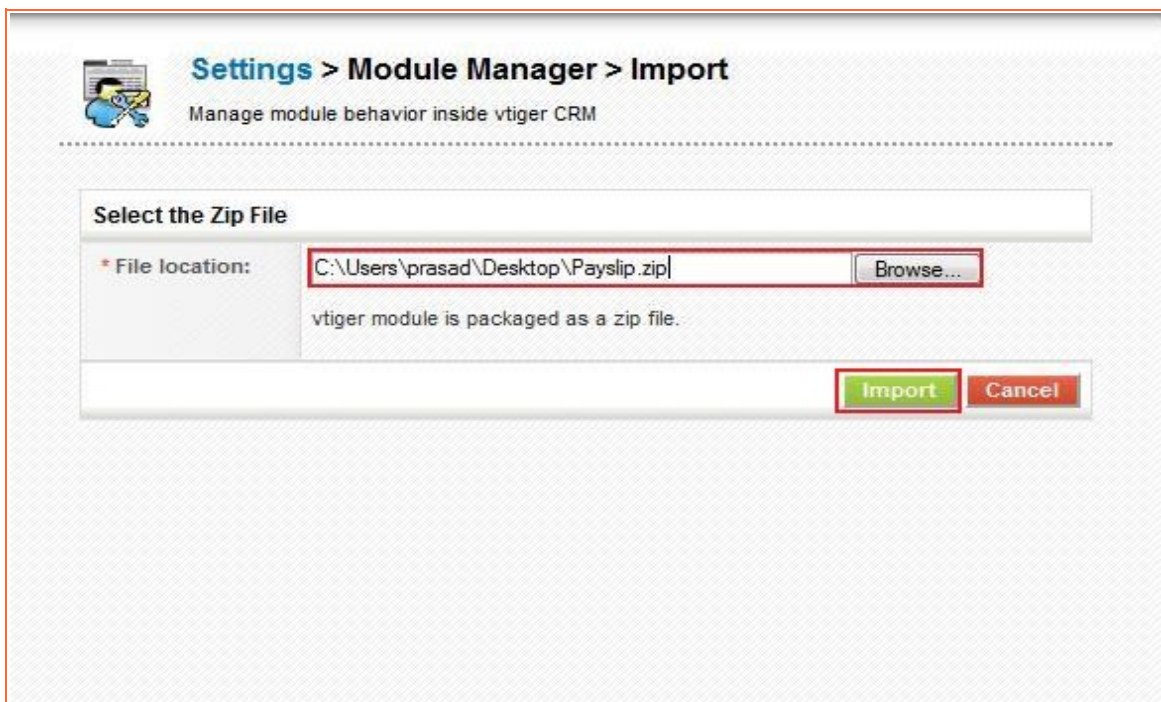
Importing Module

Module manager will let you import new modules. Follow the steps given below:

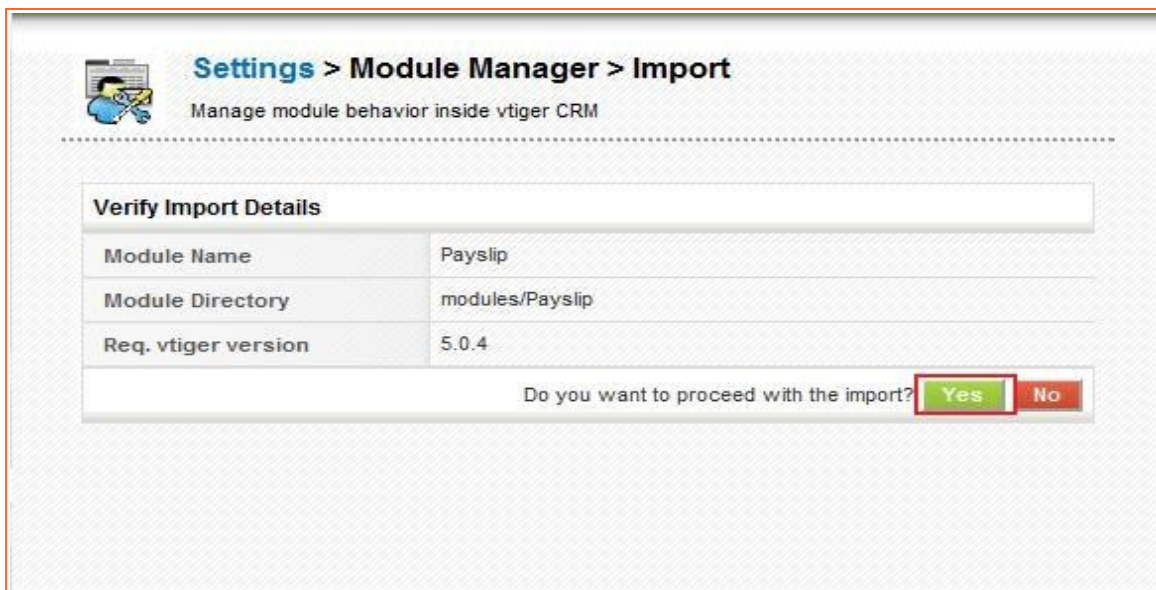
Click on the Import New button



Select the module zip (package) file that was previously exported or created.



Verify the import details parsed from zipfile. Click Yes to proceed or No to cancel.



Settings > Module Manager > Import
Manage module behavior inside vtiger CRM

Verify Import Details

Module Name	Payslip
Module Directory	modules/Payslip
Req. vtiger version	5.0.4

Do you want to proceed with the import?

Click on Finish to complete the module import.

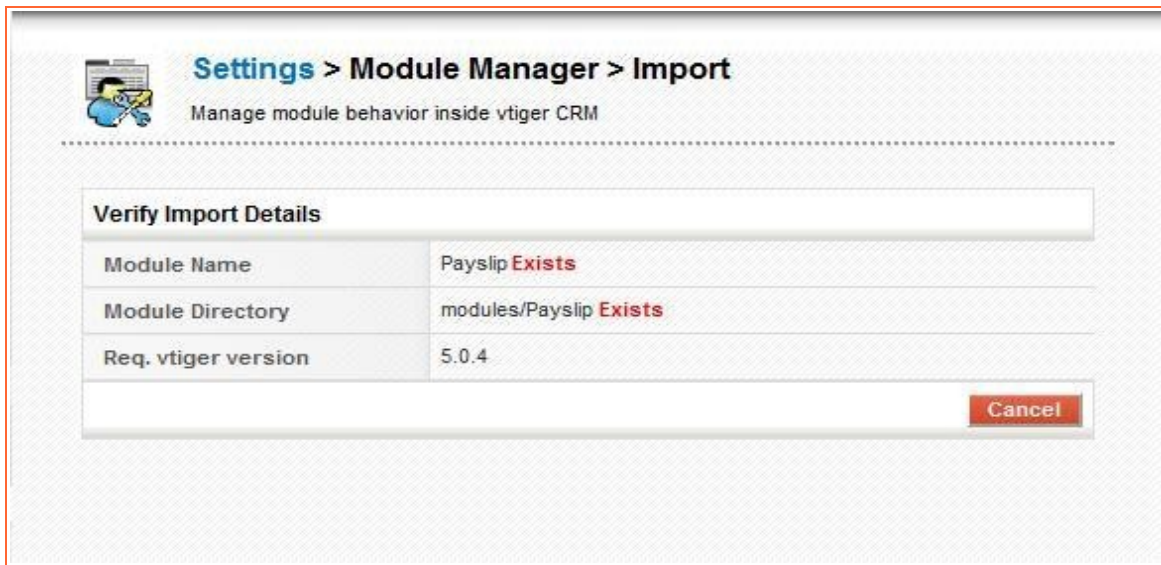



Settings > Module Manager > Import
Manage module behavior inside vtiger CRM

Importing Module ...

Creating Module Payslip ... STARTED
Initializing module permissions ... DONE
Updating tabdata file ... DONE
Setting up sharing access options ... DONE
Creating Module Payslip ... DONE
Added to menu Tools ... DONE
Updating parent_tabdata file ... DONE
Creating Block LBL_PAYSLIP_INFORMATION ... DONE
Module language entry for LBL_PAYSLIP_INFORMATION ... CHECK
Creating Field PayslipName ... DONE
Module language mapping for PayslipName ... CHECK
Setting entity identifier ... DONE
Creating Field PayslipType ... DONE
Module language mapping for Payslip Type ... CHECK
Creating table vtiger_PayslipType ... DONE
Creating Field Month ... DONE
Creating Field LinkTo ... DONE
Module language mapping for Link To ... CHECK
Setting LinkTo relation with Contacts ... DONE
Creating Field assigned_user_id ... DONE
Module language mapping for Assigned To ... CHECK
Creating Filter All2 ... DONE
Adding PayslipName to All2 filter ... DONE
Adding Condition CONTAINS on PayslipName of All2 filter ... DONE
Adding PayslipType to All2 filter ... DONE
Recalculating sharing rules ... DONE
Enabling Export for Profile [1,2,3,4] ... DONE

NOTE: If you are trying to import a module which already exists or a directory which is present in the modules folder you will see the following message.



 **Settings > Module Manager > Import**
Manage module behavior inside vtiger CRM

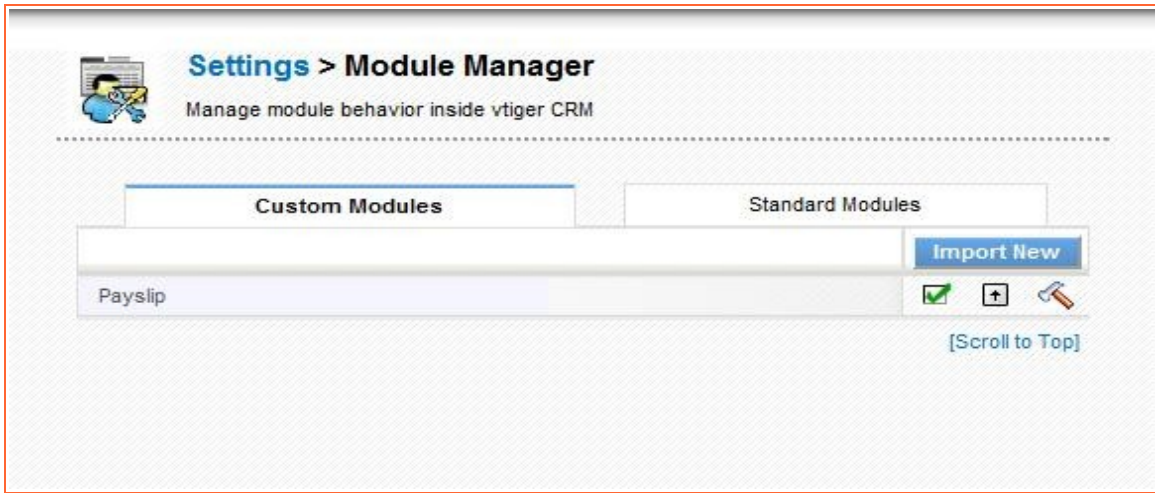
Verify Import Details

Module Name	Payslip Exists
Module Directory	modules/Payslip Exists
Req. vtiger version	5.0.4

Cancel

Module Specific Settings

A module can have its own specific settings. In such cases, Settings.php should be created under the module folder. This file will be invoked (if found) when Settings icon is clicked.



Example: Sample Settings.php for Payslip module

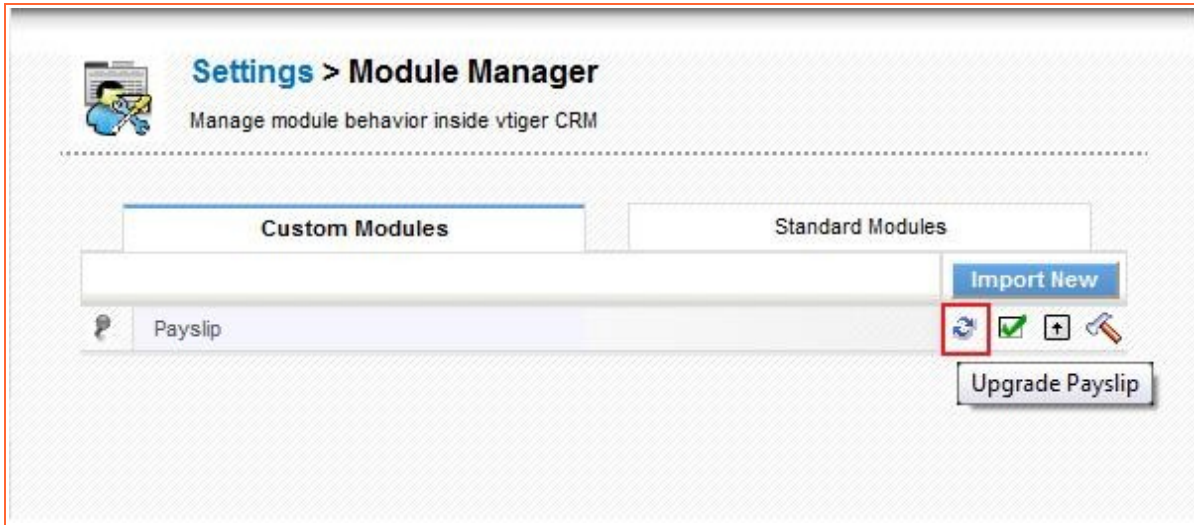
```
<?php
$thisModule = $_REQUEST['formodule'];
require_once('Smarty_setup.php');
$smarty = new vtigerCRM_Smarty();
// Use the module specific template file
// modules/Payslip/MySettings.tpl
$smarty->display(vtlib_getModuleTemplate('Payslip', 'MySettings.tpl'));
?>
```

Module Upgrade **New**

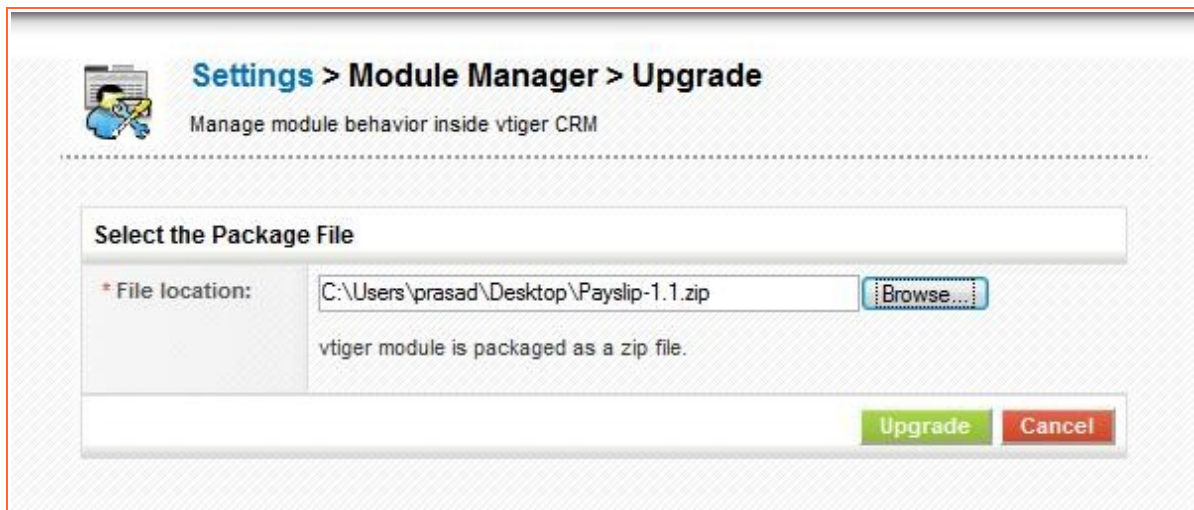
Upgrading the module to next version is now possible through Module Manager.

NOTE: Currently this module upgrade feature does not support deletion and modification of exiting module fields. Before you use this feature, please ensure your modified module does not change or delete existing fields.

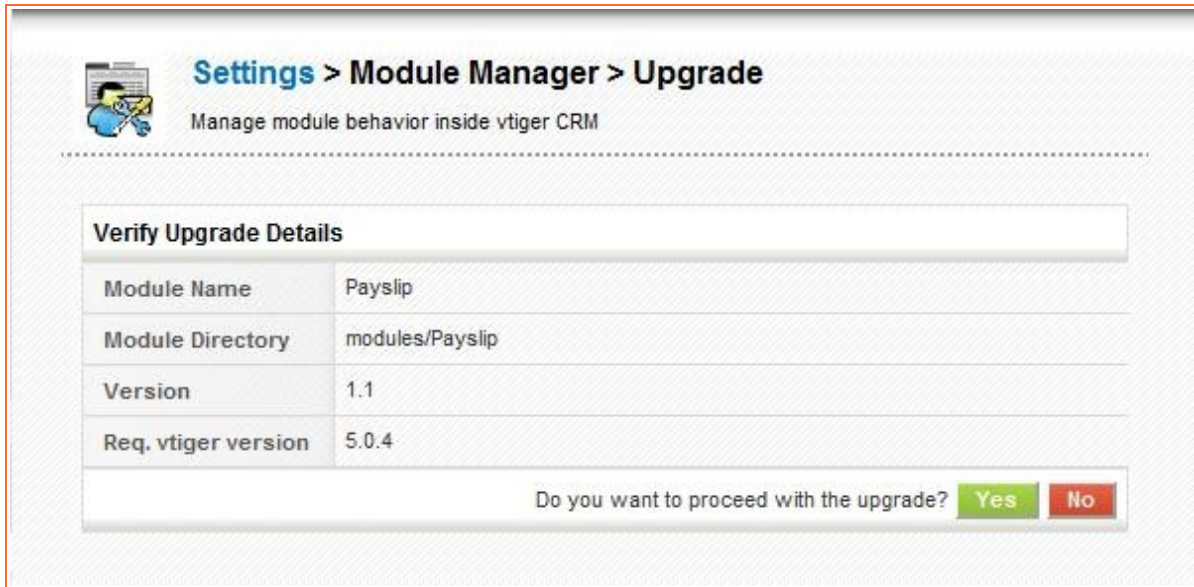
Click on the upgrade icon:



Select the new package file for the module:



Verify the package details before you upgrade:



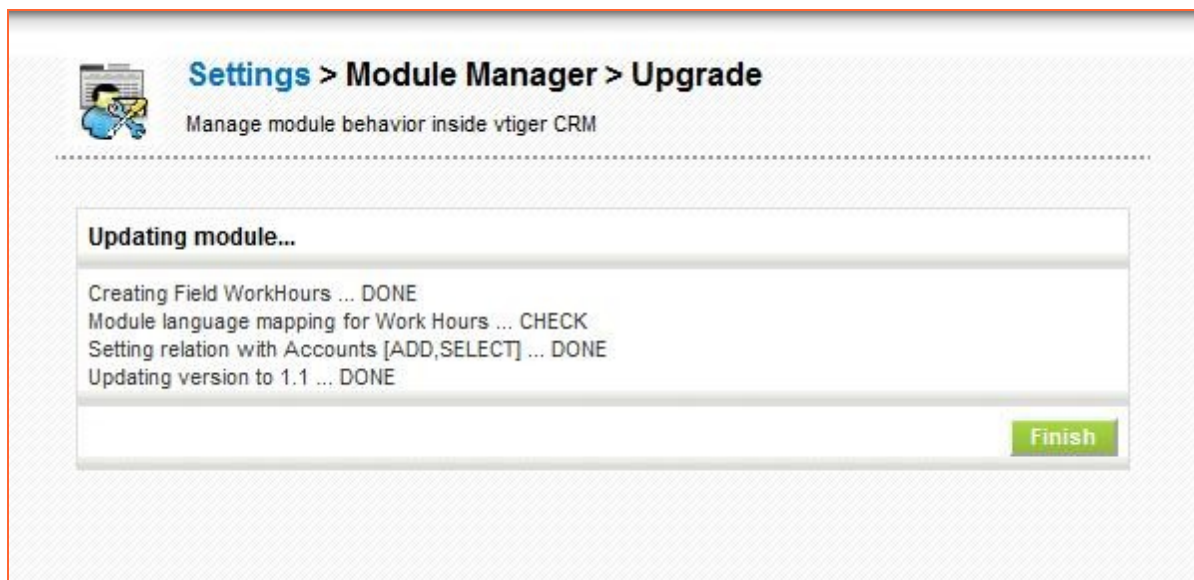
Settings > Module Manager > Upgrade
Manage module behavior inside vtiger CRM

Verify Upgrade Details

Module Name	Payslip
Module Directory	modules/Payslip
Version	1.1
Req. vtiger version	5.0.4

Do you want to proceed with the upgrade?

Finally your module will be upgraded:



Settings > Module Manager > Upgrade
Manage module behavior inside vtiger CRM

Updating module...

Creating Field WorkHours ... DONE
Module language mapping for Work Hours ... CHECK
Setting relation with Accounts [ADD,SELECT] ... DONE
Updating version to 1.1 ... DONE

Appendix 1 - API Changes

vtlib 2.0 contains changes to the APIs previous provided in 1.x version. The new APIs are more modular and adhere to the OOD model.

We explain the changes below.

Creating Module

Using vtlib 1.x

```
Vtiger_Tab::create('Payslip', 'Payslip', 'Tools');
Vtiger_Utils::CreateTable('vtiger_payslip', '(payslipid integer)');
Vtiger_Utils::CreateTable('vtiger_payslipcf', '(payslipid integer, primary key (payslipid))');
Vtiger_Utils::CreateTable('vtiger_payslipgroupe1', '(payslipid integer, groupname varchar(100), primary key(payslipid))');
```

Using vtlib 2.x

```
$moduleInstance = new Vtiger_Module();
$moduleInstance->name = 'Payslip';
$moduleInstance->save();
$moduleInstance->initTables();

$menuInstance = Vtiger_Menu::getInstance('Tools');
$menuInstance->addModule($moduleInstance);
```

Creating Block

Using vtlib 1.x

```
Vtiger_Block::create('Payslip', 'LBL_PAYSLIP_INFORMATION');
```

Using vtlib 2.x

```
$blockInstance = new Vtiger_Block();
$blockInstance->label = 'LBL_PAYSLIP_INFORMATION';
$moduleInstance->addBlock($blockInstance);
```

Creating Field

Using vtlib 1.x

```
$fieldInstance = new Vtiger_Field();
$fieldInstance->set('module', 'Payslip')
    -> set('columnname', 'payslipname')
    -> set('tablename', 'vtiger_payslip')
    -> set('columnname', 'varchar(255)')
    -> set('generatedtype', '1')
    -> set('uitype', 2)
    -> set('fieldname', 'payslipname')
    -> set('fieldlabel', 'PayslipName')
    -> set('readonly', '1')
    -> set('presence', '0')
    -> set('selected', '0')
    -> set('maxlength', '100')
    -> set('sequence', null)
    -> set('typeofdata', 'V~M')
    -> set('quickcreate', '1')
    -> set('block', null)
    -> set('blocklabel', 'LBL_PAYSLIP_INFORMATION')
    -> set('displaytype', '1')
    -> set('quickcreatesequence', null)
    -> set('info_type', 'BAS');
$fieldInstance->create();
```

Using vtlib 2.x

```
$fieldInstance = new Vtiger_Field();
$fieldInstance->name = 'PayslipName';
$fieldInstance->table = 'vtiger_payslip';
$fieldInstance->column = 'payslipname';
$fieldInstance->columnname = 'VARCHAR(100)';
$fieldInstance->uitype = 2;
$fieldInstance->typeofdata = 'V~M';
$blockInstance->addField($fieldInstance);
```

Setting Entity Identifier

Using vtlib 1.x

```
$fieldInstance->set('entityidfield', 'payslipid')
    ->set('entityidcolumn', 'payslipid');
$fieldInstance->setEntityIdentifier();
```

Using vtlib 2.x

```
$moduleInstance->setEntityIdentifier($fieldInstance);
```

Set Picklist Values

Using vtlib 1.x

```
$fieldInstance->setupPicklistValues( Array ('Employee', 'Trainee') );
```

Using vtlib 2.x

```
$fieldInstance->setPicklistValues( Array ('Employee', 'Trainee') );
```

Creating Filter

Using vtlib 1.x

```
Vtiger_CustomView::create('Payslip', 'All', true);  
$cv = new Vtiger_CustomView('Payslip', 'All');  
$cv->addColumn($fieldInstance1)  
    ->addColumn($fieldInstance2, 1);
```

Using vtlib 2.x

```
$filterInstance = new Vtiger_Filter();  
$filterInstance->name = 'All';  
$filterInstance->isdefault = true;  
$moduleInstance->addFilter($filterInstance);  
  
$filterInstance->addField($fieldInstance1)->addField($fieldInstance2, 1);
```

Configure Tools

Using vtlib 1.x

```
Vtiger_Module::disableAction('Payslip', 'Import');  
Vtiger_Module::enableAction('Payslip', 'Export');
```

Using vtlib 2.x

```
$moduleInstance->enableTools(Array('Import', 'Merge'));  
$moduleInstance->disableTools('Export');
```

Configure Sharing Access

Using vtlib 1.x

```
Vtiger_Module::setDefaultSharingAccess('Payslip', 'Private');
```

Using vtlib 2.x

```
$moduleInstance->setDefaultSharing('Private');
```

Appendix 2 – Schema Changes **New**

Some of the vtlib API make the schema changes (either adding a new table or new column to existing table) the details are captured in this section

Table	Column	Action	Description
vtiger_field	helpinfo TEXT	Column Addition	This column will store the helptext associated with vtiger_field
vtiger_language		Table Addition	Captures languages installed for vtiger CRM
vtiger_links		Table Addition	Captures details of custom module links
vtiger_tab	version VARCHAR(10)	Column Addition	Track version of module in use. Useful during migration or upgrade of module.
vtiger_crmentityrel		Table Addition	Captures the relation between module records. For Generic related list handling.
vtiger_fieldmodulerelel		Table Addition	Captures related module information for the field of uitype 10
vtiger_mailer_queue		Table Additions	These tables will be added when Vtiger_Mailer class will be use for sending mails asynchronously.
vtiger_mailer_queueinfo			

Appendix 3 – Using vtiger_imageurl API

There are reusable images under themes/images folder and theme specific images will be under themes/<THEMENAME>/images folder.

You can let the image easily configurable for each theme, please make sure to follow the steps below:

In YourSmartyFile.tpl (*Smarty template file*)

```

```

\$THEME variable will be sent by the calling script as follows:

```
global $theme;  
$smarty->assign('THEME', $theme);  
$smarty->display('YourSmartyFile.tpl');
```

This gets translated to:

	If myimage.gif exists under <THEMENAME> folder
	Default path if theme specific image is not found

If you directly building the UI from PHP script, make sure to use the API as follows:

```
vtiger_imageurl ( 'imagename', 'themenamename' );
```

NOTE: vtiger_imageurl API is defined in include/Utils/VtlibUtils.php