Electronic Financial Officer
(EFO)

INTRODUCTION

What is EFO?

EFO or Electronic Financial Officer is a highly flexible, browser based, open source. Financial application.

What is the advantage of being browser based?

There are 3 advantages:

1. EFO was designed to be modified. By making it browser based, the screens can be easily added or modified.
2. EFO can be used as a stand alone application or it can go on an application server and be multi-user.
3. EFO is so flexible, that it can be easily modified to power a website. This is particularly useful to keep track of the website profit and loss. Also, to be able to write reports against the website data.

What makes EFO so flexible

EFO uses a new technology called Flexible Transaction Language (FTL or Fetal for short). This is a powerful scripting language that defines accounting transactions. It is not only powerful but fast, due to look-ahead parsing. The scripts are loaded at execution time so they can be hot swapped without taking down the system (very useful in a multi-user environment). The scripts are easily modified or added in case the accounting needs change.

> **NOTE:** The bulk of EFO is written in Java (using Spring/Hibernate). FTL is not designed to write an entire application, only define the accounting transactions.

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INSTALLATION

Installing MySQL

The first step is to install MySQL. You can actually use any database you wish but with any other database engine, you will need to modify some of the SQL statements.

You will need MySQL and MySQL workbench. 5.x is recommended (5.7 in particular). It is also recommended that this be done by someone with some background in MySQL installation.

Assuming that the database is on the same machine as the application, the username is 'root', the port is '3306' and the default password is '3xc7vbkjlv99'.

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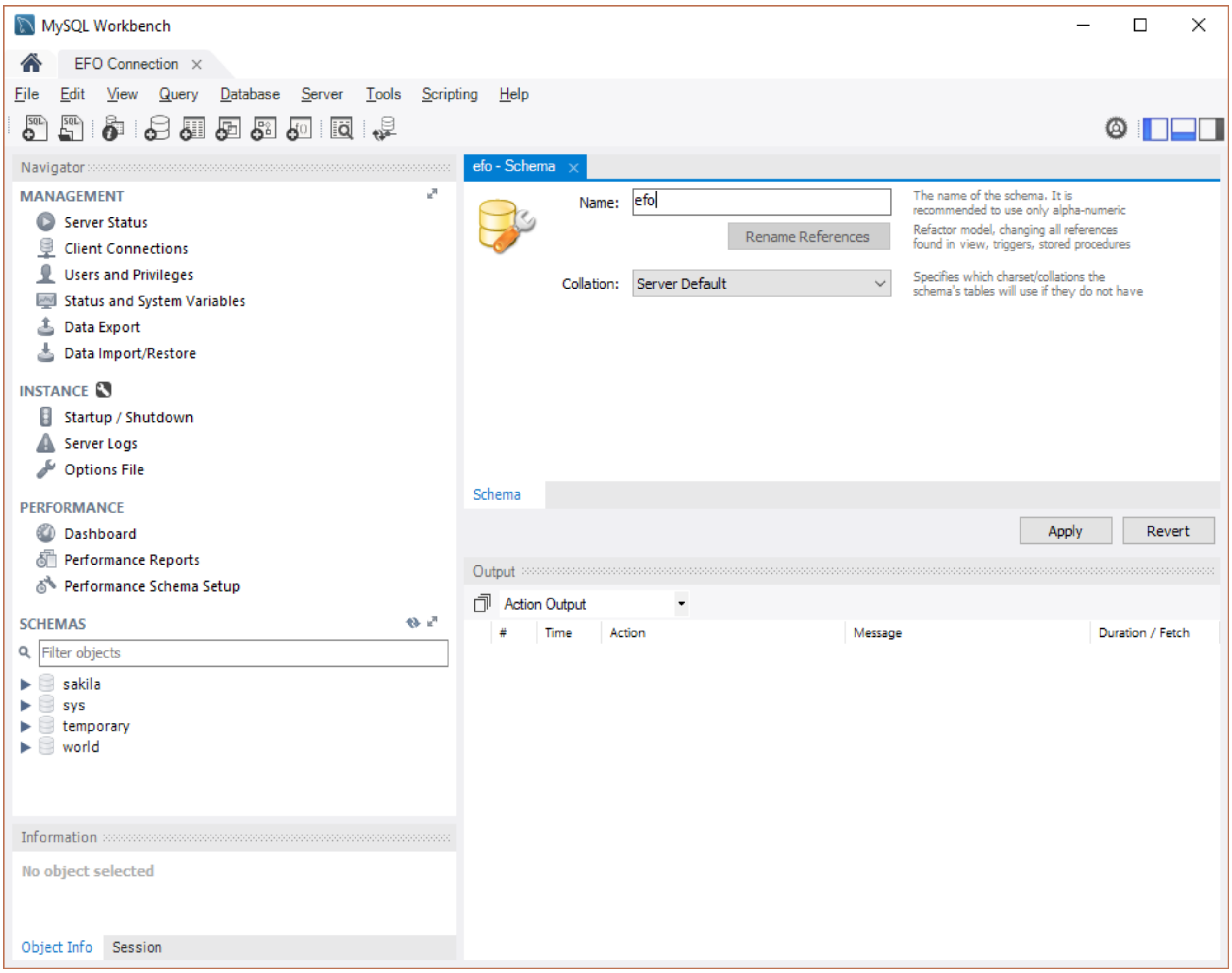
Once MySQL Workbench is installed and running. You will have to create a blank Schema. Right-click on an open area in the lower left panel, where it says 'SCHEMAS'. A menu will come up. Select the option that says 'Create Schema...' and when the 'New Schema' window comes up, enter 'efo' in the name window, then click 'Apply' in the lower corner of the Schema window. Follow the directions and a new, blank schema will be created.

When EFO starts up, it will create the tables and add all of the necessary data.



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Installing EFO

The installation of EFO is quite simple (at least for windows). Simply launch the EfoInstaller.exe. It will create an additional directory called C:/home/WebsiteFiles and put the config files, the transaction files and the log file. EFO will run on windows or UNIX (a UNIX installation is forthcoming).

Running EFO

The installation will place a shortcut on the desktop called 'EfoServer'. It takes about 30 to 45 seconds for the server to be fully running. There are monitors (some of them free) that will tell you when the server is functional. However, the quickest way to do that (if you don't want to download more software) is to bring up the Windows Task Manager. After starting the server, you will see a process named 'JAVA(TM) Platform SE binary', under the 'Processes' tab. The 'CPU' percentage will go up and down. However, when it goes to 0 and stays at 0, the server is ready to take requests. That is a quick and dirty way to see if the server is up and running.

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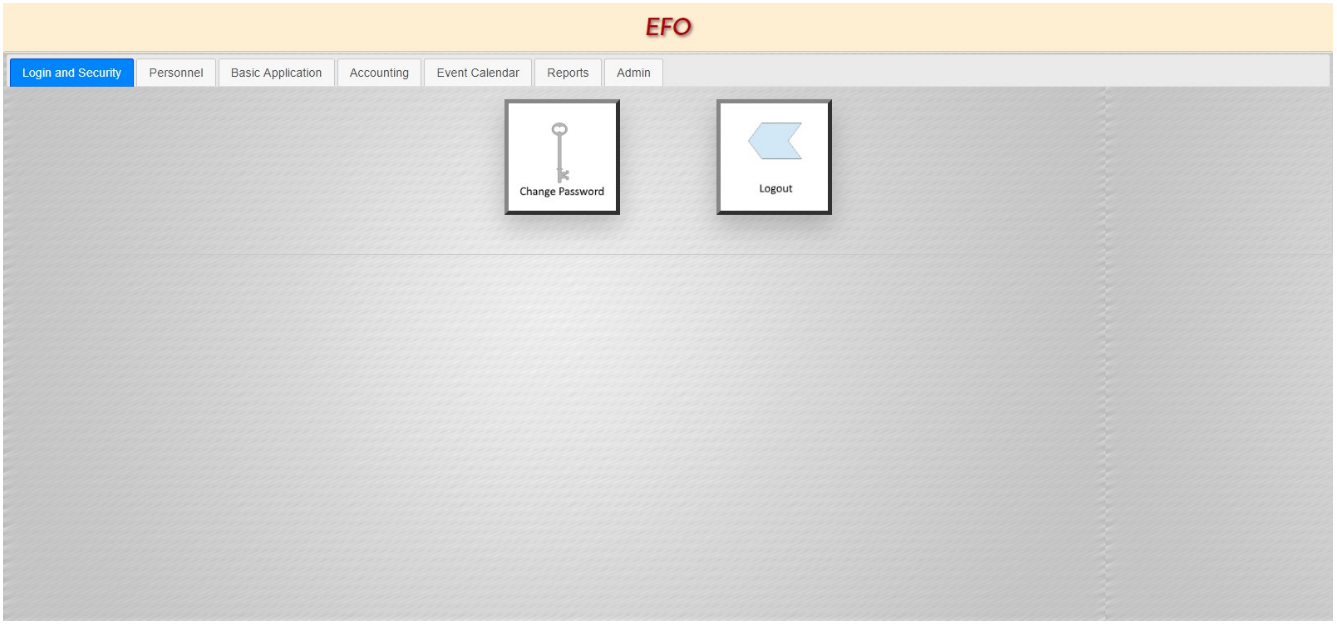
To start the application, pull up your browser and in the address window, type localhost:8080

This will work with most browsers. However, it is recommended that you use Google Chrome.

You will see a single tab with a single tile that says 'Login'. Click the login tile to bring up the login page.

> **Note:** A user is created named 'New Employee', with an email address of new@new.com and a password of 'password' is created so you can get started. This user should have all rights. Use this account to create your own account. After creating your own account, disable 'New Employee' by editing that account and unchecking 'Enable logins'. This will keep the user but disable someone's ability to hack into the system.

Once logged in, you should be able to see all of the tabs and another tile appears so you can change your password.



Pressing the next tab, brings you to 'Personnel'.

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There are 4 types of personnel:

1. Customers
2. Vendors
3. Employees
4. Investors

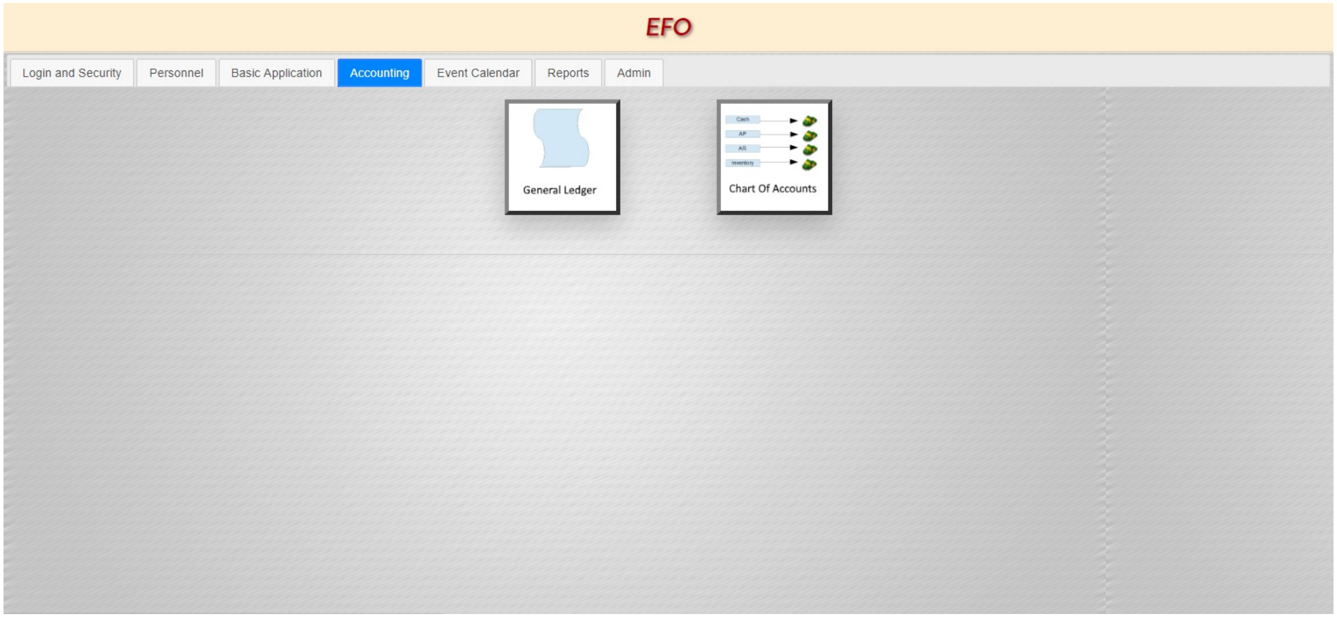
Any of the personnel can be allowed to log into the system. Simply check the 'Enable Logins' checkbox when creating or editing any of the personnel.

Lets say that you want to allow certain vendors to have a custom schedule that you've created, no problem, just check 'Enable Logins' and only give them rights to the part of the system that you want them to see.

The next tab brings up the basic (or core) tiles.

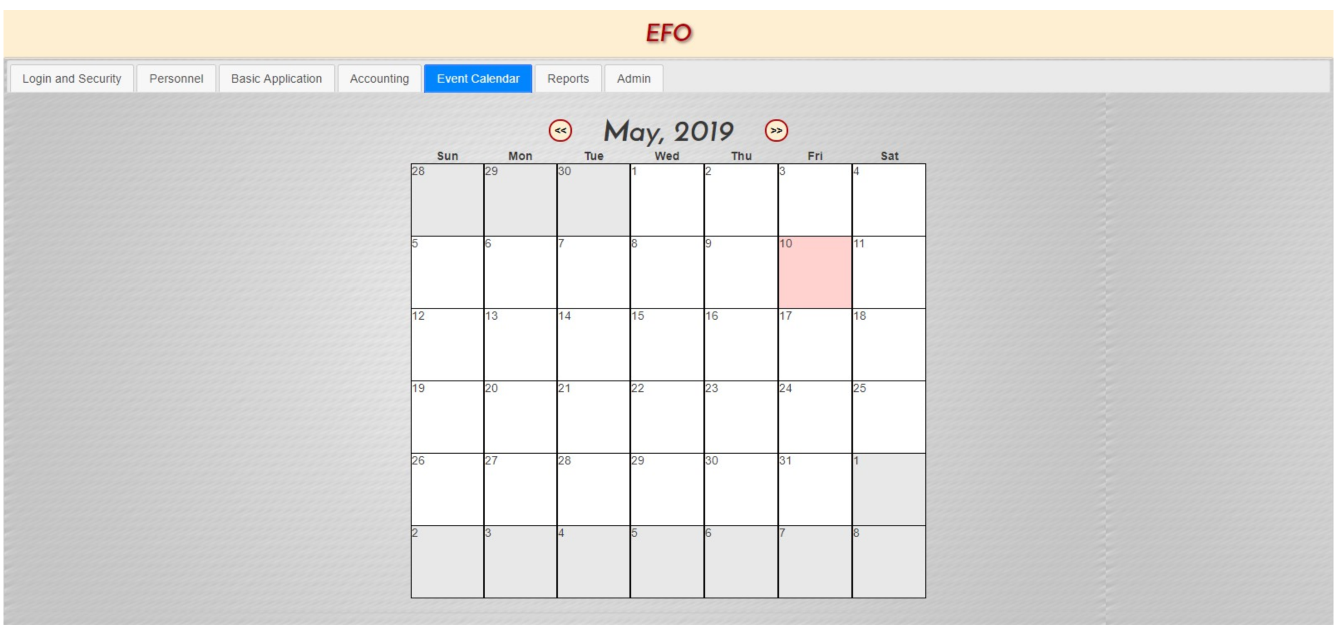
This is the heart of the application. The basic application is only to keep track of profit and loss. There are add-ons to keep track of inventory, services rendered, capital assets and depreciation, petty cash, labor reporting and budgets.

The next tab brings up the accounting functions.



At present, there are 2 accounting functions. General Ledger lets you view the general ledger for any given period. Chart Of Accounts lets to view all of the accounts and their balances. Accounts can be added as the need arises.

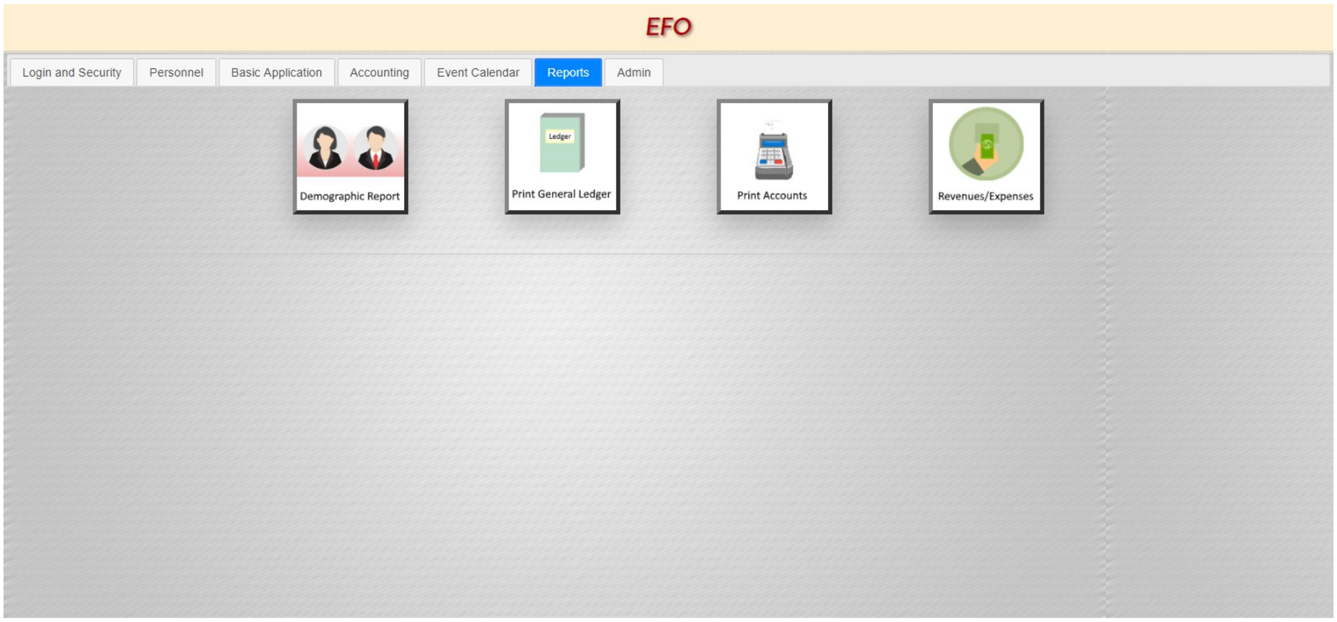
The next tab is the calendar.



The basic system puts events on the calendar. For anything with continuing payments (ie loans, credit notes both receivable and payable and overhead), the payments are handled by the calendar.

When the event has a ~~strikethrough~~, that means the event is completed.

The next tab is the reports tab.



At present, there are 4 reports available:

1. Demographic Report (shows percentage of male to female);
2. Print General Ledger
3. Print Accounts
4. Revenue, Expenses and Profit report

The 'Print General Ledger' and 'Print Accounts' of these will generate a PDF file and put it in /home/WebsiteFiles/documents. The 'Print General Ledger' tile will produce a file named gl<timestamp>.pdf and the 'Print Accounts' tile will produce a file named cofa<timestamp>.pdf, where <timestamp> is the date and time when the file was generated. The Demographic report is a pie chart, which shows the percentages of Male and Female customers and the Revenue/Expenses report is a line chart, which shows revenues, expenses and simple profit (revenues minus expenses).

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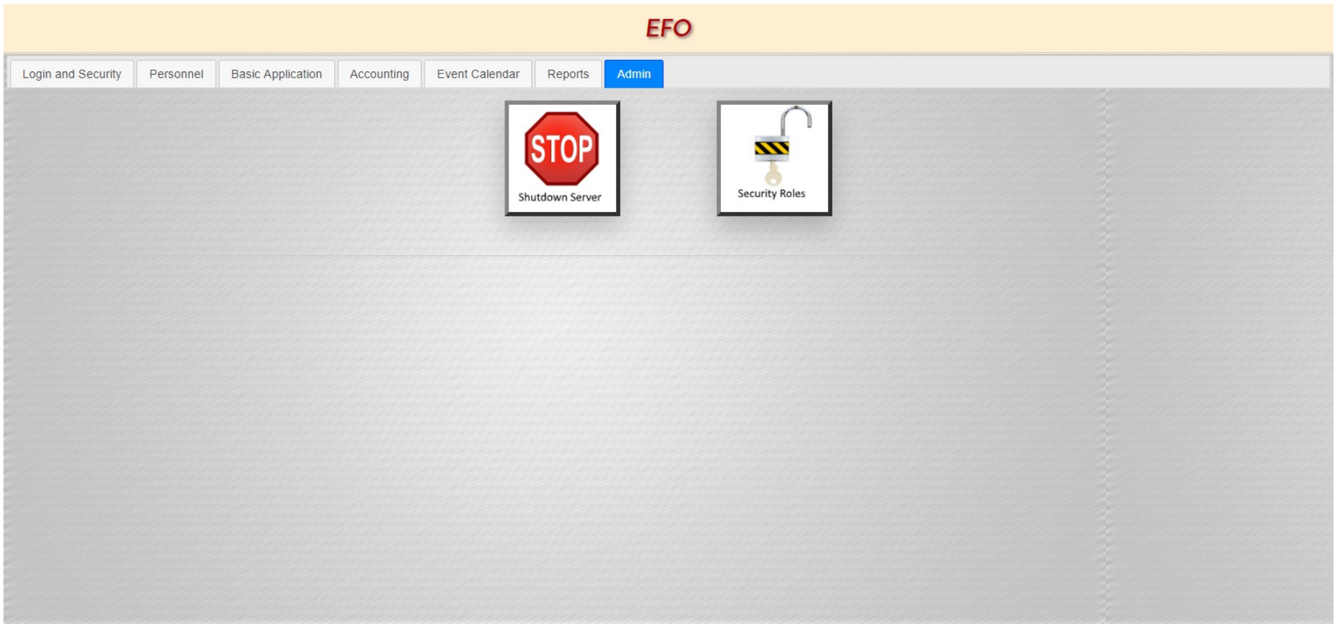
The next tab will bring up the admin functions.



The 'Shutdown Server' tile will shutdown the entire system for all users so it should be used sparingly, especially when used in a multi-user environment. The 'Security Roles' tile is where you can add new security roles. This (along with a minimal amount of programming) allows certain parts of the application to be “turned off” to any particular user.

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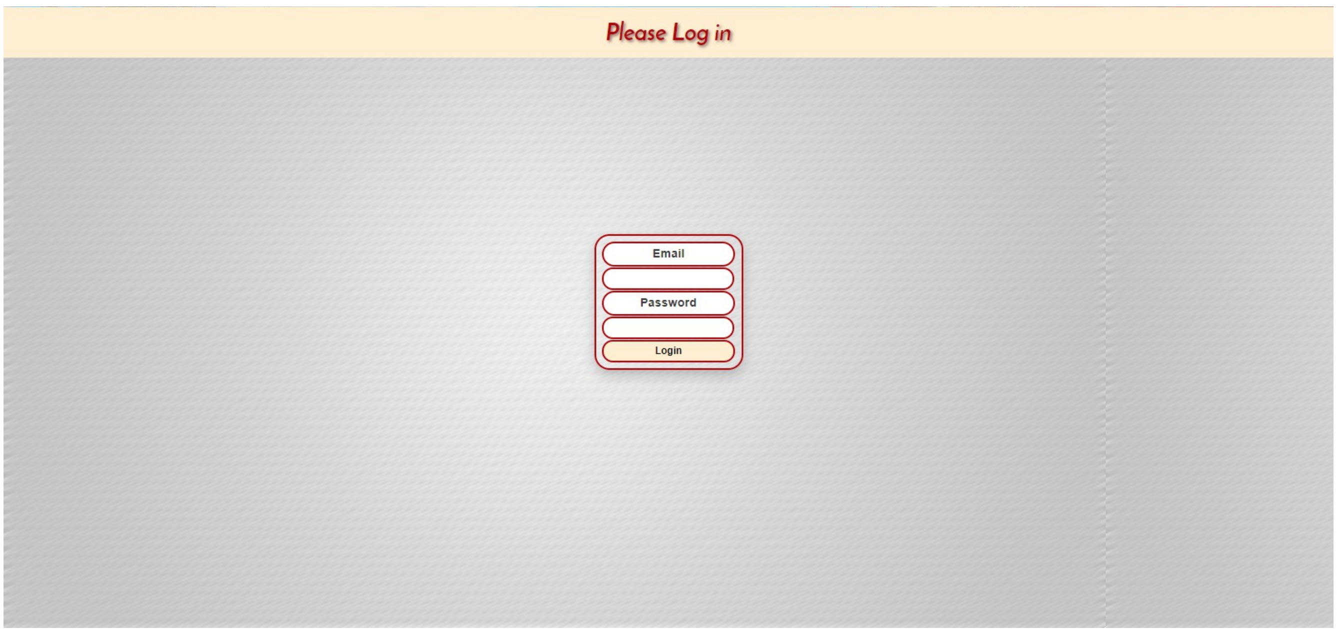
Login And Security

The 'Login And Security' tab is the first thing you will see. If you are logged in, it will show 2 tiles;

1. Change Password
2. Logout

If you are logged out, it will only show 'Login'

Login takes you to the login screen.



Your email is your username and the default password is 'password'. The system will force you to change the default password as soon as you log in to the system.

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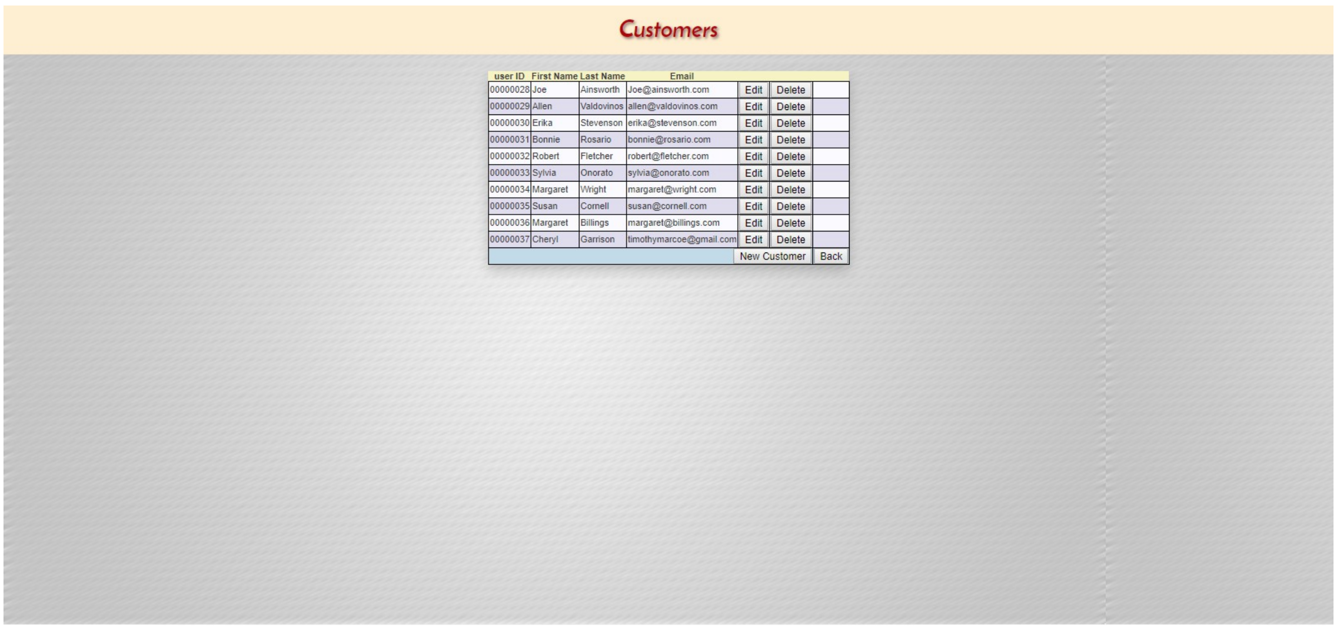
Personnel

The personnel tab is where you can add personnel, allow them to log in, assign a new temporary password (if they're allowed to log in) or assign security roles.

When you click on a personnel tile (in this case we are using the customers), a list of that type of personnel will be displayed (remember that we said there are 4 types of personnel).



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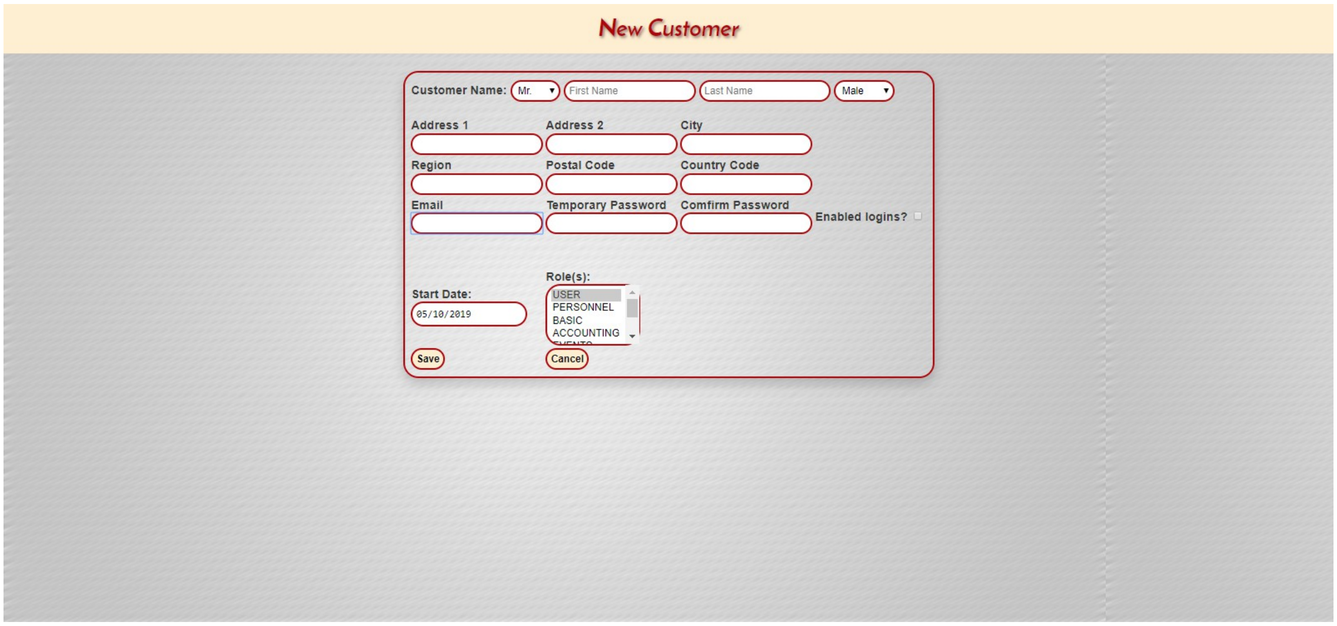
Press 'Edit' next to the personnel you wish to edit ('Delete' if you wish to delete) or, if you wish to add personnel, press the 'New' button at the bottom of the list.



This screen is pretty self explanatory. 'Region' is for those countries that don't have states and 'Postal Code' is the international equivalent of 'Zip Code'. You must supply a unique email address, even if the user is not enabled to log into the system. In addition, every user must have at least one role (usually 'USER'). To assign more roles, hold down the control key and click on whatever role you wish to select.

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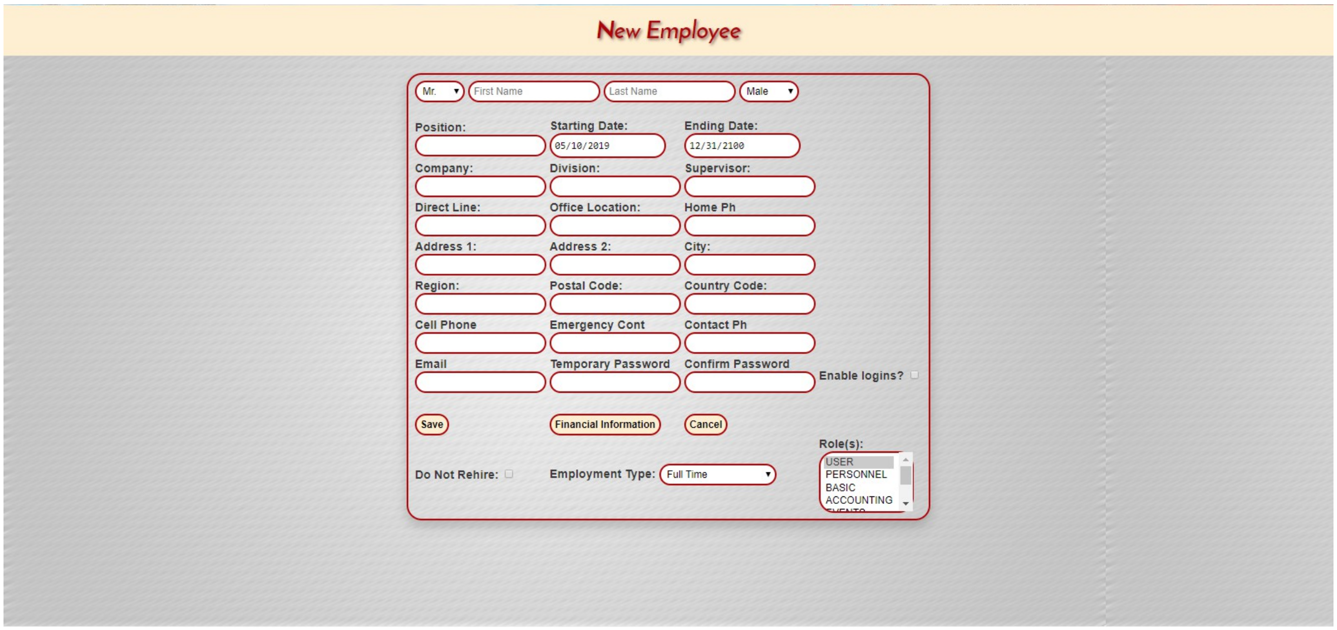
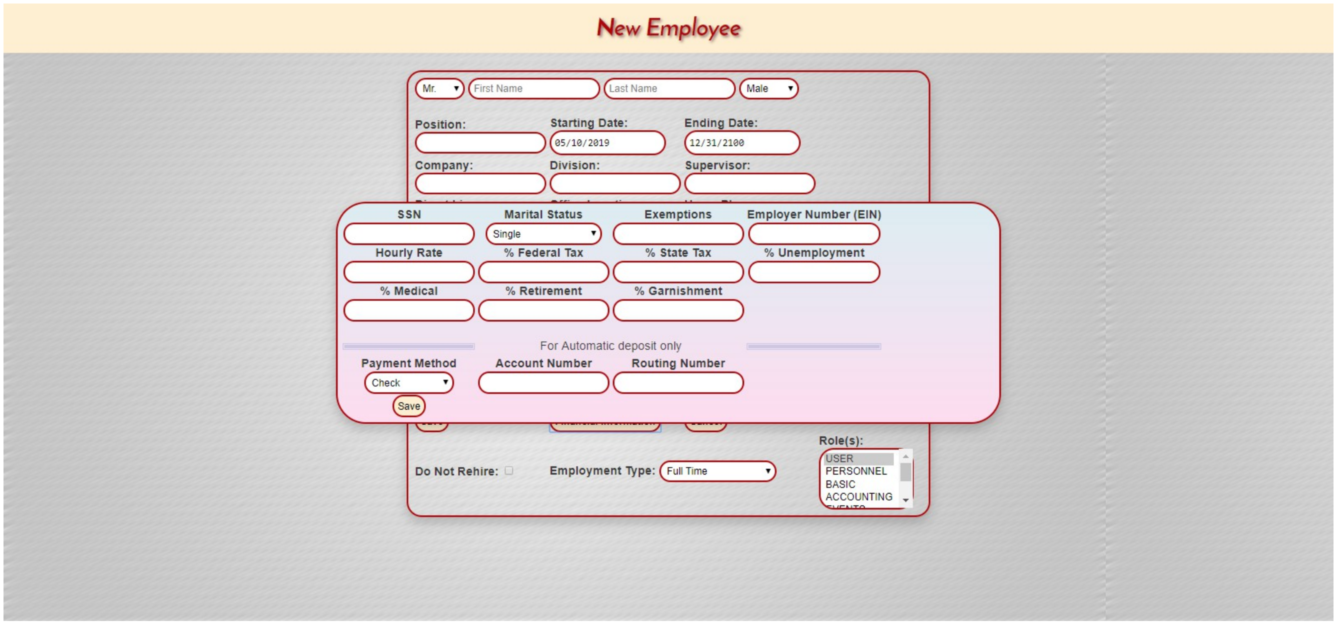
Most of the personnel tiles have the same fields with a few exceptions. However, the 'Employees' tile is a bit more complex because of labor requirements.



You can see all of the necessary fields for a personnel file.

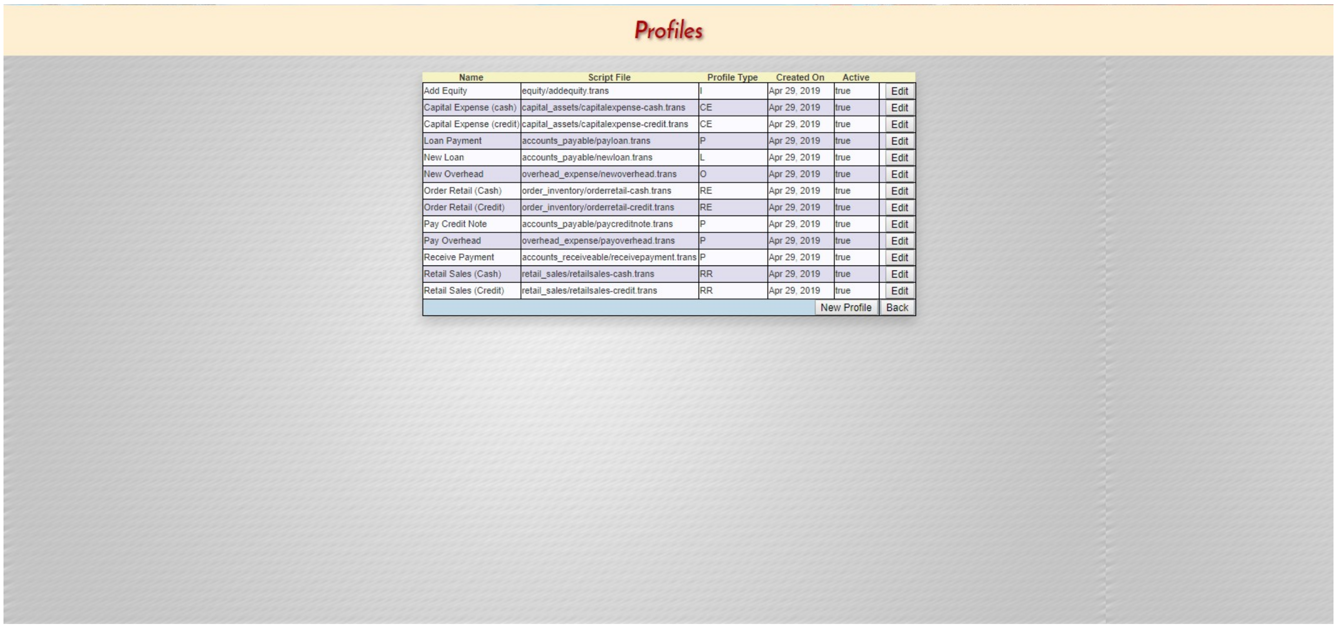
However, for an employee's financial information, press 'Financial Information' at the bottom of the screen.



This is all of the information needed to fill out a W4.

Basic Application/Event Calendar

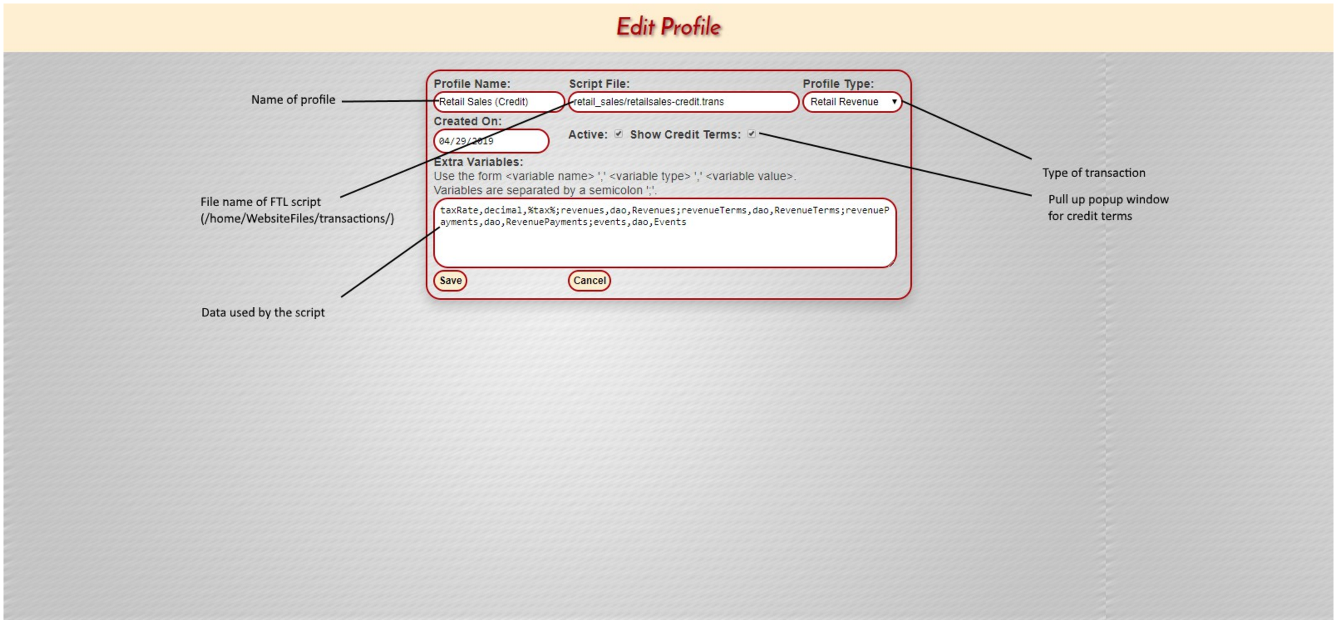
The tiles here all have at least one transaction profile. Press the 'Transaction Profiles' tile to pull up a list of profiles.



Profiles

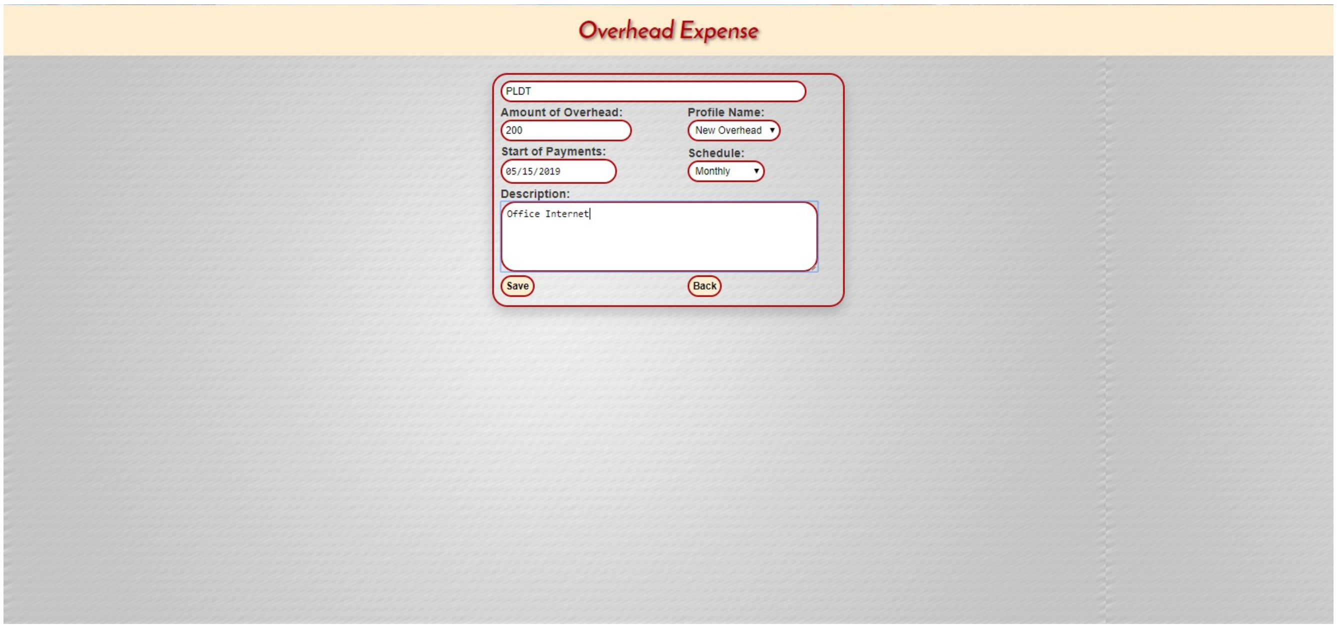
Name	Script File	Profile Type	Created On	Active	
Add Equity	equity/addequity.trans	I	Apr 29, 2019	true	Edit
Capital Expense (cash)	capital_assets/capitalexpense-cash.trans	CE	Apr 29, 2019	true	Edit
Capital Expense (credit)	capital_assets/capitalexpense-credit.trans	CE	Apr 29, 2019	true	Edit
Loan Payment	accounts_payable/payloan.trans	P	Apr 29, 2019	true	Edit
New Loan	accounts_payable/newloan.trans	L	Apr 29, 2019	true	Edit
New Overhead	overhead_expense/newoverhead.trans	O	Apr 29, 2019	true	Edit
Order Retail (Cash)	order_inventory/orderretail-cash.trans	RE	Apr 29, 2019	true	Edit
Order Retail (Credit)	order_inventory/orderretail-credit.trans	RE	Apr 29, 2019	true	Edit
Pay Credit Note	accounts_payable/paycreditnote.trans	P	Apr 29, 2019	true	Edit
Pay Overhead	overhead_expense/payoverhead.trans	P	Apr 29, 2019	true	Edit
Receive Payment	accounts_receiveable/receivepayment.trans	P	Apr 29, 2019	true	Edit
Retail Sales (Cash)	retail_sales/retailsales-cash.trans	RR	Apr 29, 2019	true	Edit
Retail Sales (Credit)	retail_sales/retailsales-credit.trans	RR	Apr 29, 2019	true	Edit
				New Profile	Back

Here is a list of profiles. To view or edit a profile, press 'Edit' next to the desired profile.



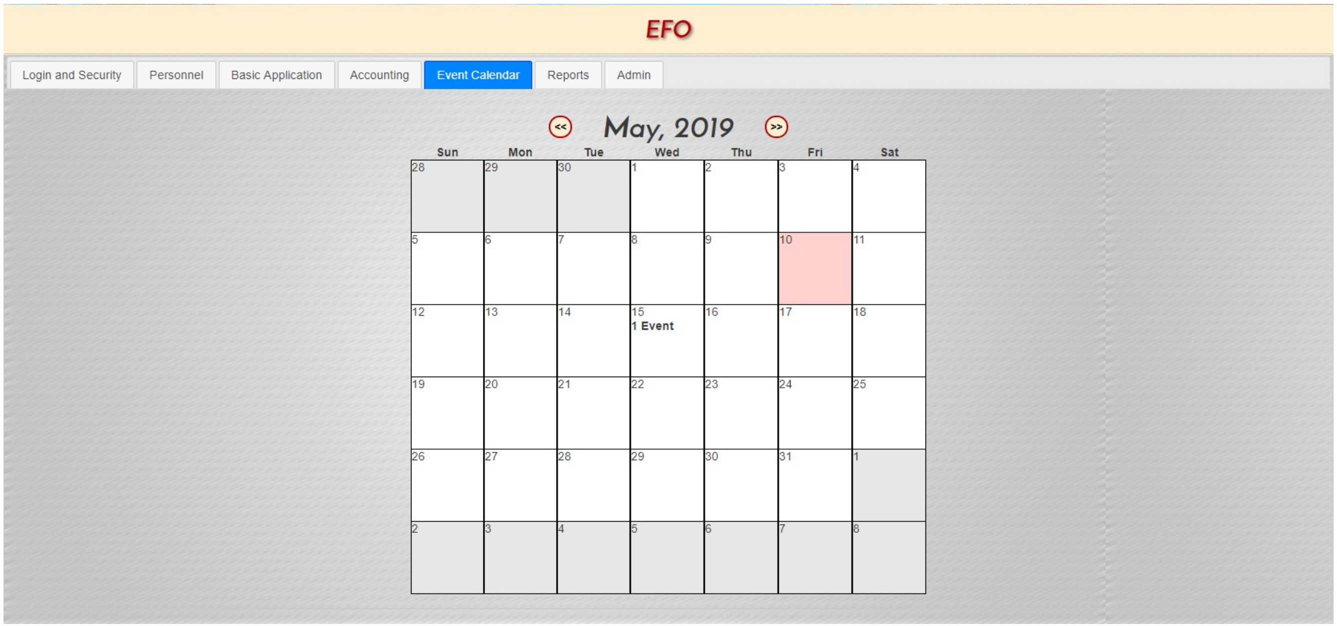
The first field (top to bottom, left to right) is the name of the profile. This is a key field and is used to pull of the record from the table. The second field is the file to read the FTL script from. The FTL script is what does the work here. The java program simply determines what script to load and loads it. The next field is the profile timestamp. There are 2 check boxes, one to make the script active and the other determines if a pop-up box will appear that accepts inputs for credit terms. The last field is the extra data (usually data access objects or DAO's) that can be imported into the script. It's in the form of <name>, <data type>, <value>. Each datum is separated by a semicolon ';'. If you look at the first datum, the value is %tax%. That's because this datum is read from the application properties file. It is the tax rate for a given area (**see programming guide**).

Let's say that we order internet for our retail store, it costs $200/month and the payments start on the 15th. We go to the 'Overhead Expense' tile and click it.

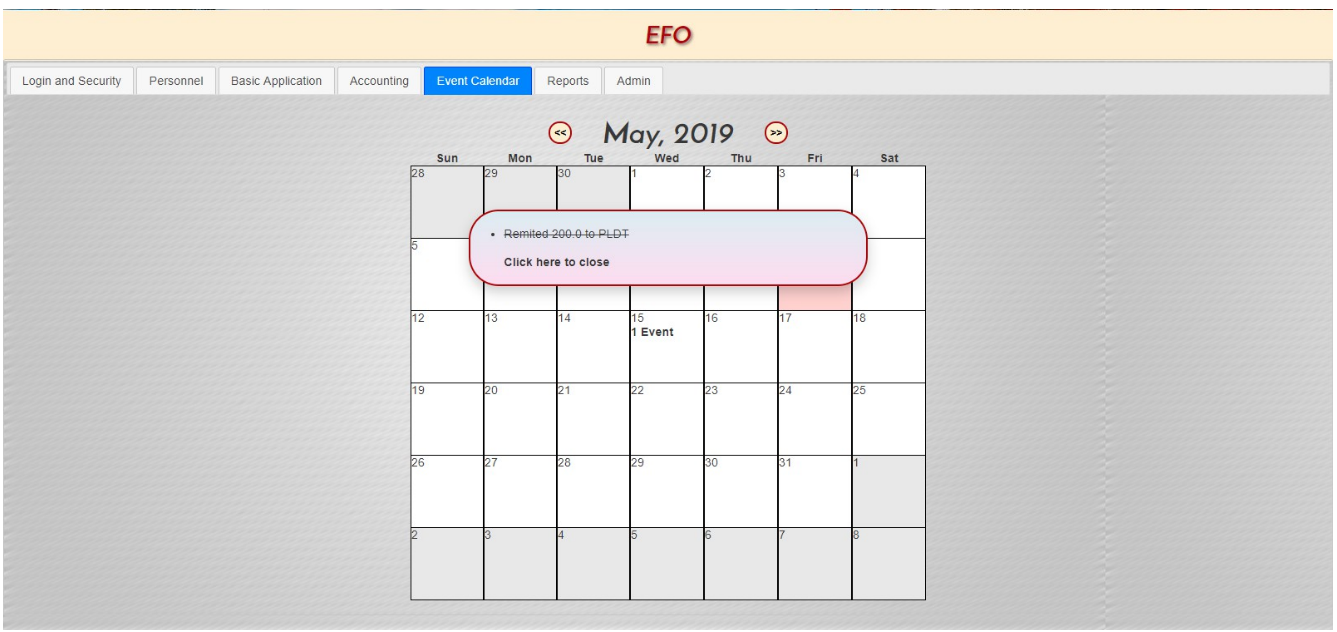


Here, it shows the vendor as PLDT, the amount as $200, the transaction type as 'New Overhead' the starting date as May 15th and the schedule as 'Monthly'. The bottom text area is a brief explanation of the transaction. **It must not be blank!** The ledger uses that for the explanation for the transaction.

Now, if we look on the calendar...

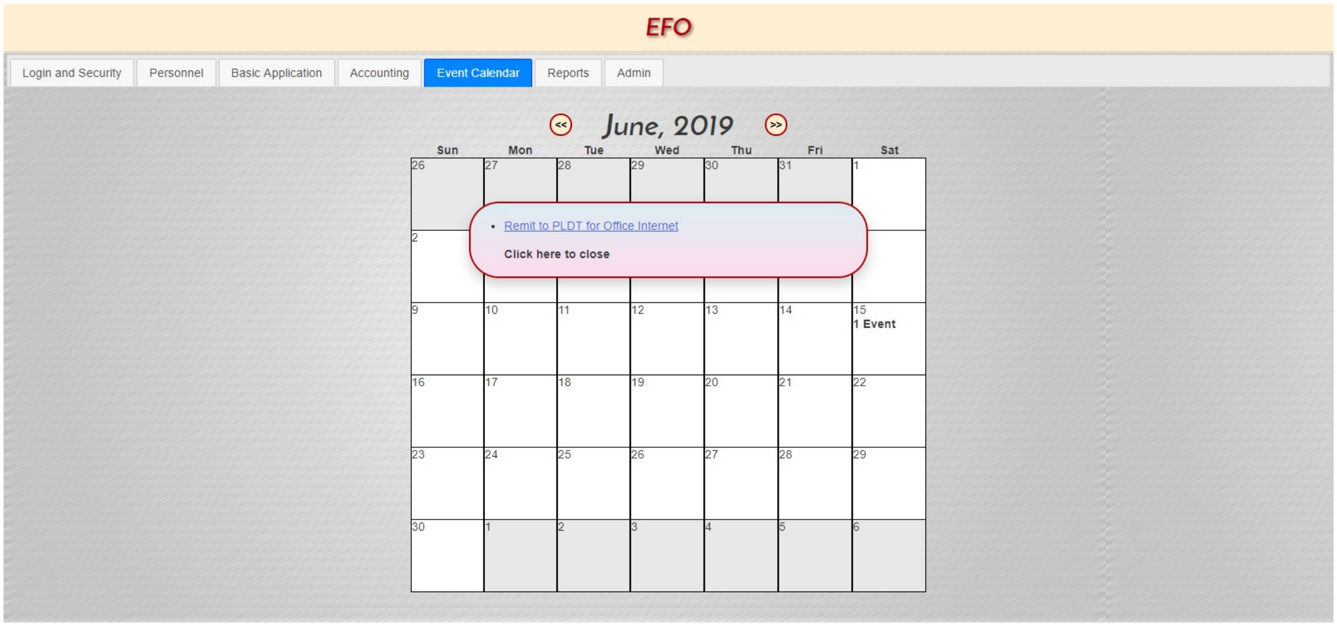


We see an event on May15th . Clicking on the event...



We see a completed event. 'Overhead Expense' is the only tile to do this. This is because more often than not, overhead is paid at the same time it is put on the calendar. This can be easily changed with a small modification to the FTL script.

Now, if we look at next month...



We see next month's bill for the internet. Lets look at another example.

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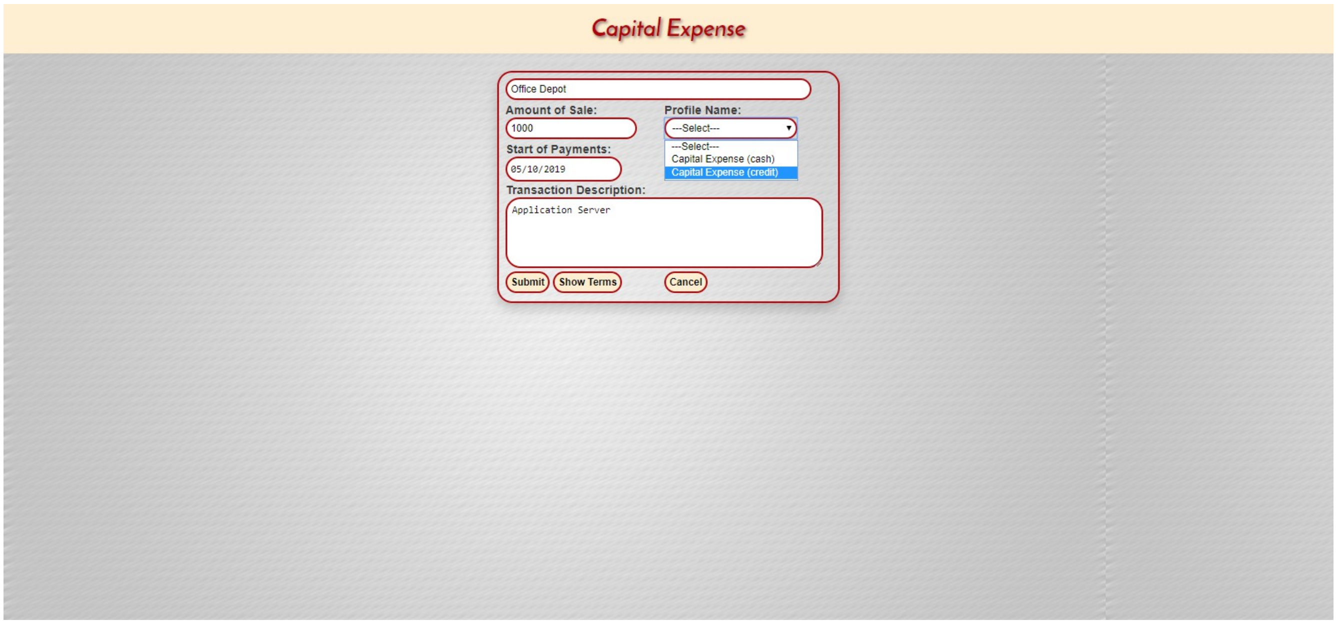
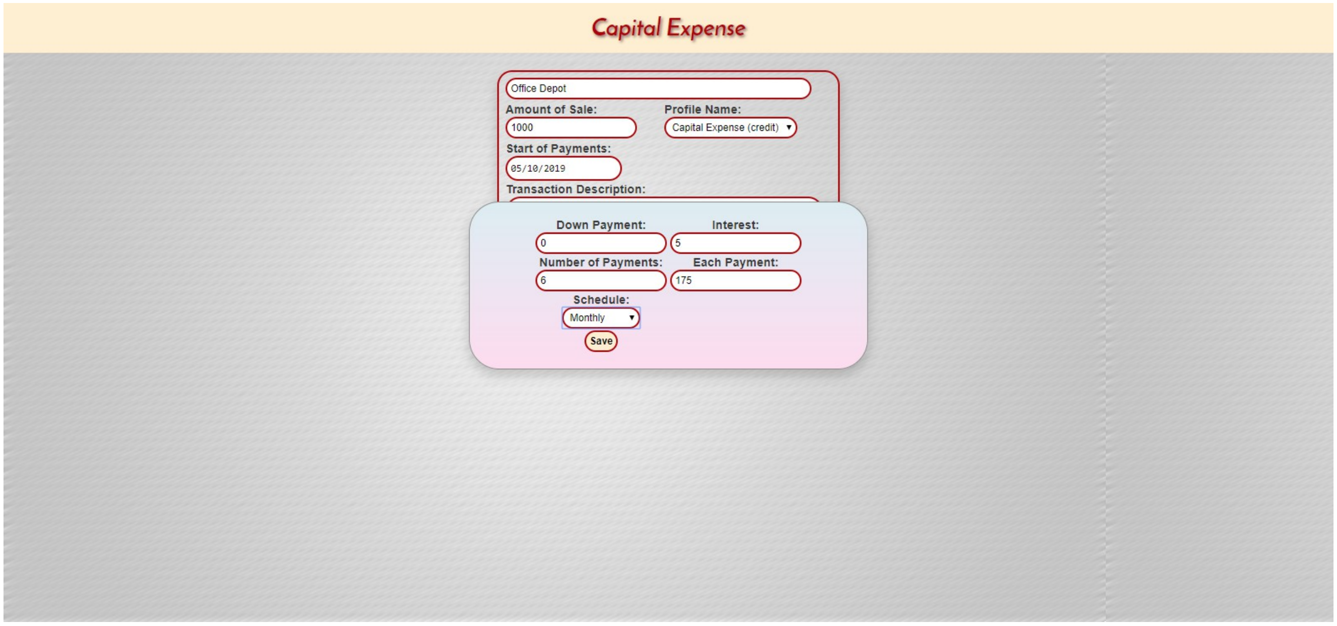
Let's say that our office needs a central computer. With our added needs, the computer comes out to $1000 but our supplier will let us make 6 payments for only 5% interest. Since a computer is a capital expense, we click on the 'Capital Expense' tile.



Since the vendor will extend credit for 6 months, we select 'Capital Expense (credit)' (as opposed to 'Capital Expense (cash)'). When we go to submit the cost of the sale...



We get a pop-up window to input the credit terms. 'Down Payment' is 0, 'Interest' is 5%, 'Number of Payments' is 6 and 'Each Payment' is calculated to be $175. The 'Schedule' is 'Monthly'.

> **Note:** The 2 fields that must have some value is 'Number of Payments' and 'Schedule'. Everything else can be 0. Otherwise, the pop-up window will keep popping up when we go to submit.

We click save and submit.

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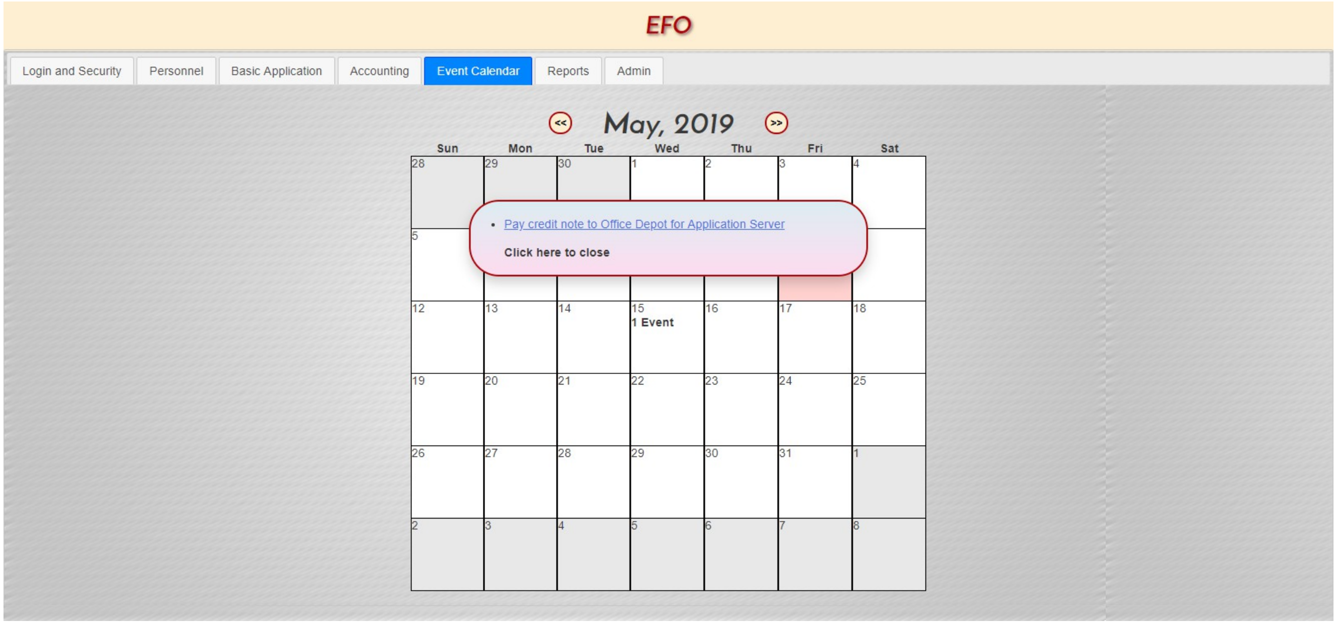
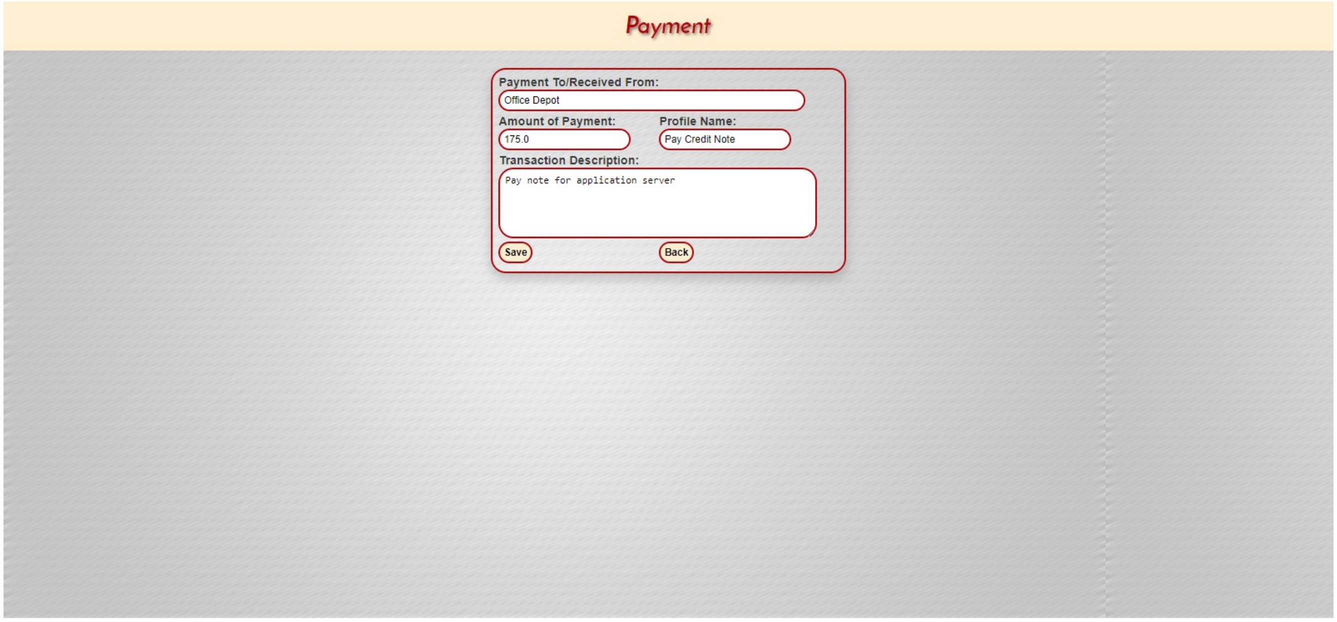


We now see an event on the 10th. When we click on the event, we see a link to our first payment. When we click on the link...



We get the payment window, with the vendor, payment amount and profile name already filled in. We simply put an explanation in the transaction description and press 'Save'.

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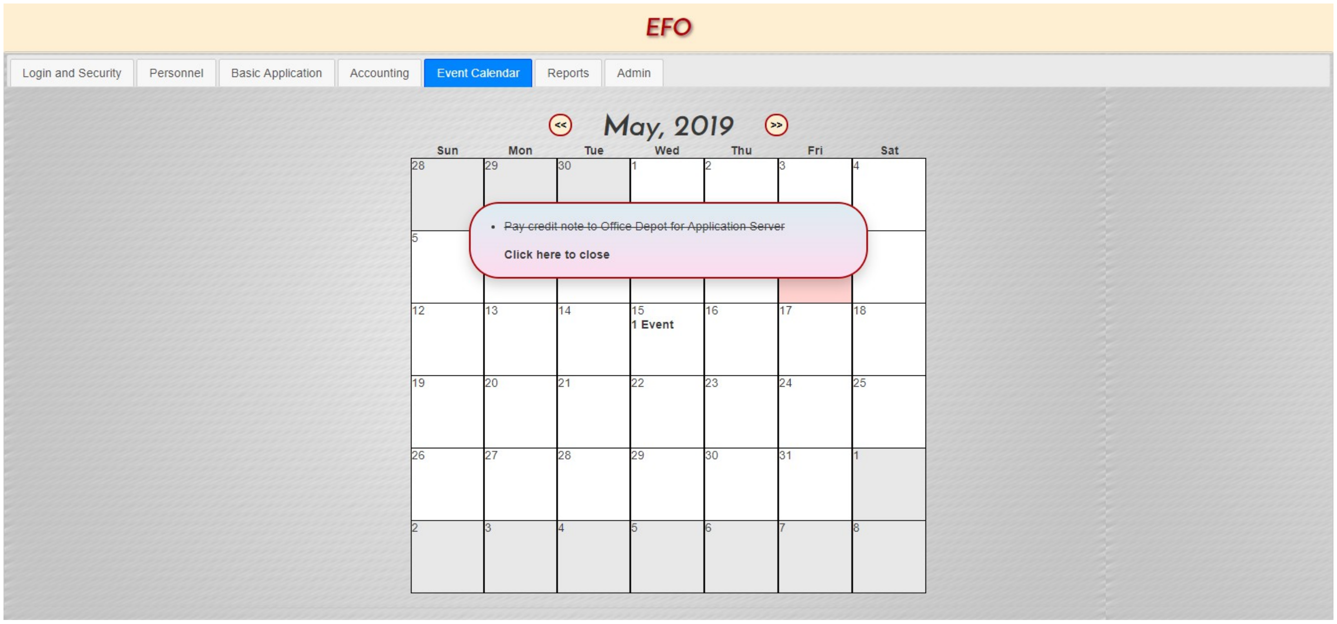

Now we see that the event has completed and it has already put an event for payment, next month.

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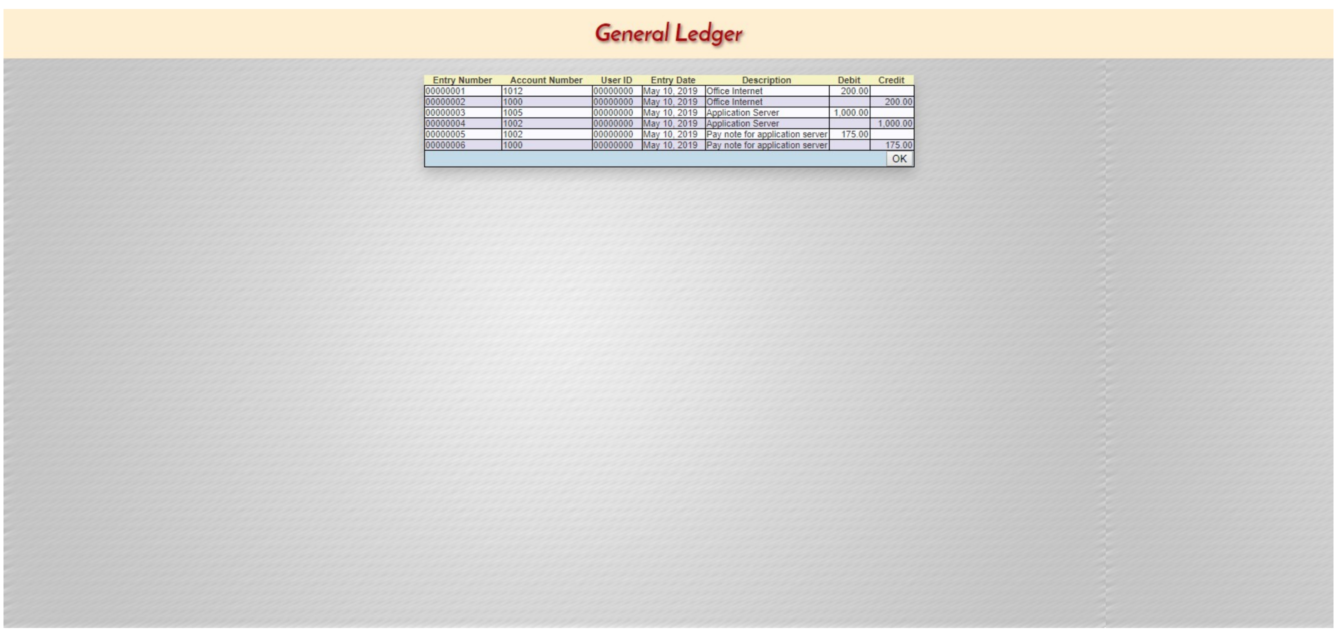
Accounting

The pressing the 'General Ledger' tile we see a window popup.

Each accounting transaction can have 2 or more entries in the ledger. At the end of the year, you can easily top 1000+ pages. For this reason, it is highly recommended that you only look at sections of the ledger at one time.



Entry Number	Account Number	User ID	Entry Date	Description	Debit	Credit
00000001	1012	00000000	May 10, 2019	Office Internet	200.00	
00000002	1000	00000000	May 10, 2019	Office Internet		200.00
00000003	1005	00000000	May 10, 2019	Application Server	1,000.00	
00000004	1002	00000000	May 10, 2019	Application Server		1,000.00
00000005	1002	00000000	May 10, 2019	Pay note for application server	175.00	
00000006	1000	00000000	May 10, 2019	Pay note for application server		175.00

The ledger shows the entry number, the account number, entry date, description, debit column and credit column.

Pressing the Chart of Accounts tile, we see the following.

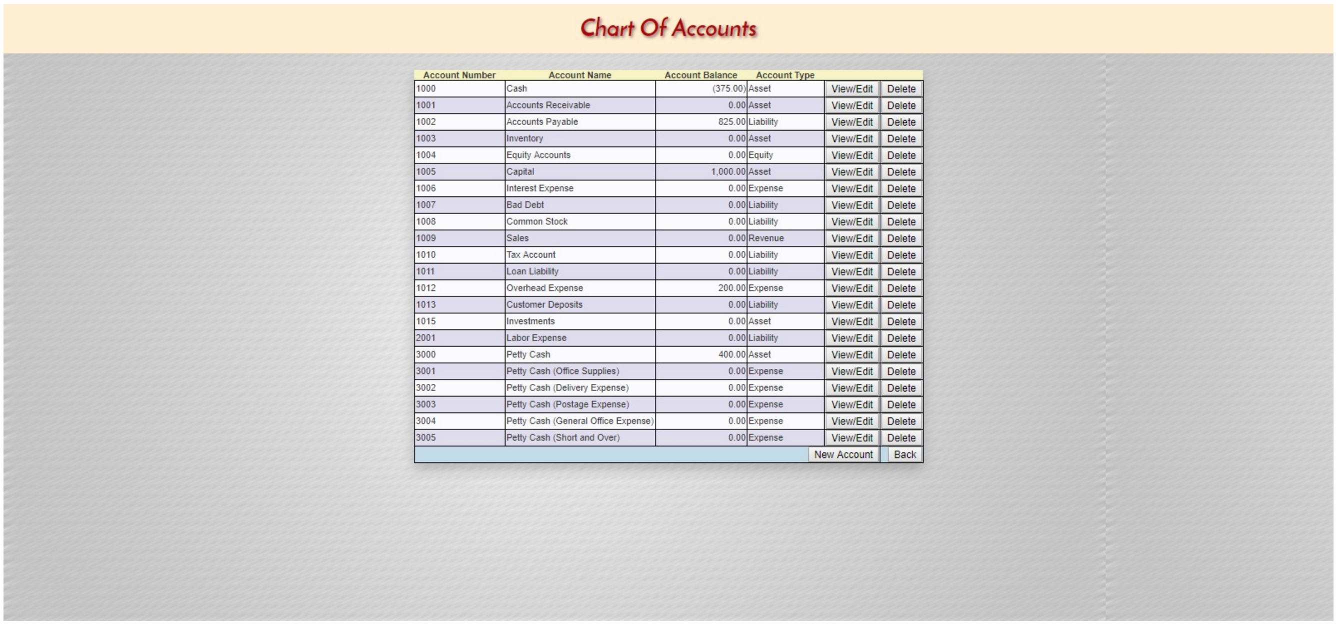


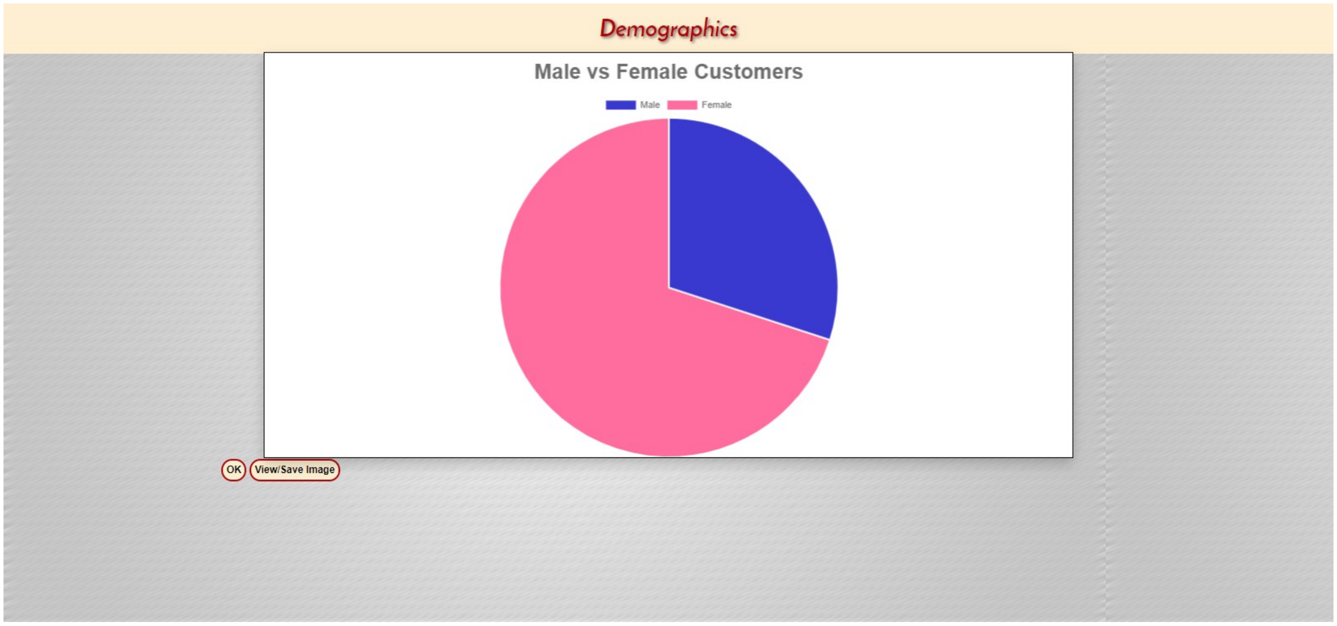
Chart Of Accounts

Account Number	Account Name	Account Balance	Account Type		
1000	Cash	(375.00)	Asset	View/Edit	Delete
1001	Accounts Receivable	0.00	Asset	View/Edit	Delete
1002	Accounts Payable	825.00	Liability	View/Edit	Delete
1003	Inventory	0.00	Asset	View/Edit	Delete
1004	Equity Accounts	0.00	Equity	View/Edit	Delete
1005	Capital	1,000.00	Asset	View/Edit	Delete
1006	Interest Expense	0.00	Expense	View/Edit	Delete
1007	Bad Debt	0.00	Liability	View/Edit	Delete
1008	Common Stock	0.00	Liability	View/Edit	Delete
1009	Sales	0.00	Revenue	View/Edit	Delete
1010	Tax Account	0.00	Liability	View/Edit	Delete
1011	Loan Liability	0.00	Liability	View/Edit	Delete
1012	Overhead Expense	200.00	Expense	View/Edit	Delete
1013	Customer Deposits	0.00	Liability	View/Edit	Delete
1015	Investments	0.00	Asset	View/Edit	Delete
2001	Labor Expense	0.00	Liability	View/Edit	Delete
3000	Petty Cash	400.00	Asset	View/Edit	Delete
3001	Petty Cash (Office Supplies)	0.00	Expense	View/Edit	Delete
3002	Petty Cash (Delivery Expense)	0.00	Expense	View/Edit	Delete
3003	Petty Cash (Postage Expense)	0.00	Expense	View/Edit	Delete
3004	Petty Cash (General Office Expense)	0.00	Expense	View/Edit	Delete
3005	Petty Cash (Short and Over)	0.00	Expense	View/Edit	Delete
				New Account	Back

These are all of the account names and numbers, along with the balance and account type. You can add or delete these accounts. However, the FTL scripts are expecting certain accounts to be there, so modifying the accounts means modifying the FTL scripts. You need to also modify the account mapping file (/home/WebsiteFiles/config/accounts.xml).

Reports

The first report is the 'Demographic' report, which shows the percentage of male to female customers. Just click on the tile and it shows a pie chart.



To save the pie chart, click 'View/Save Image' at the bottom of the pie chart. The whole screen will show the pie chart. Right-click on the image and a menu will pop up. Click on 'Save image as...' and you can save the image as a JPEG.

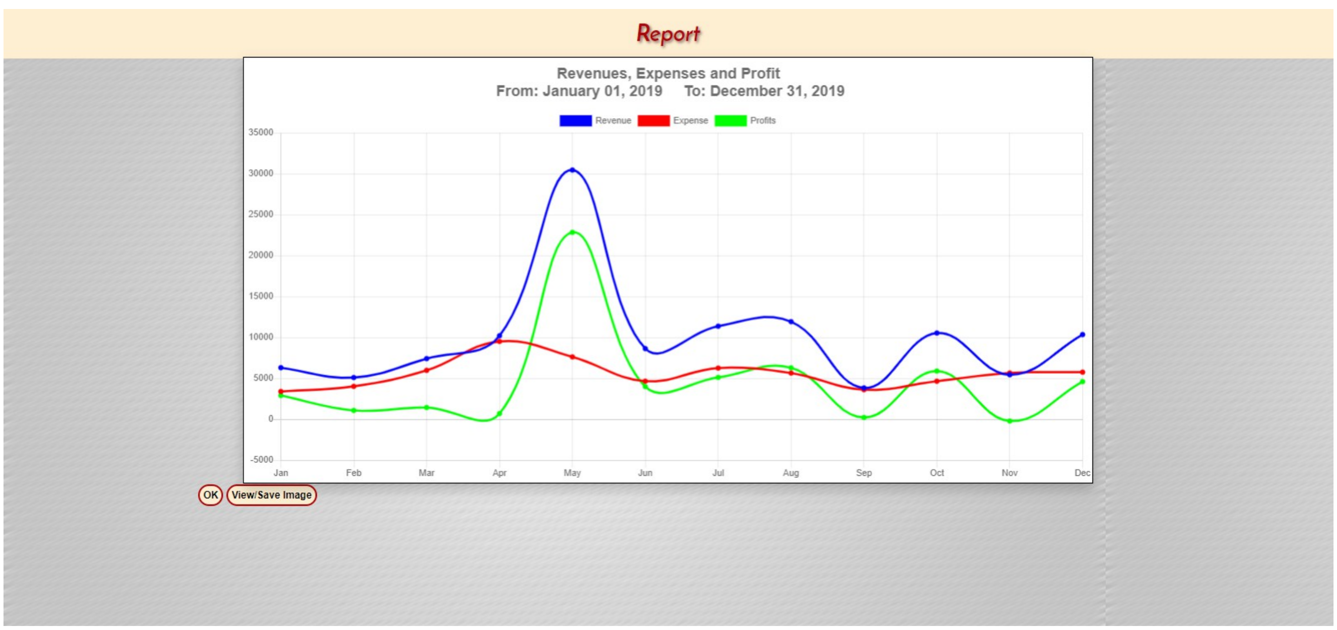
To return to the web page, just refresh the page (with some browsers, you must click the back button). To return to the reports tab, click 'OK'.

The 'Print General Ledger' and 'Print Accounts' do almost the same thing as 'General Ledger' and 'Chart Of Accounts' from the accounting tab. The difference is that they don't display the result on the screen. Instead they generate PDF files, which they store in /home/WebsiteFiles/documents.

The 'Revenue/Expense' tile shows a line graph of revenues, expenses and simple profit (revenues minus expenses).

Click on the tile and a window will pop up so you can enter the date range you wish to view.

Enter the start and ending dates and click 'View Period' to see the chart.



The 2 buttons at the bottom of the chart, operate the same way as they do in the demographic report.

Admin

The 'Admin' tab has 2 tiles, 'Shutdown' and 'Security Roles'. 'Shutdown' will shut the entire server down so make sure there is no one else on the system. 'Security Roles' allows you to view all security roles and add roles for other systems (**see programming guide**).