

## References

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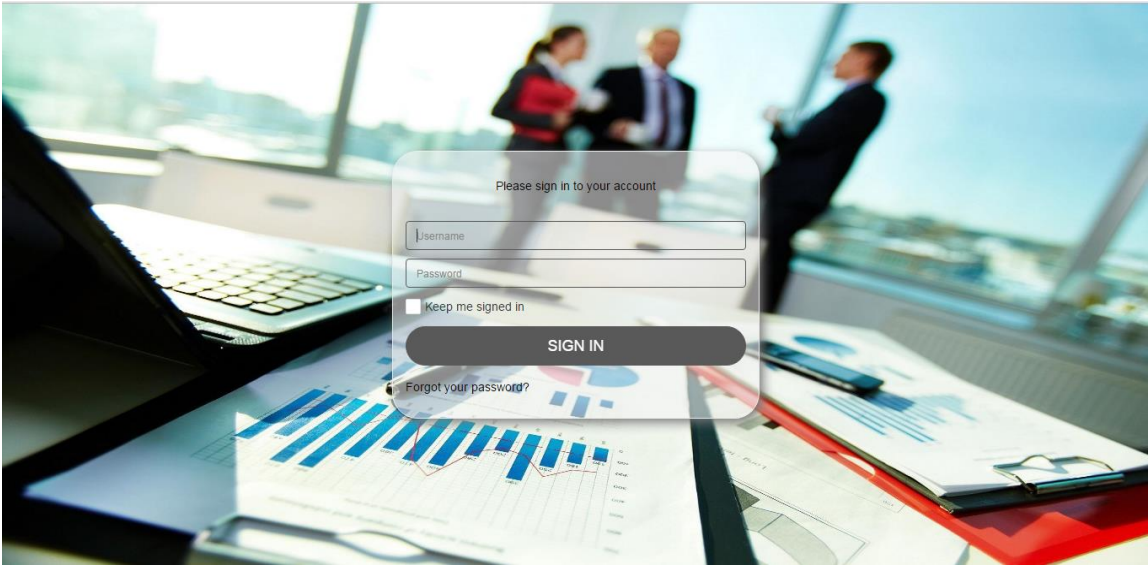
[12] Klassen, R. D., & Flores, B. E. (2001). Analyzing Practices of Canadian Firms: Survey Results and Comparisons. *International Journal of Production Economics*, 70 , p. 163-174.

[13] Moon, M. A., & Mentzer, J. T. (1999). Improving Salesforce Analyzing. *The Journal of Business Analyzing* , p. 7-12.

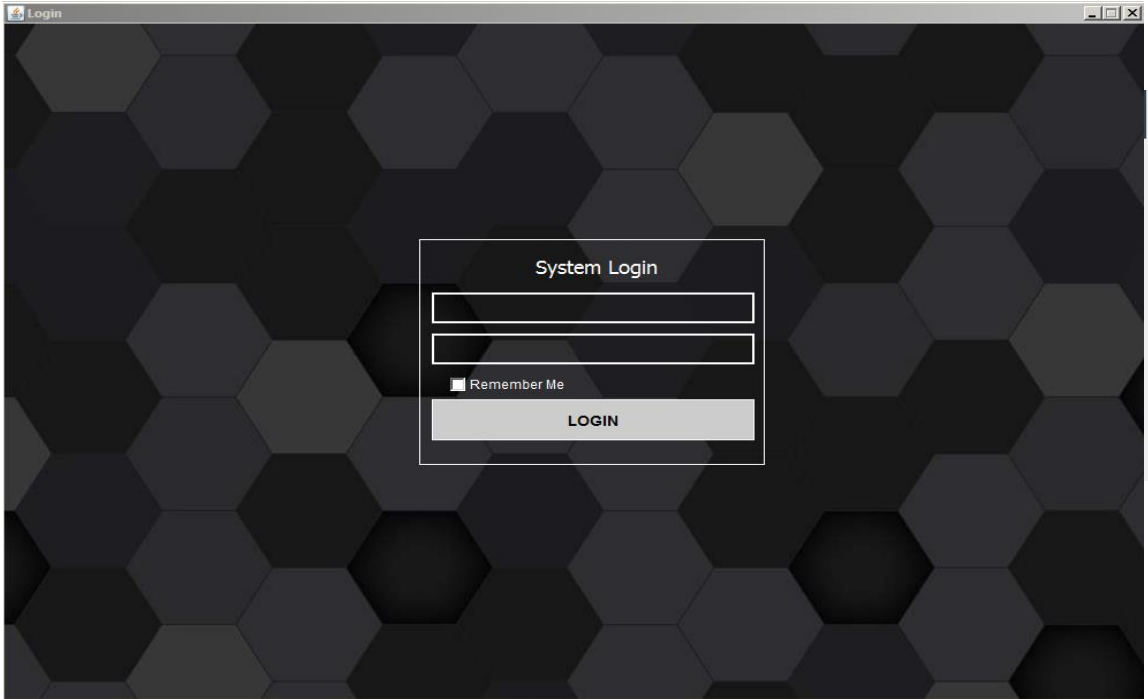
[14]“What is Java and why do I need it?” [Online]. Available: [https://www.java.com/en/download/faq/whatis\\_java.xml](https://www.java.com/en/download/faq/whatis_java.xml). [Accessed: 13-Dec-2016].

# Appendixes

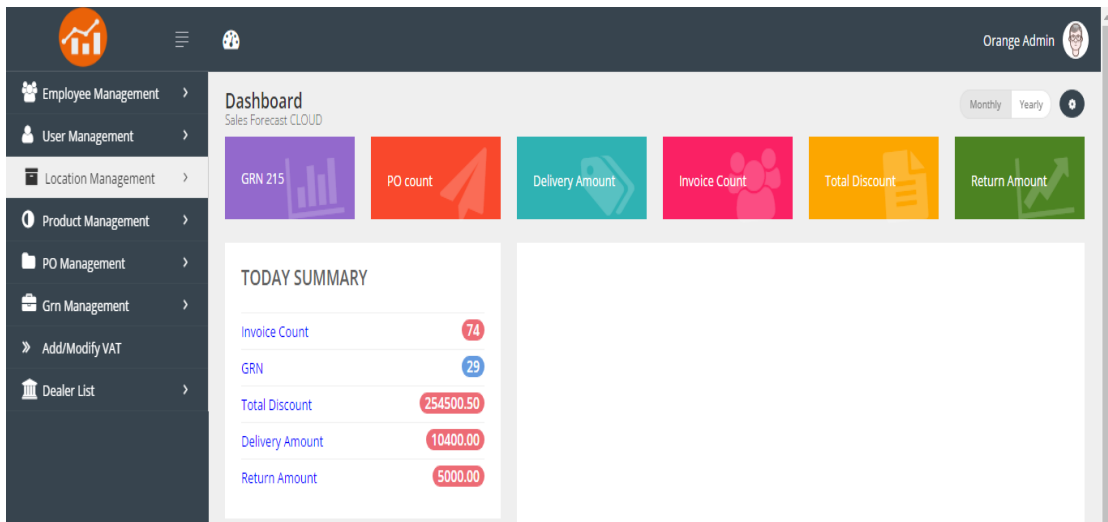
## Appendix A – User Interfaces.



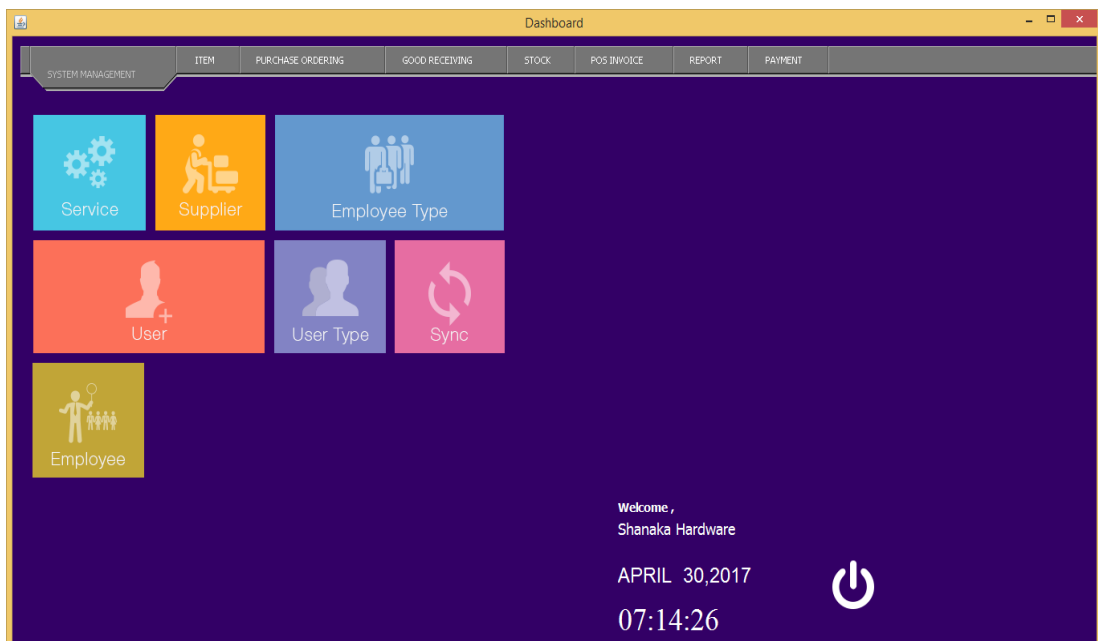
*Cloud application Login*



*Point of sale Login*



*Cloud application dashboard*



*Point of sale dashboard*

## I. Employee and employee Type Modules.

- Cloud application.

Employee Management

Home > Employee Management > Add Employee

Add Employee

Employee Type\* admin

Name\* Kalpa Dissanayake

Address No.425/11.Pelenwatta, Pannipitiya

Email infokalpa@gmail.com

Mobile\* 713998064

Save

### *Add Employee*

Employee Management

Home > Employee Management > List Employee

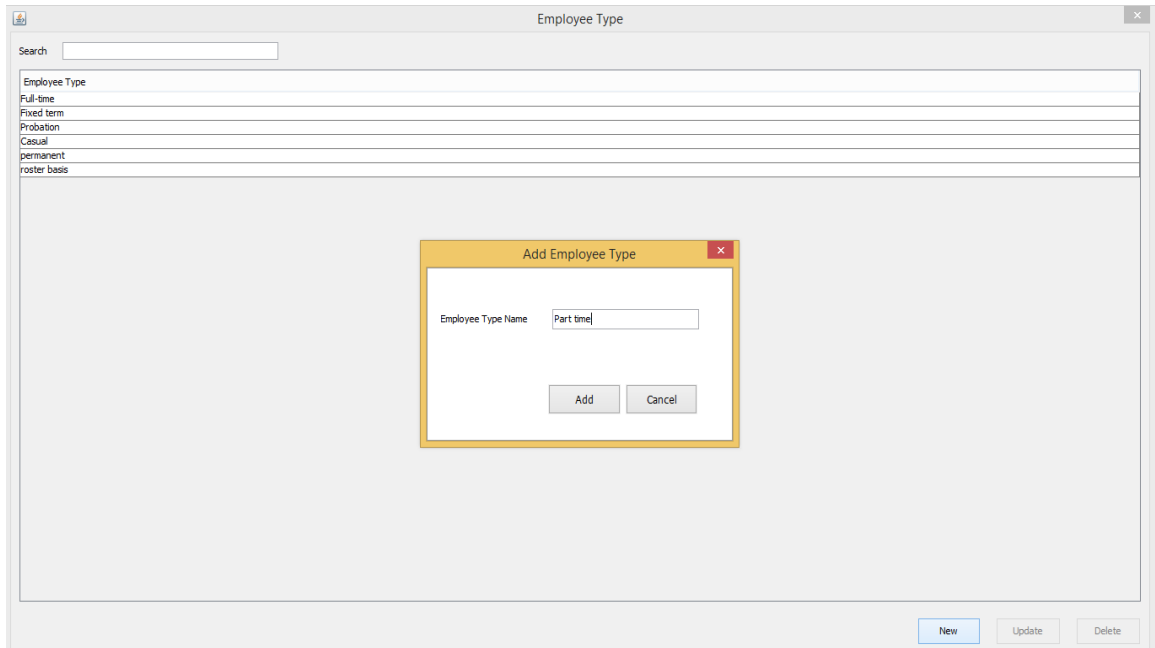
Employee List

First Name	Last Name	Address	Email	Mobile	Type	Action
Orange	Admin	Colombo	admin@orangelanka.c...	0111111111	admin	
Nuwan	Prasanna	No.23, Kottawa	nuwan@gmail.com	1234567891	admin	
Rasika	Perera	25	rasika@gmail.com	1225698741	admin	
Orange	RSM	Colombo	dimorsm@dimolanka.c...	0111111111	RSM	
Iresh	Madhushan	No.23, Dematagoda	iresh@orel.com	0745484564	RSM	
Maduka	Deshan	No.22, Kottawa	maduka@gmail.com	1345878945	RSM	
Orange	ASM	Colombo	dimosm@dimolanka...	0111111111	ASM	
PRADEEP	THILAKERATHNE	NO 14, DEVI ROAD, W...	Pradeep.Thilakarathne...	0771522591	Rep	
SHANAKA	GUNATHILAKE	NO 20/1, SRI DHARAM...	Shanaka.Gunathilaka...	0777867881	Rep	
DUMINDU	PATHIRANAGF	MAI NIGA WATTF WA	Dumindu Pathiranae	0773917166	Rep	

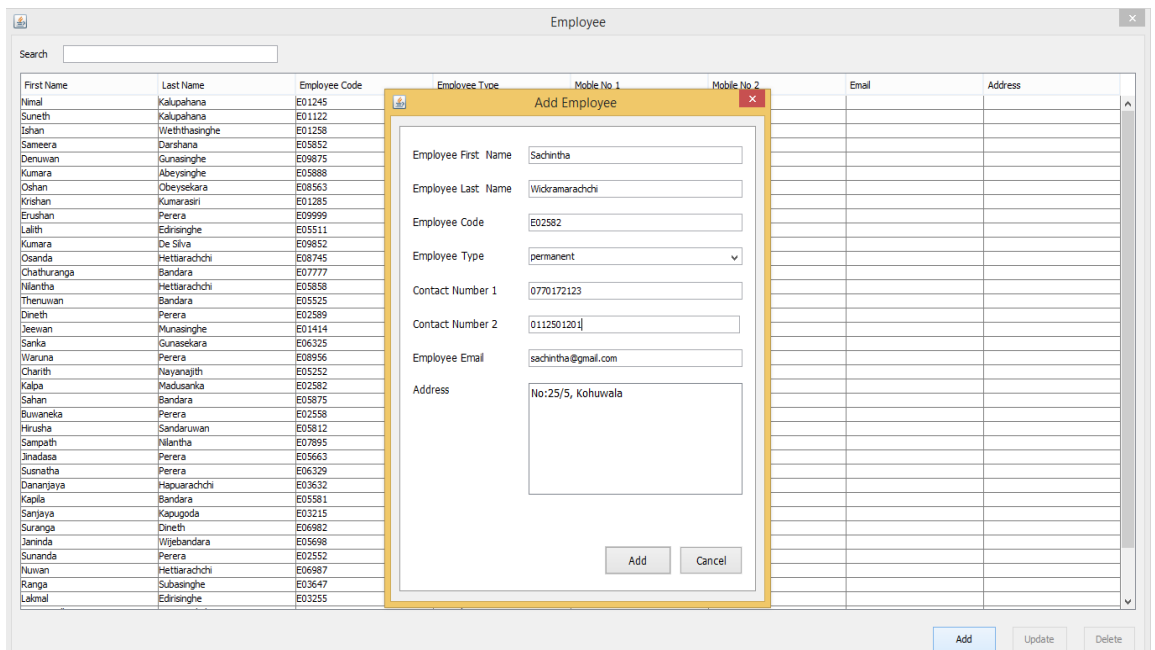
1 - 25 of 29 items

### *View Employee List*

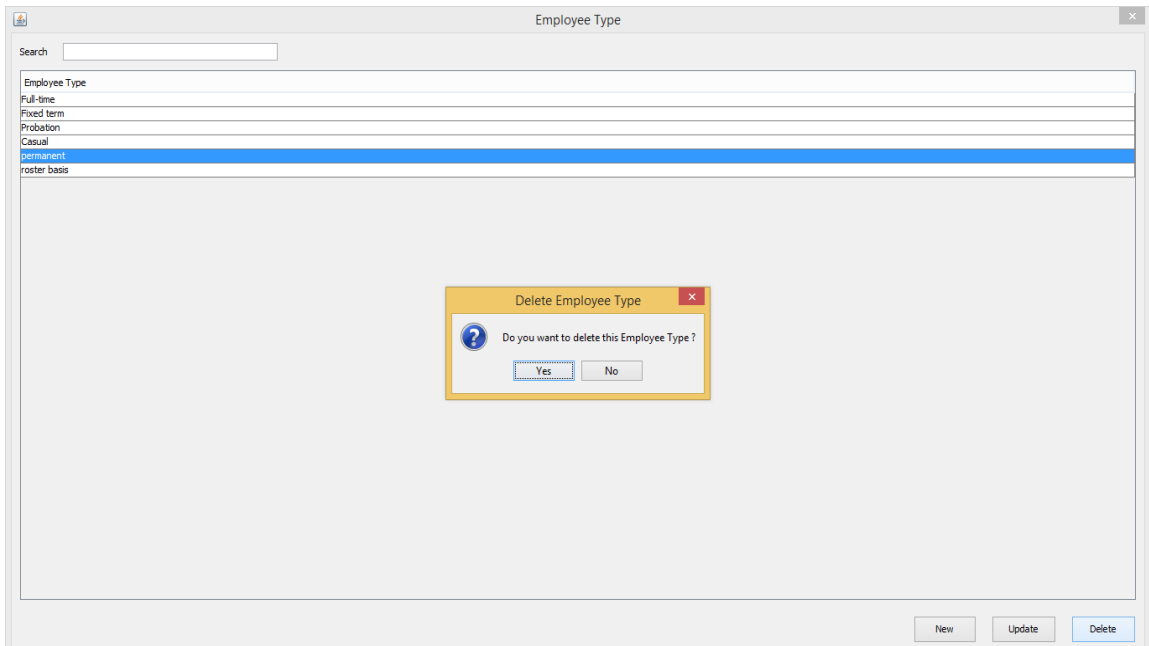
- POS Application



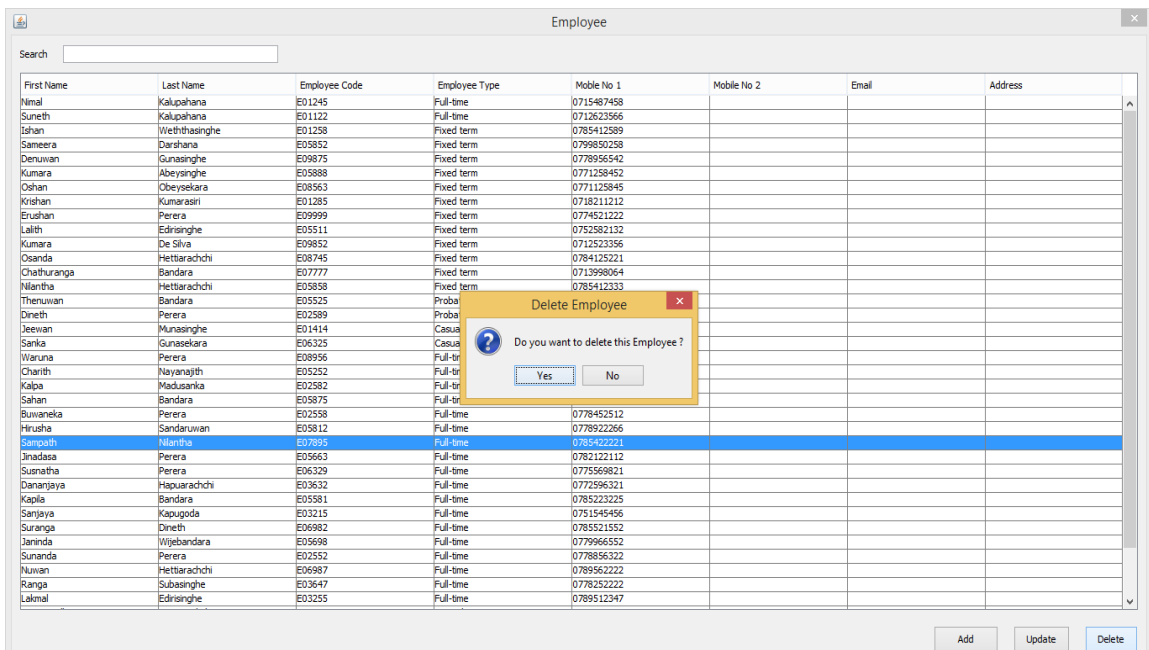
**Add Employee Type**



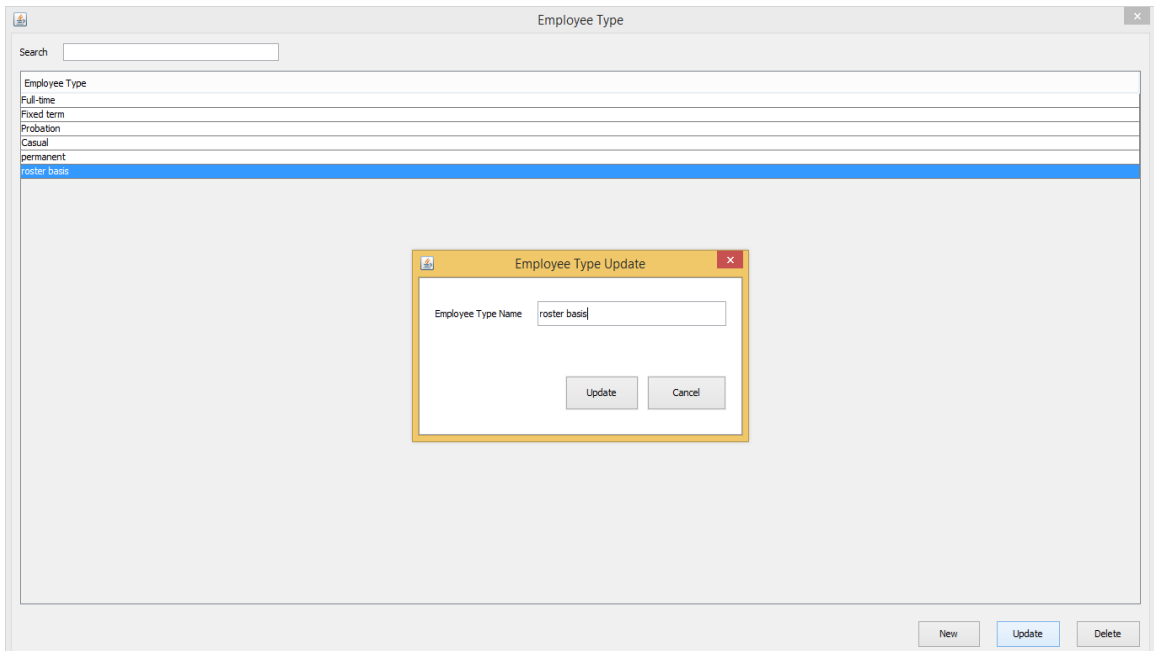
**Add Employee**



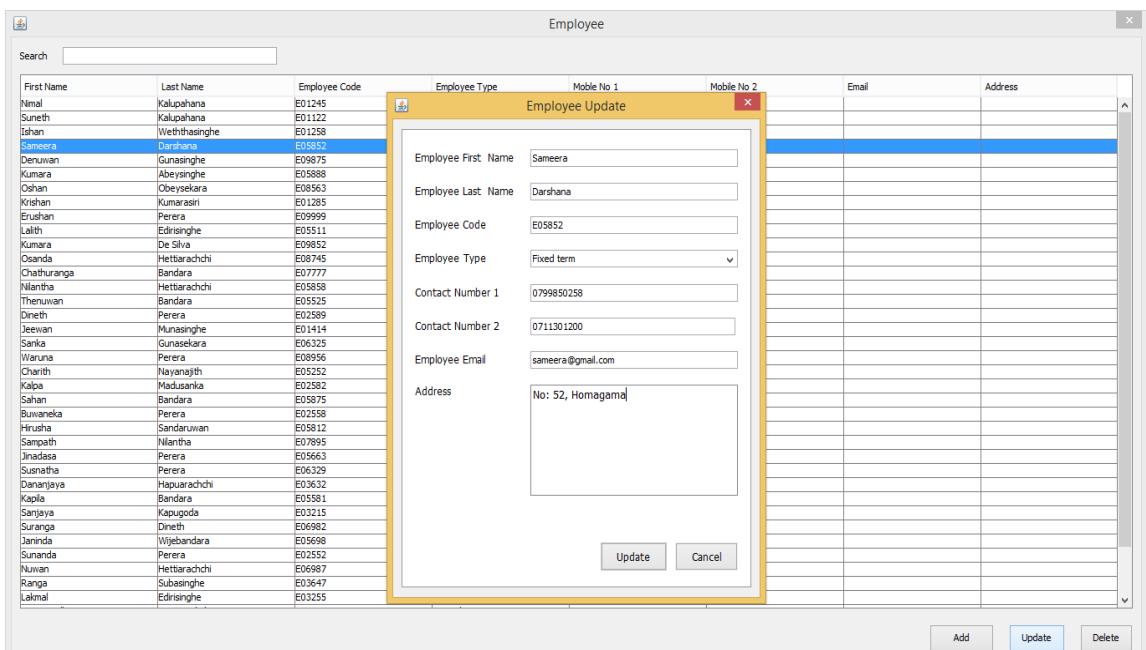
### Delete Employee Type



### Delete Employee



### *Update Employee Type*



### *Update Employee*



## II. Location and Are Management.

- Cloud application.

The screenshot shows the 'Add Location' form in the Orange Admin application. The browser address bar shows 'localhost/FORECAST-WEB/location/add?'. The left sidebar contains navigation options: Employee Management, User Management, Location Management (expanded), Product Management, PO Management, Gm Management, Add/Modify VAT, and Dealer List. The main content area is titled 'Add Location' and contains the following fields:

- Category\*: Company (dropdown)
- Parent\*: Select an Option (dropdown)
- Name\*: Hemantha Motors (text input)
- Allowance: 1000 (text input)
- Supervisor\*: Orange Admin (dropdown)

A 'Save' button is located at the bottom right of the form.

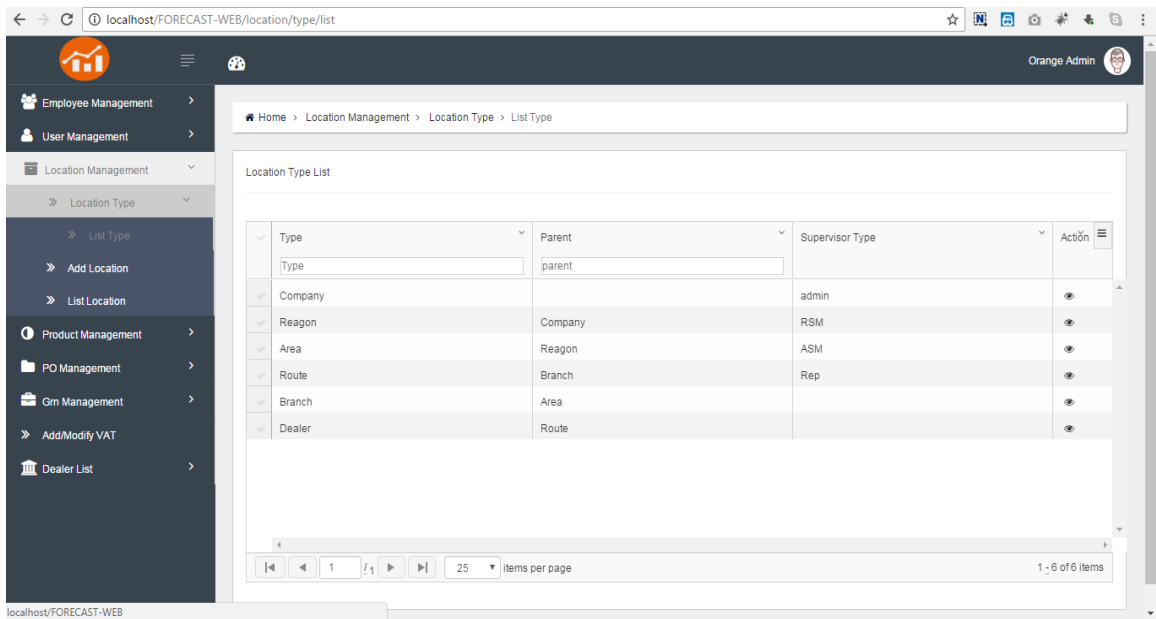
### *Add Location*

The screenshot shows the 'List Location' table in the Orange Admin application. The browser address bar shows 'localhost/FORECAST-WEB/location/list'. The left sidebar is the same as in the previous screenshot. The main content area is titled 'Location List' and contains a table with the following data:

Name	Type	Parent	Allowance	Action
Kandy	Branch	Orange AREA	0.00	Eye icon, Edit icon
Kandy Route 1	Route	Kandy	0.00	Eye icon, Edit icon
Auto Mart Service Station & Caean P...	Dealer	Kandy Route 1		Eye icon, Edit icon
Fiat Mama Motors	Dealer	Kandy Route 1		Eye icon, Edit icon
Pradeep Motors	Dealer	Kandy Route 1		Eye icon, Edit icon
Sumedha Tyre Centre	Dealer	Kandy Route 1		Eye icon, Edit icon
Thenuka Auto Service	Dealer	Kandy Route 1		Eye icon, Edit icon
Thilanka Motors	Dealer	Kandy Route 1		Eye icon, Edit icon
Up - Country Motors	Dealer	Kandy Route 1		Eye icon, Edit icon
A M S Motors	Dealer	Kandy Route 1	0.00	Eye icon, Edit icon

At the bottom of the table, there is a pagination control showing '1 / 1' and '25 items per page'.

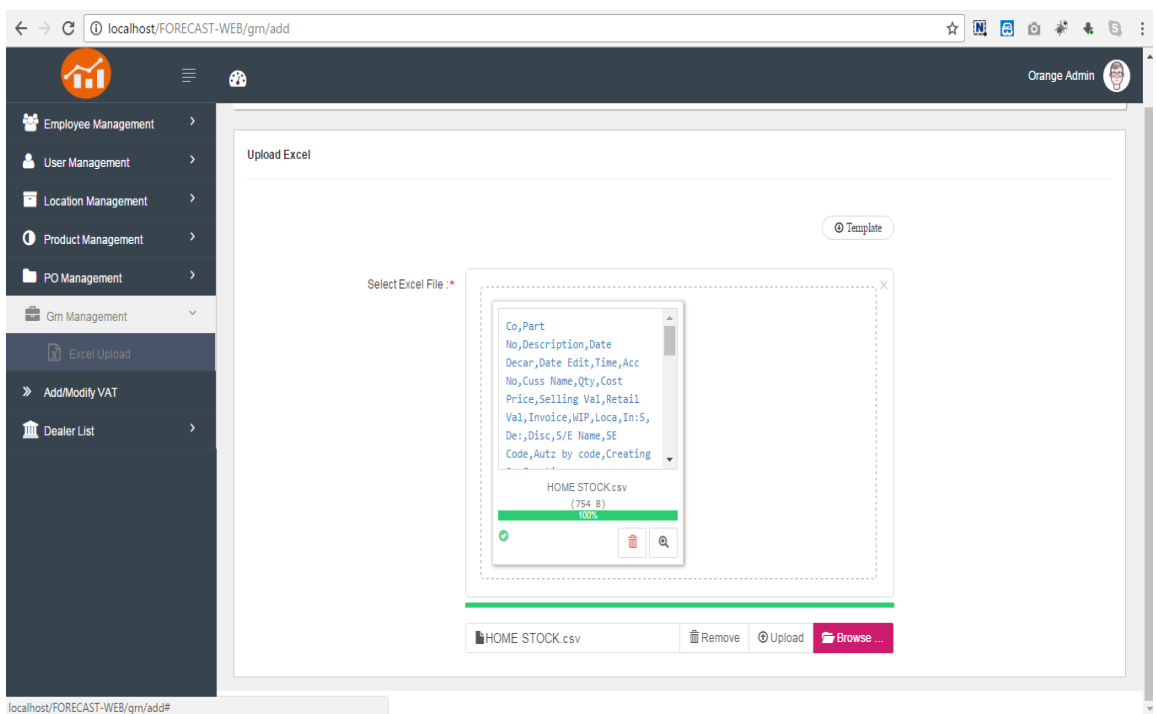
### *Location List*



### *Location Types*

## III. GRN Management module.

- Cloud application.



### *Upload GRN Excel*

- Point of sale.

New Orange GRN

Search

Part No	Description	Buying Price	Invoiced Qty	MRP	Accepted Qty	Barcode	Return Qty	Reject Reason
WG1-040CM	GLS Pin type 40W Clear Bulb	2055.45	5	2569.32	5	1-040CM		
WG1-060C	GLS Pin type 60W Clear Bulb	2398.04	3	2997.54	3	1-060C		
WG1-025C	GLS Pin type 25W Clear Bulb	554.97	10	693.71	10	1-025C		

Total Amount (approx) : 23,021.07      Vat : 15.0%     

Total Item Quantity : 3

### Add New GRN

GRN

Orange GRN      Accepted Orange GRN

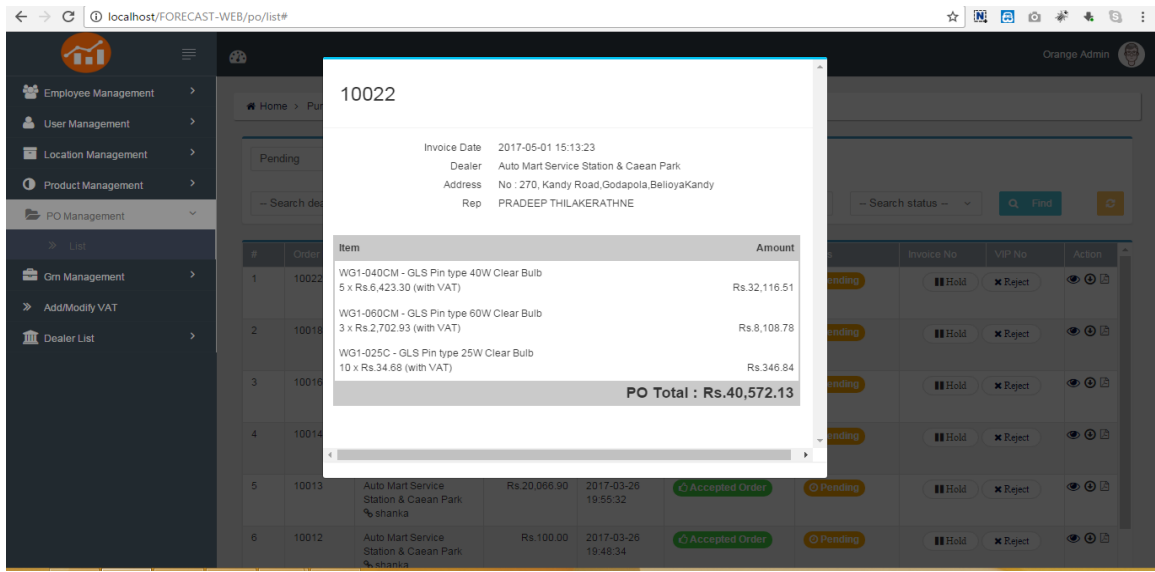
Search

Wip No	Invoice No	Created Date	Updated Date
28	28	2017/03/24	2017/03/24
28	28	2017/03/26	2017/03/26
28	28	2017/03/26	2017/03/26
28	30	2017/03/26	2017/03/26
28	12	2017/03/26	2017/03/26
105	106	2017/03/28	2017/03/28
28	50	2017/05/01	2017/05/01

### GRN List

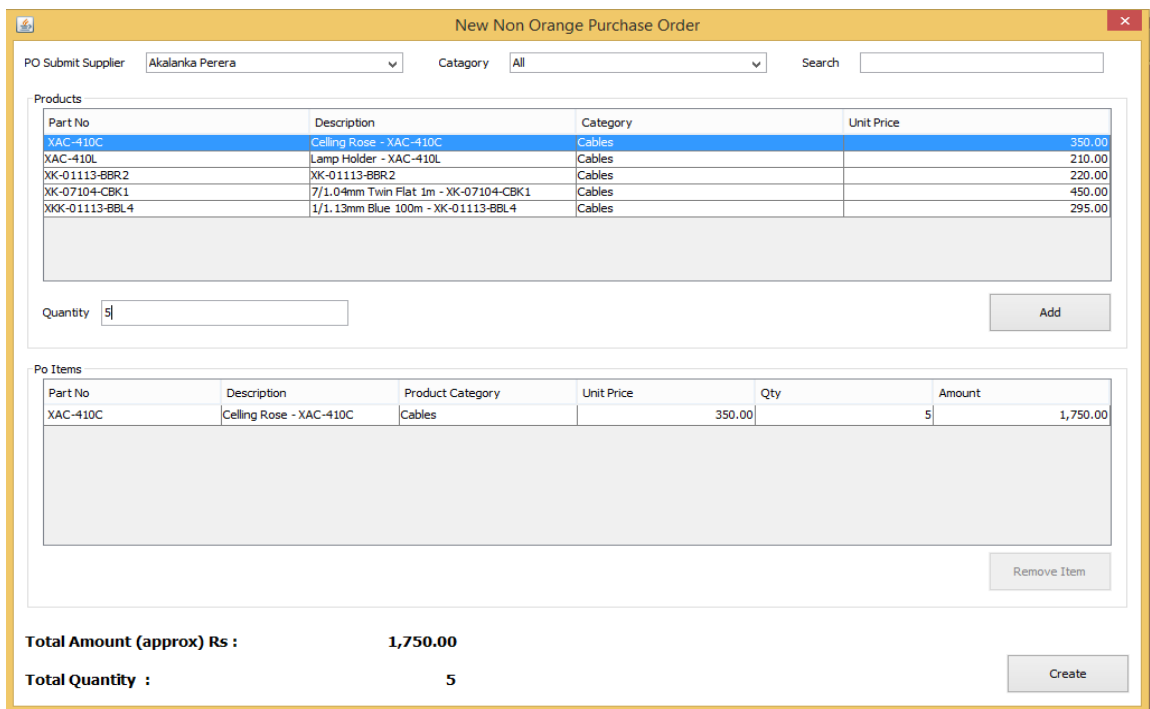
## IV. PO Management Module

- Cloud application.

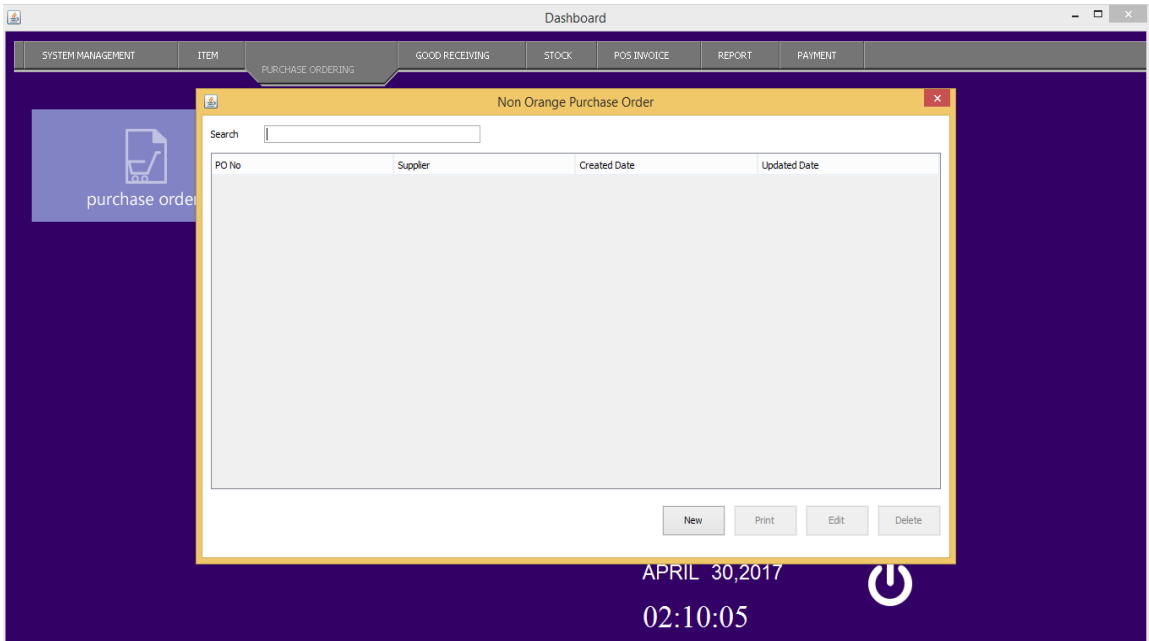


### *Purchase Order List*

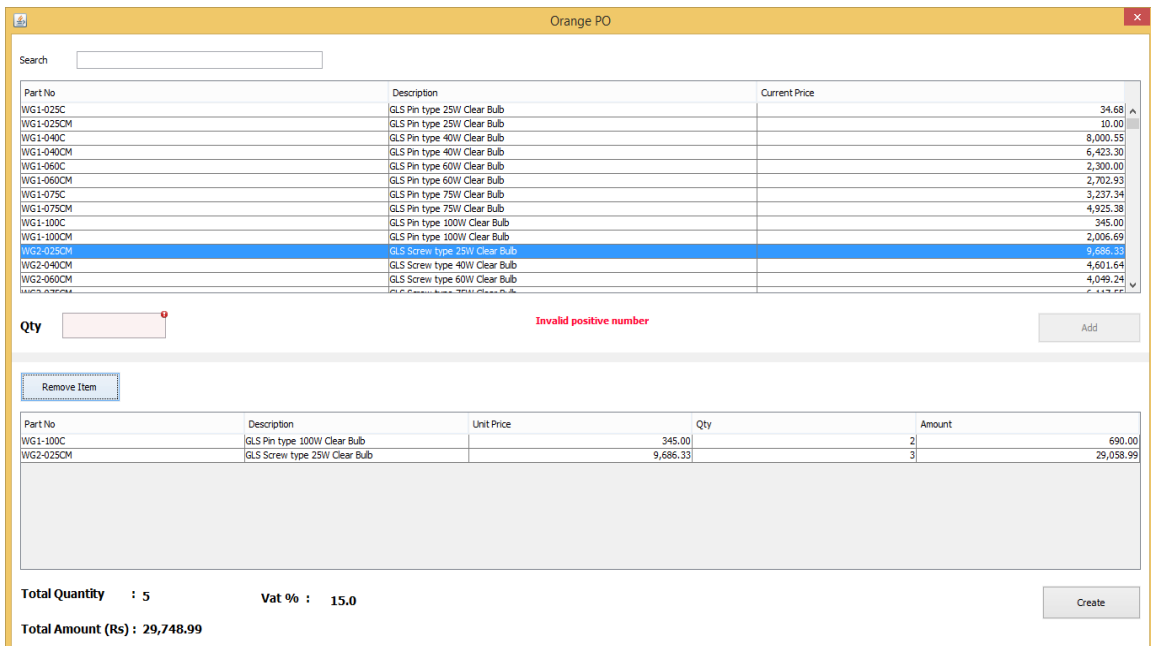
- Point of sale.



### *Add new none orange purchase order*



*None orange purchase order list*



*Add Orange purchase order*

**Update Non Orange Purchase Order**

PO Submit Supplier: Akalanka Perera    Category: All    Search:

**Product Details**

Part No	Description	Category	Unit Price
XAC-410C	Celling Rose - XAC-410C	Cables	350.00
XAC-410L	Lamp Holder - XAC-410L	Cables	210.00
XK-01113-BBR2	XK-01113-BBR2	Cables	220.00
XK-07104-CBK1	7/1.04mm Twin Flat 1m - XK-07104-CBK1	Cables	450.00
XKK-01113-BBL4	1/1.13mm Blue 100m - XK-01113-BBL4	Cables	295.00

Quantity:    

**Product Items**

Part No	Description	Product Category	Unit Price	Qty	Amount
XAC-410C	Celling Rose - XAC-410C	Cables	350.00	5	1,750.00

**Total Amount (approx) Rs : 1,750.00**

**Total Quantity : 5**   

*Update purchase order*

**Orange Purchase Order**

Part No	Description	Product Category	Unit Price	Qty	Amount
WG1-100C	GLS Pin type 100W Clear Bulb	mypos_default	345.00	2	690.00
WG2-025CM	GLS Screw type 25W Clear Bulb	mypos_default	9,686.33	3	29,059.00

**Total Amount (approx) Rs : Rs 29,749.00    Vat : 15.0%**

**Total Quantity : 5**   

*Orange purchase order list*

## V. Product and Product Category Management Modules

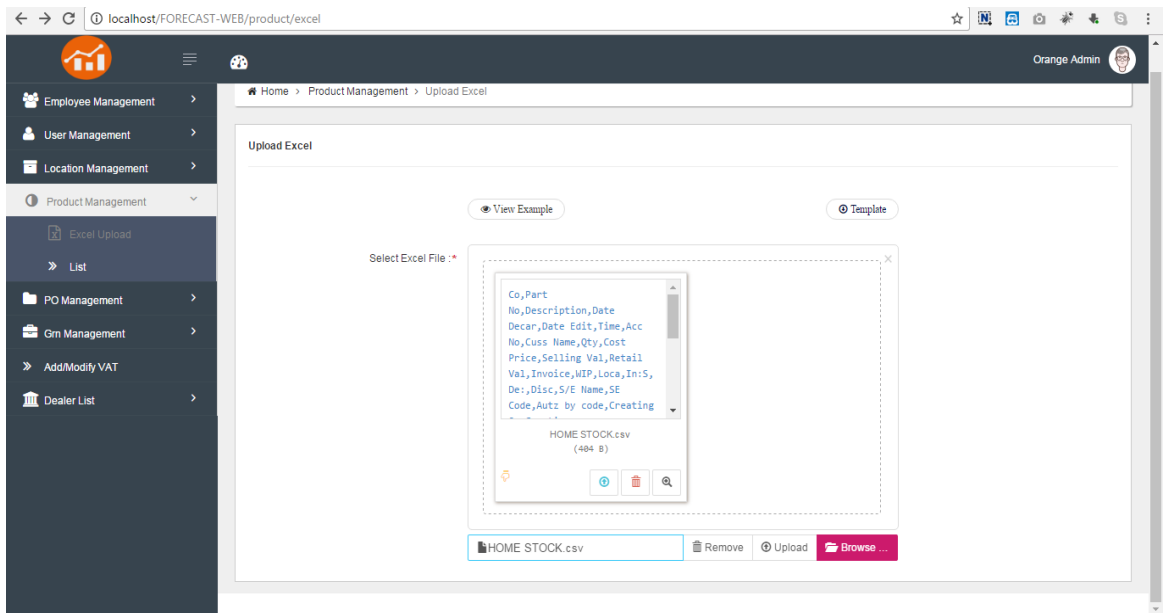
- Cloud application.

#	Part No	Description	Stock Qty	Selling Price +(VAT)	Actions
#1	WG1-025C	GLS Pin type 25W Clear Bulb	0	52,670.00	
#2	WG1-025CM	GLS Pin type 25W Clear Bulb	0	2,886.62	
#3	WG1-040C	GLS Pin type 40W Clear Bulb	1	1,158.27	
#4	WG1-040CM	GLS Pin type 40W Clear Bulb	2	3,909.15	
#5	WG1-060C	GLS Pin type 60W Clear Bulb	0	1,882.18	
#6	WG1-060CM	GLS Pin type 60W Clear Bulb	3	1,447.84	
#7	WG1-075C	GLS Pin type 75W Clear Bulb	392	1,561.90	
#8	WG1-075CM	GLS Pin type 75W Clear Bulb	0	1,249.51	
#9	WG1-100C	GLS Pin type 100W Clear Bulb	4	12,846.59	

### *Product List*

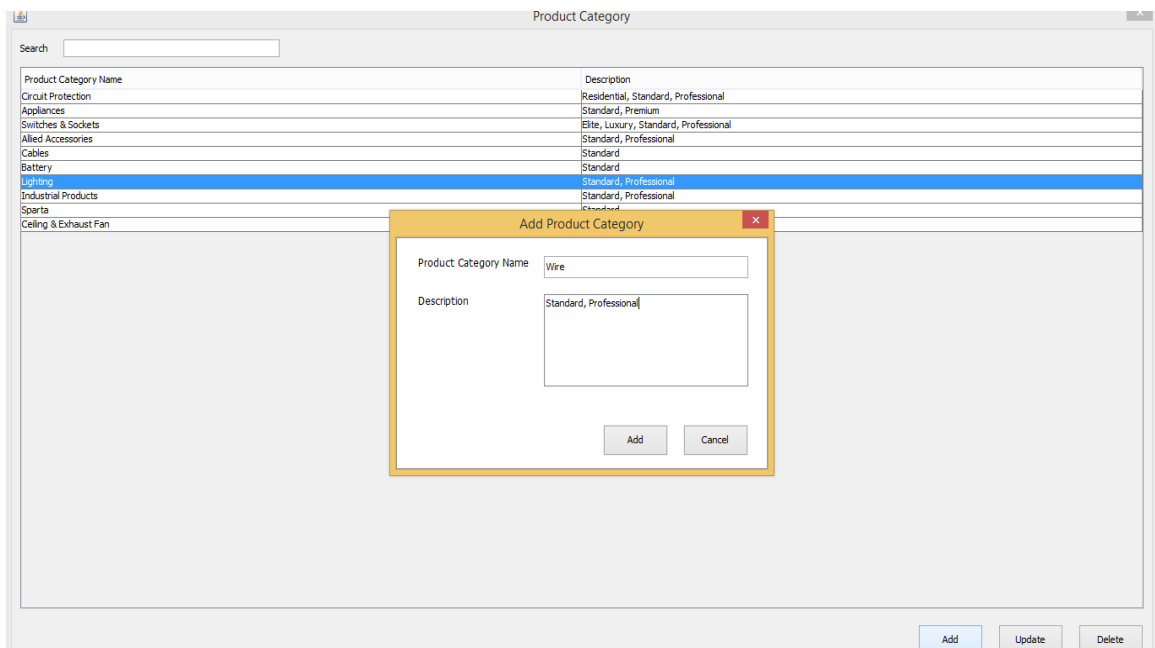
	A	B	C	D	E	F	G
	Part number	Description	Total stock quantity	AMD VSD	Average mthly demand	Average cost	Selling price
1							
2	AS09800517	AUTOBASI	0	0.03	0	1870.021	2898
3	AS5010013	EMPTY CA	0	0.83	0	34.6944	46
4	AS5010014	EMPTY CA	0	0.64	0	37.7083	50
5	AS5010015	EMPTY CA	0	0.99	0	100	130
6	AS9880081	LESONAL I	0	0.03	0	1281.233	1992
7	ASBMA004 1L	INTERSWI	0	0.03	0	1148.61	1212.06
8	ASCARCOLOR	CAR COLO	0	0.03	0	55.1541	95
9	ASCLD260	INTERLAC	0	0.03	0	9224.578	12000
10	ASCLF384	INTERLAC	0	0.02	0	7500	9750
11	ASCLF684	INTERIAC	0	0.03	0	294.16	11492
12	ASCLS665	INTERLAC	0	0.03	0	294.16	310.41
13	ASECS740	INTERGAR	0	0.03	0	400.61	422.74
14	ASEGA088 1L	INTERGAR	0	0.03	0	352.99	372.49
15	ASEPA001 1L	INTERGAR	0	0.03	0	386.6	407.96
16	ASEPA530	INTERGAR	0	0.03	0	8200	10660

### *Product excel Upload*



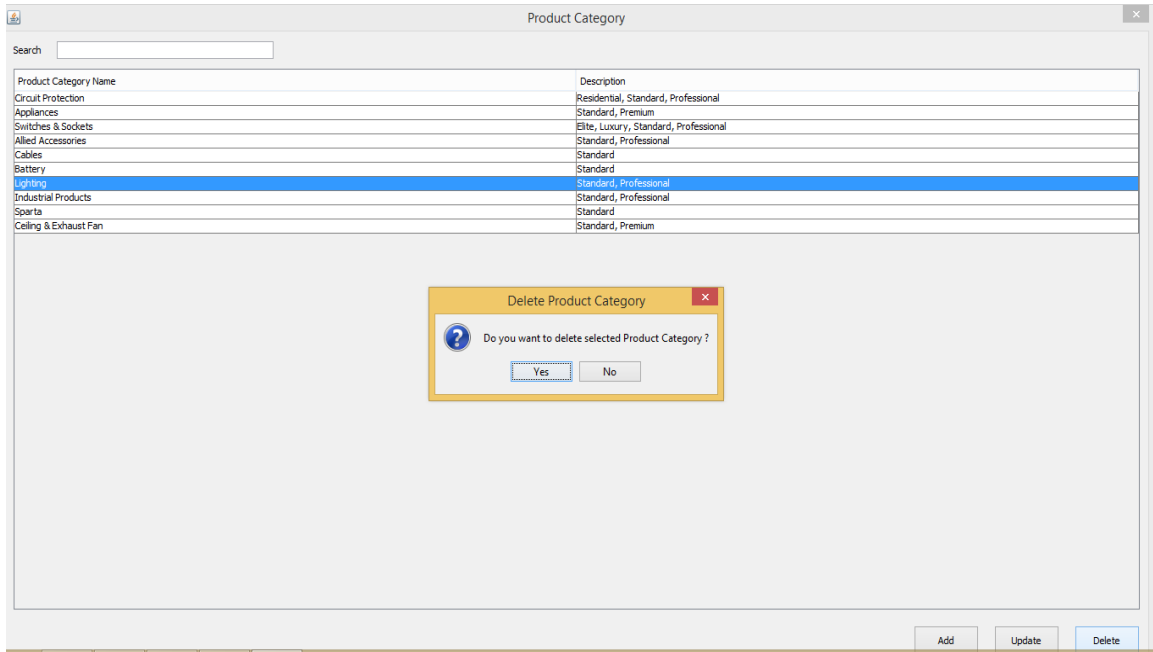
### *Product excel Upload*

- Point of sale.

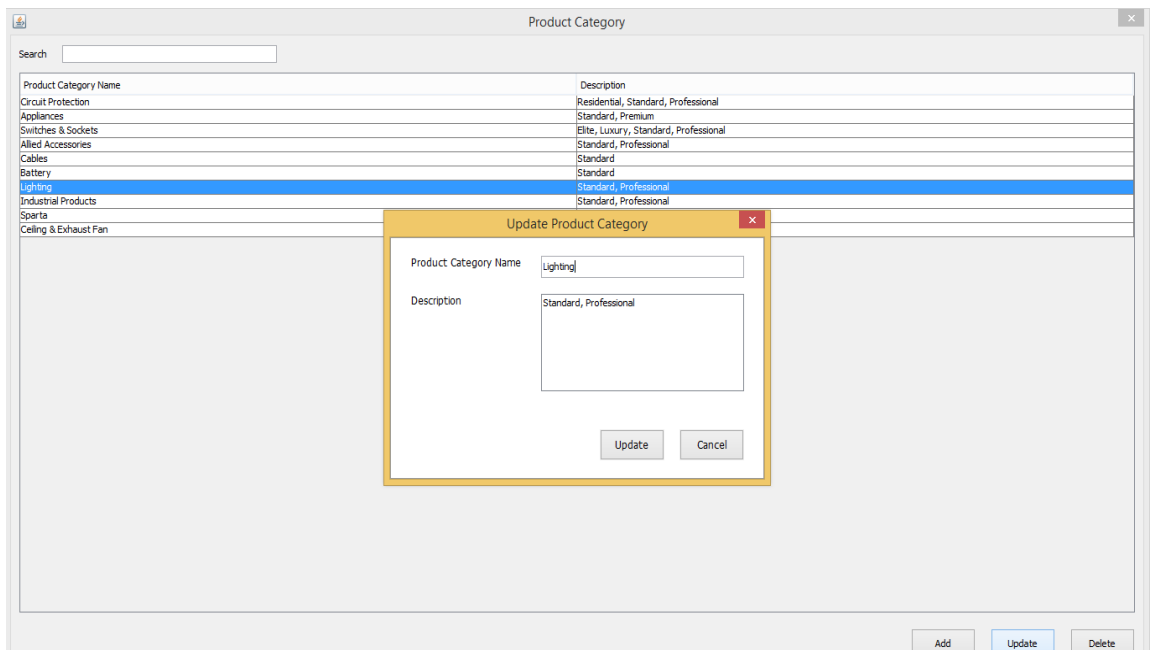


*Figure 5.2.1 Add product category*

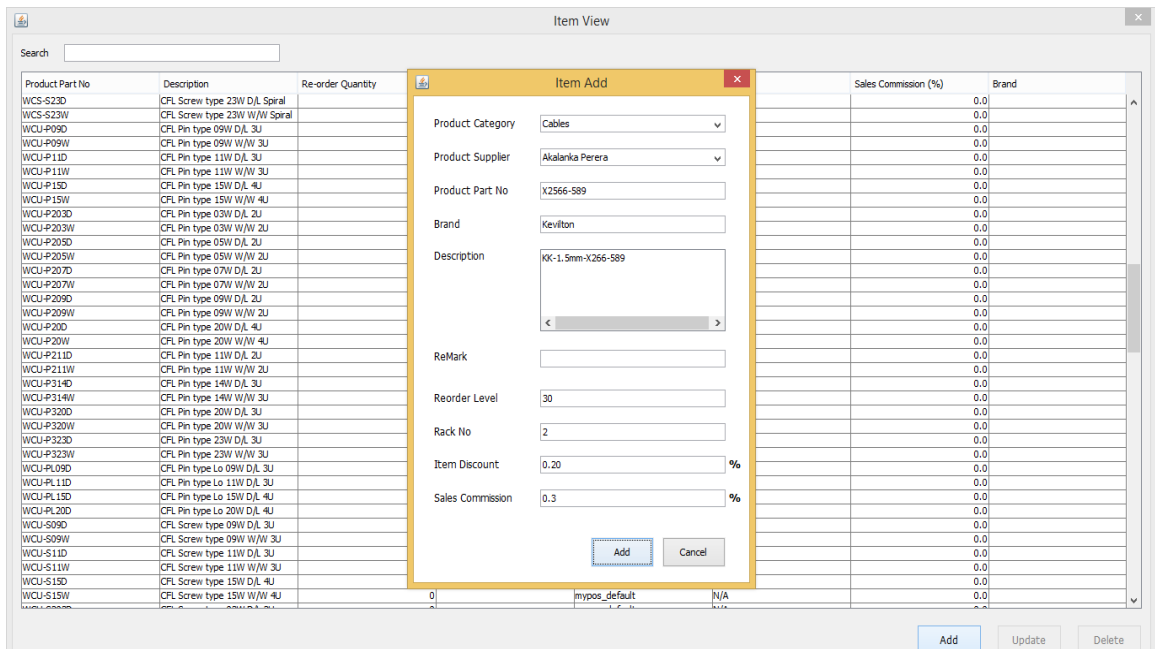




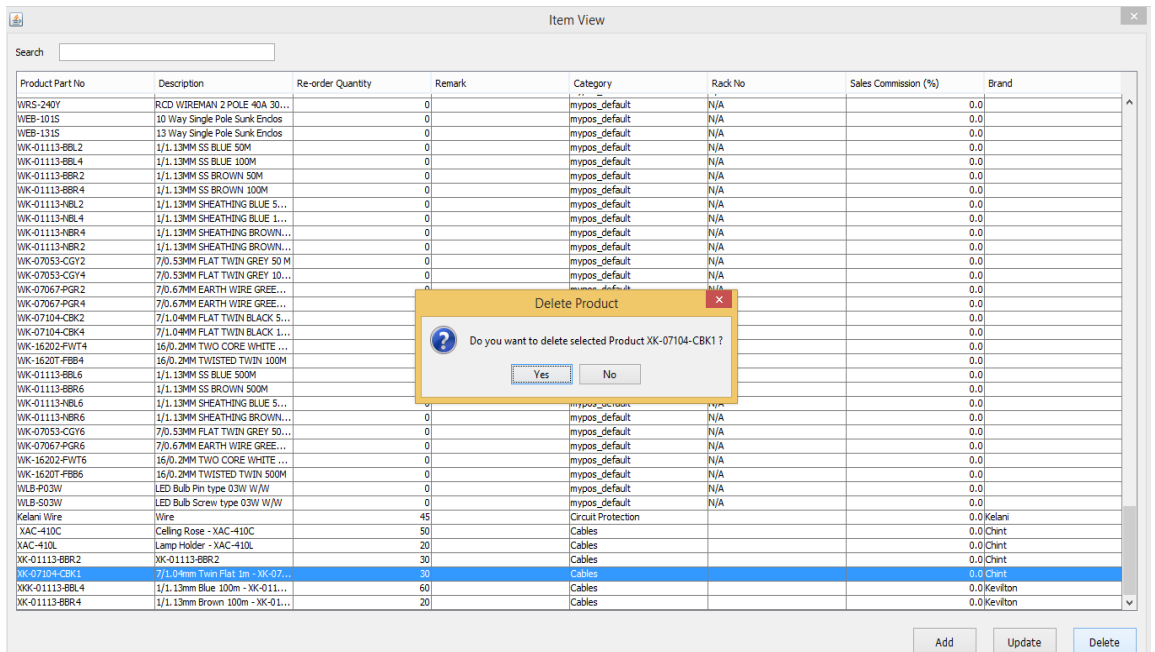
***Delete product category***



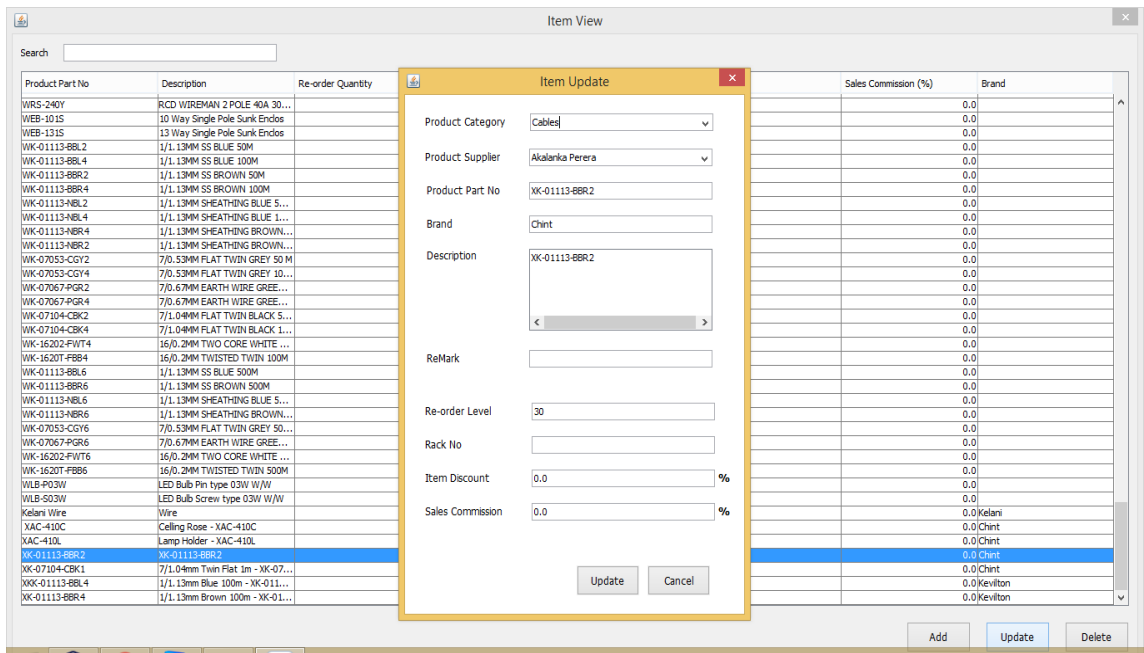
***Update Product Category***



### Add Products



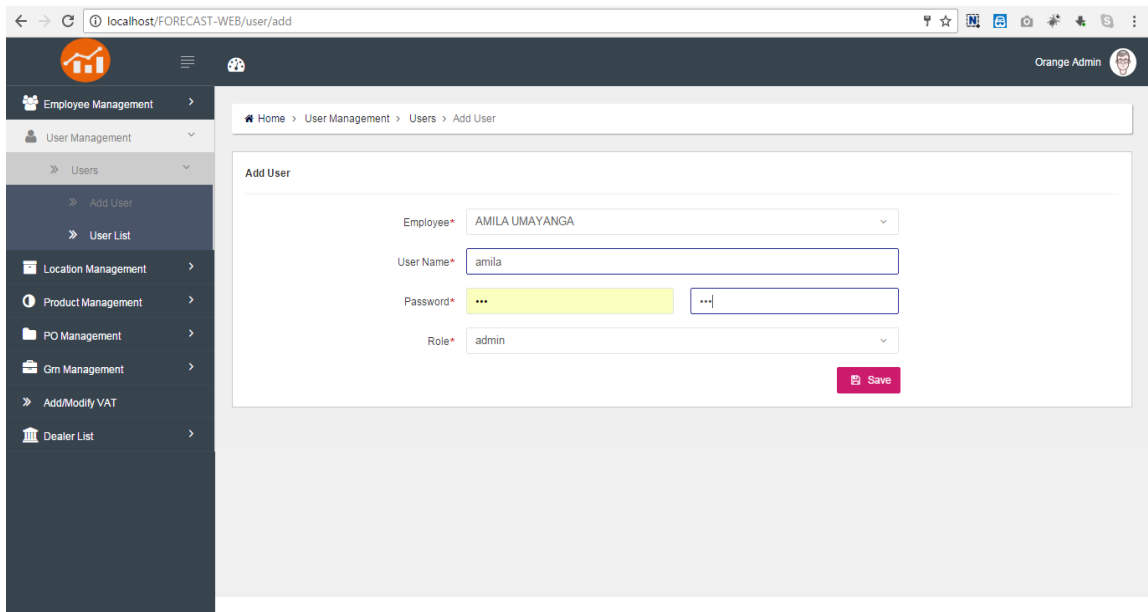
### Delete Product



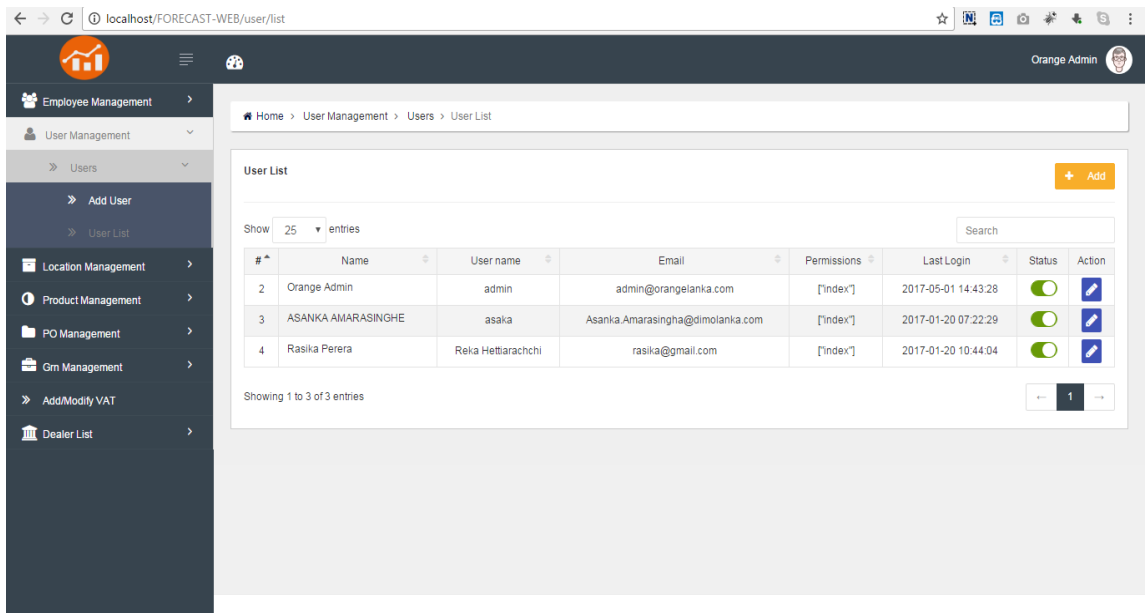
*Product Update*

## VI. User and User Type Management Modules

- Cloud application.

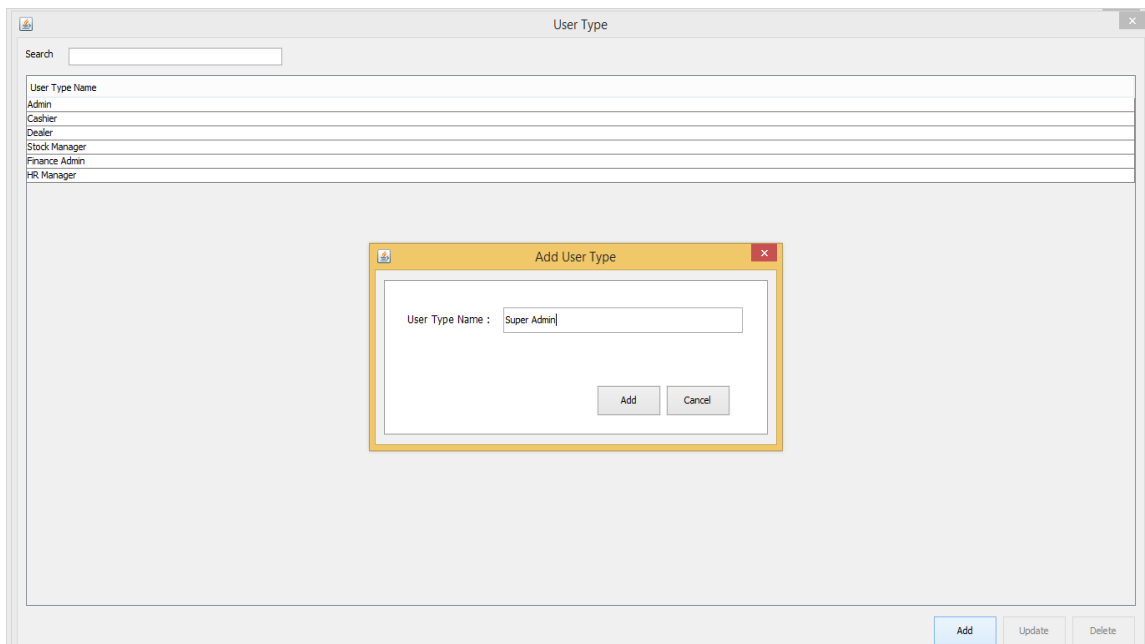


*Add User*

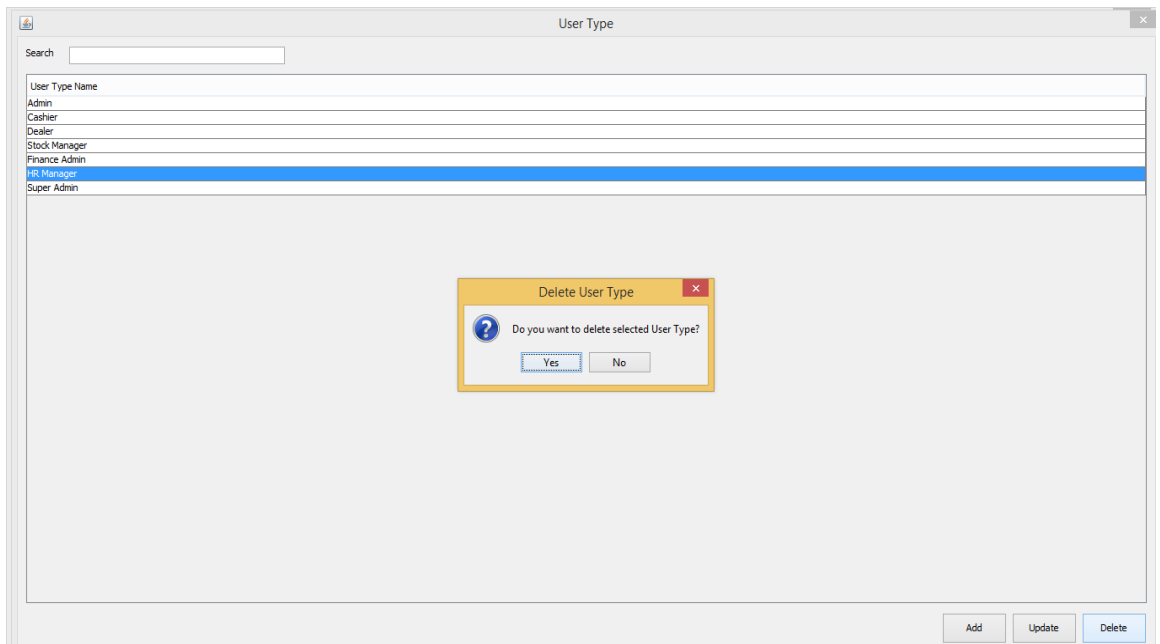


### *User List*

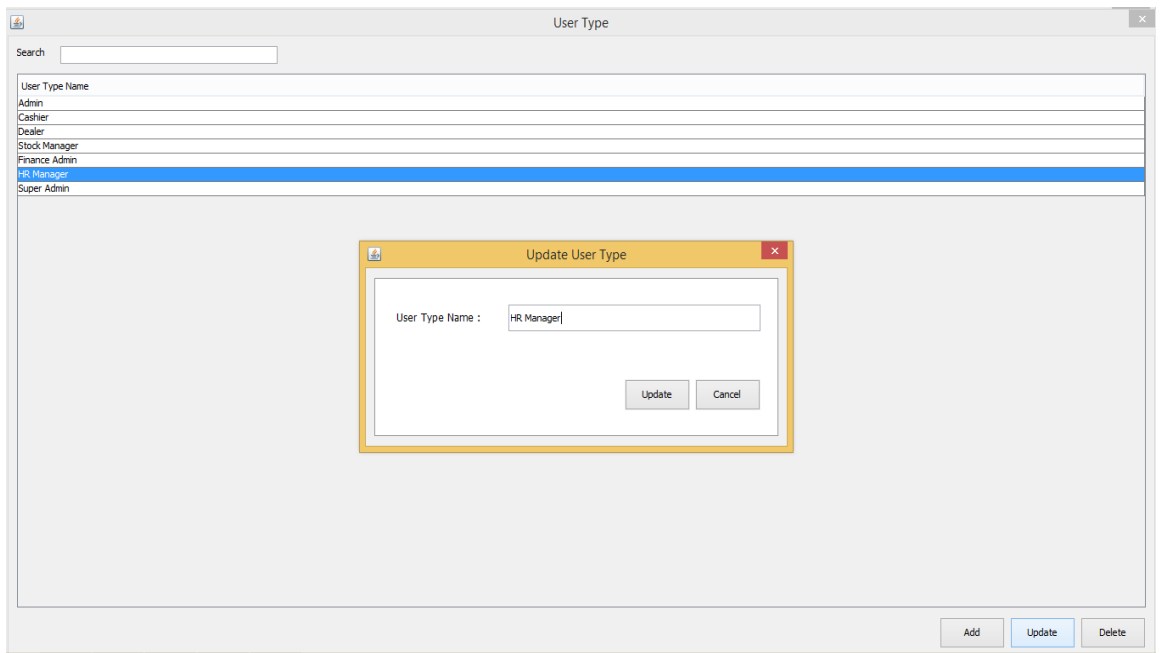
- Point of Sale.



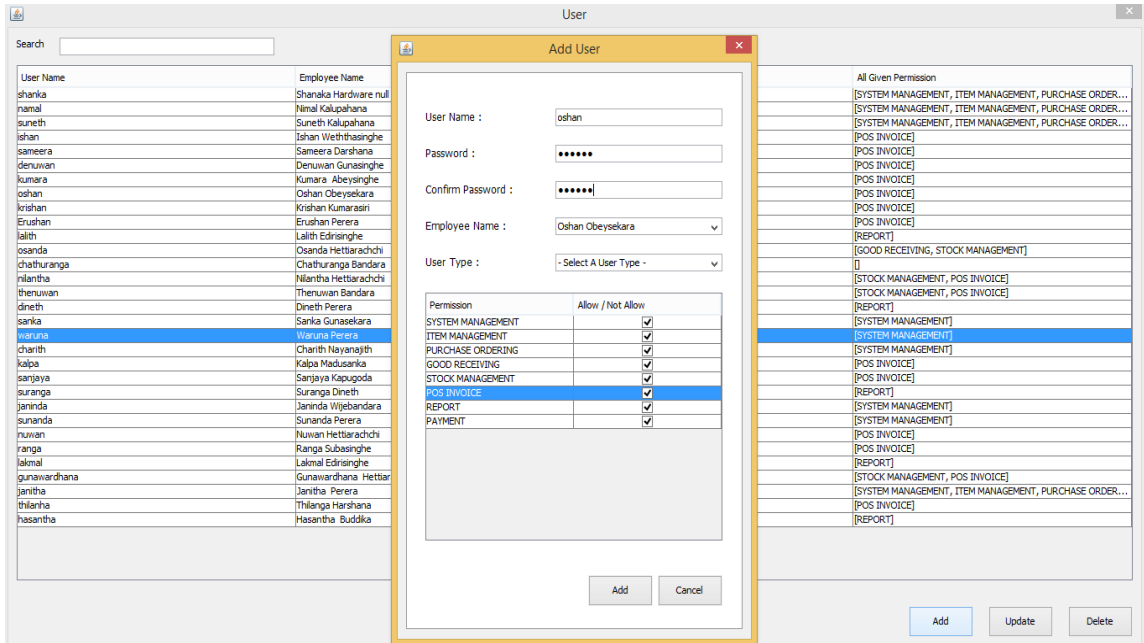
### *Add User Type*



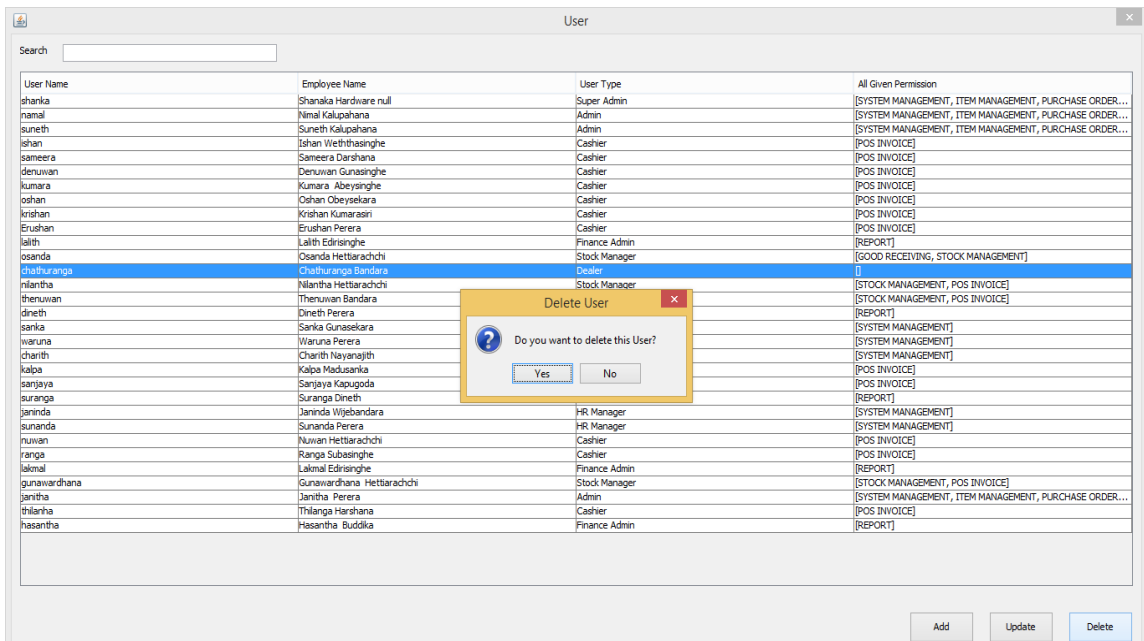
*Delete User Types*



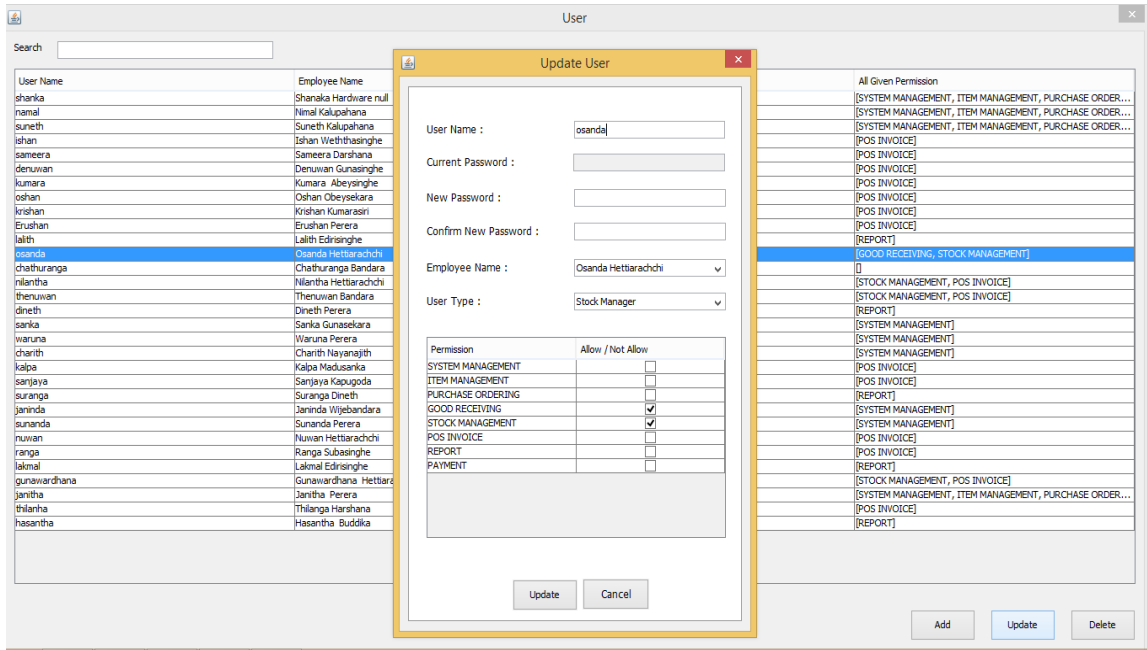
*Update User Type*



**Add User**



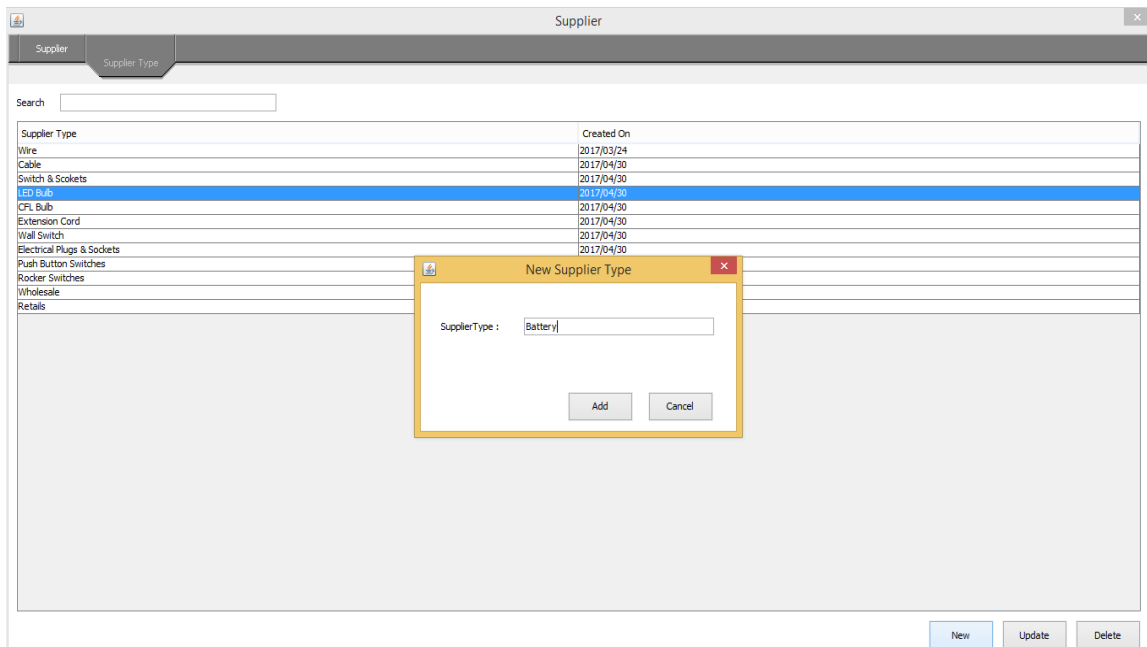
**Delete User**



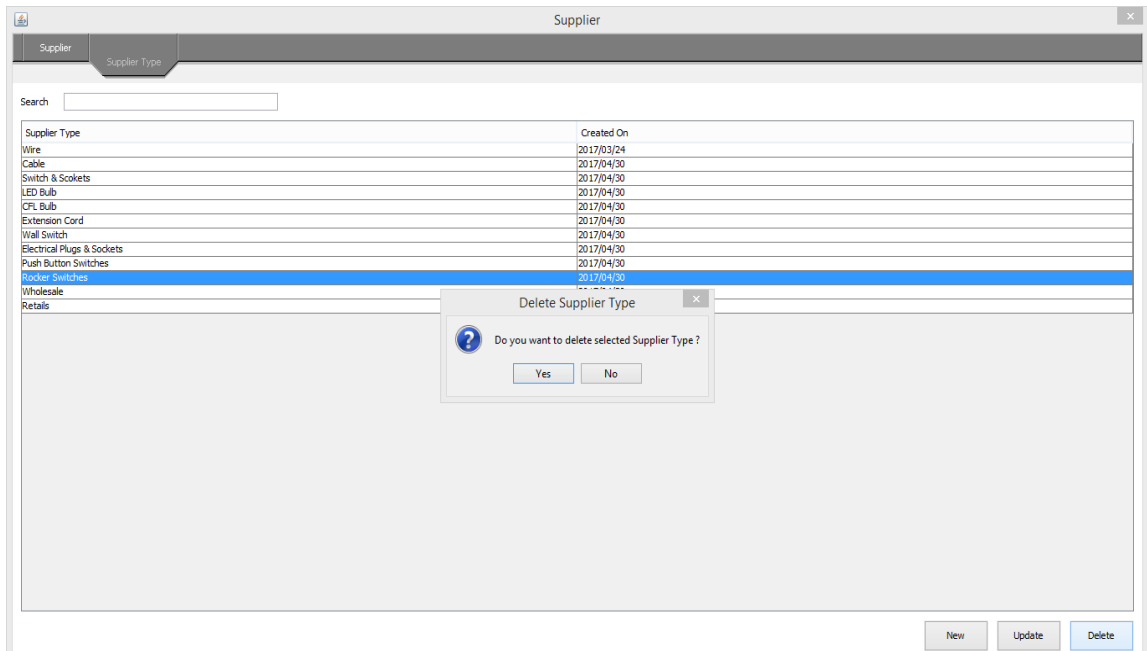
*Update User*

## VII. Supplier Management Module

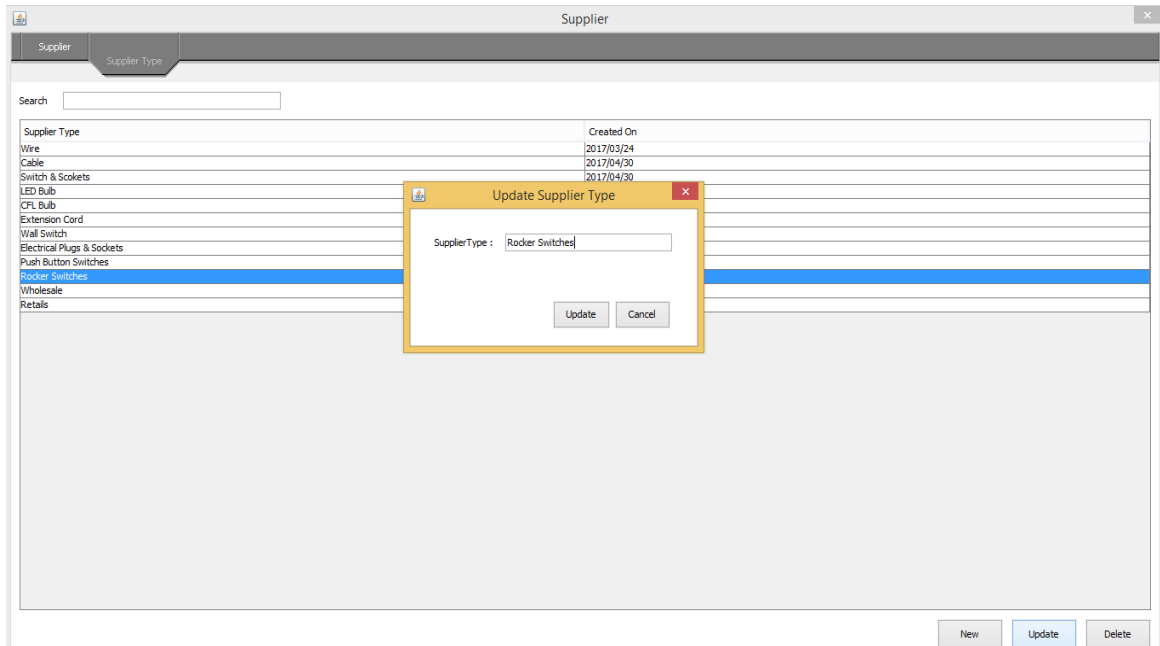
- Point of Sale.



*Add supplier Type*

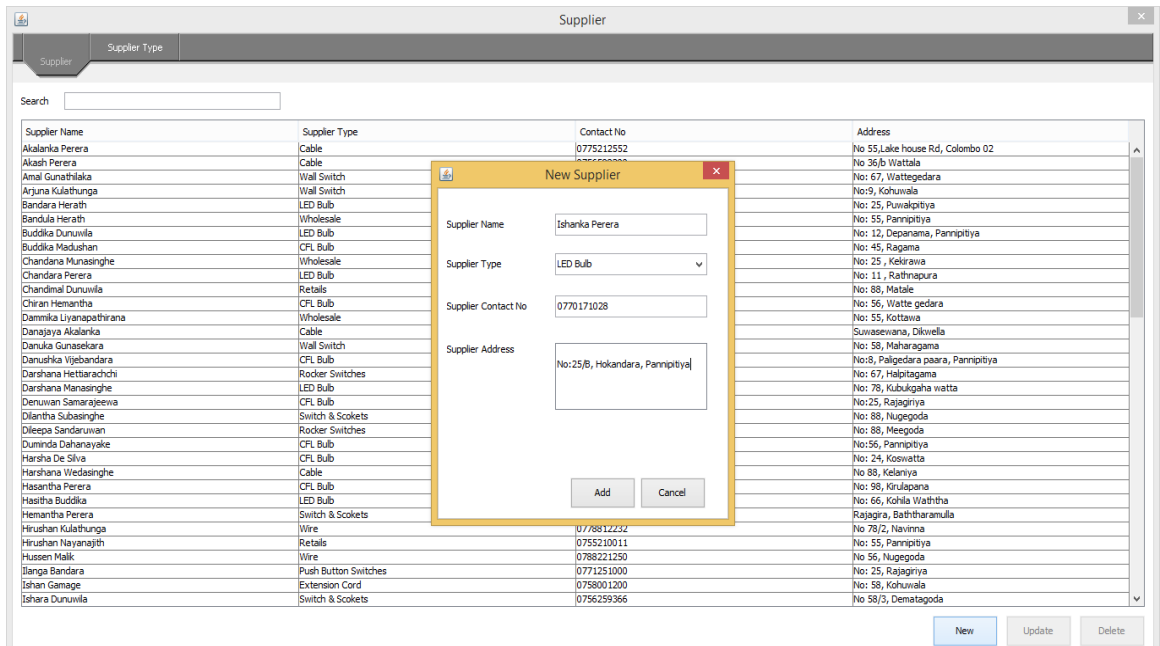


**Delete Supplier Type**

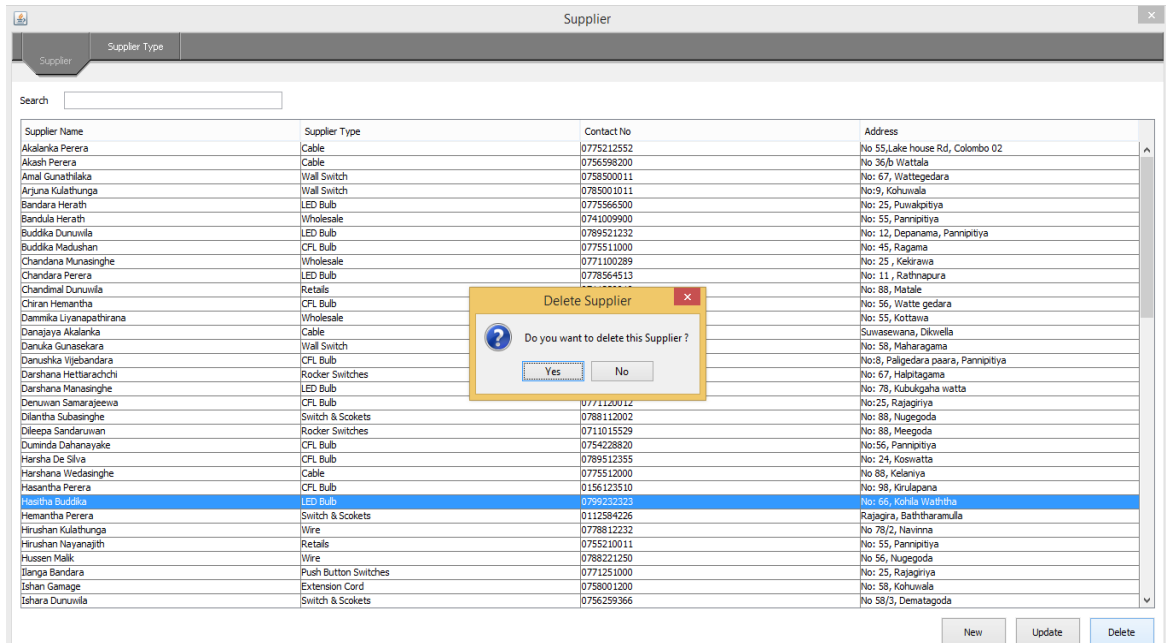


**Update supplier type**

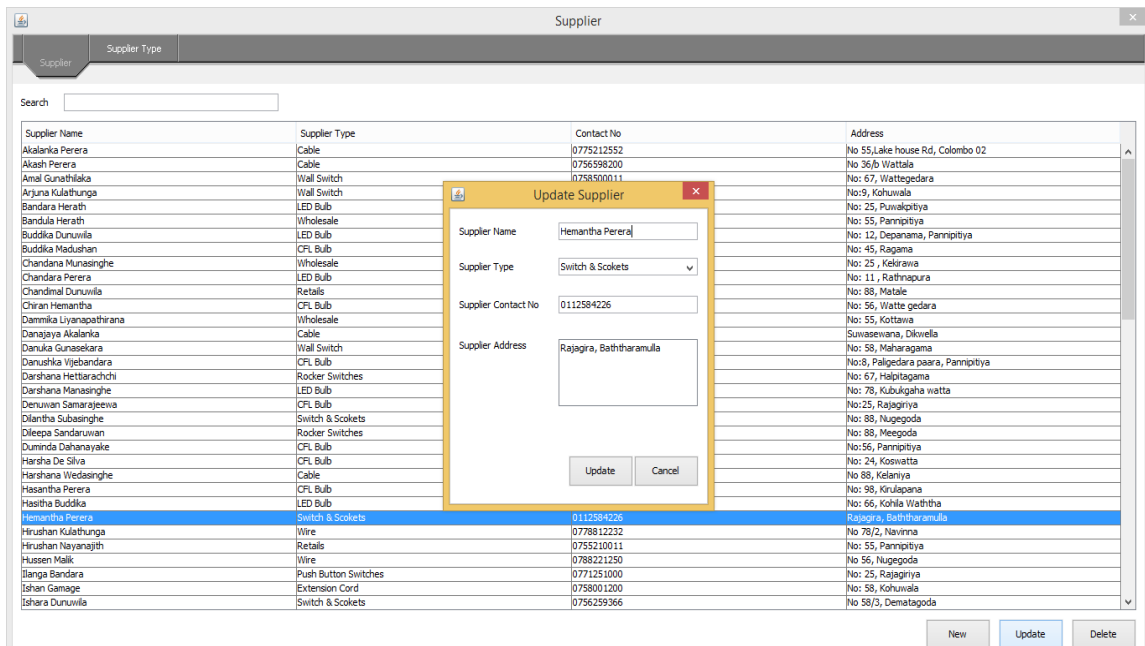




*Add new supplier*



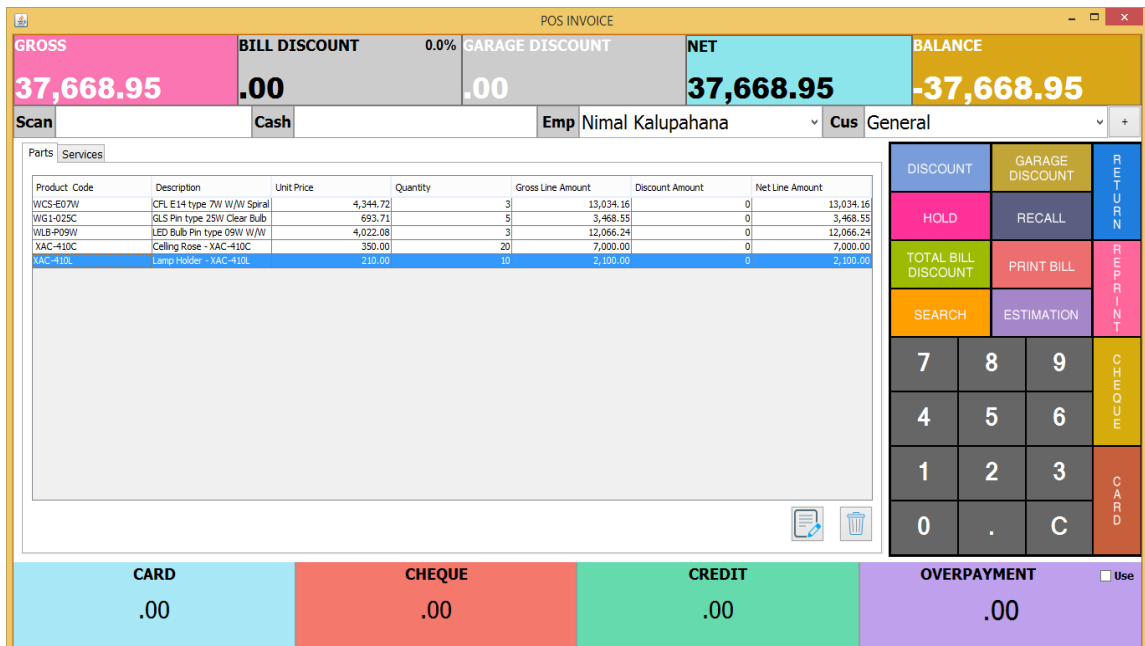
*Delete supplier*



**Update supplier**

**VIII. Sales and invoicing module**

- Point Of sale.



**Add Invoice**

POS INVOICE

Product And Service Search

**GROSS** 37,668.95

**BALANCE** -37,668.95

Parts Services

Search: [ ] Category: ALL

Part No	Description	Category	Current Price	Previous Price	Available Qty	Discount	Rack No
WLB-P07W	LED Bulb Pin type...	mypos_default	513.87	0.00	10	0.0	N/A
WLB-P09D	LED Bulb Pin type...	mypos_default	2,055.45	0.00	15	0.0	N/A
WLB-G03D	LED Bulb Screw t...	mypos_default	2,569.32	0.00	1	0.0	N/A
WLB-S05D	LED Bulb Screw t...	mypos_default	144.78	0.00	1	0.0	N/A
WLB-S05W	LED Bulb Screw t...	mypos_default	2,312.39	0.00	3	0.0	N/A
WLB-S07D	LED Bulb Screw t...	mypos_default	2,055.45	0.00	2	0.0	N/A
WLB-S07W	LED Bulb Screw t...	mypos_default	4,735.25	0.00	7	0.0	N/A
WLB-S09D	LED Bulb Screw t...	mypos_default	3,247.60	0.00	2	0.0	N/A
WLB-S09W	LED Bulb Screw t...	mypos_default	11,952.47	0.00	2	0.0	N/A
Kelani Wire	Wire	Circuit Protection	550.00	0.00	440	0.0	
XX-01113-8BR2	XX-01113-8BR2	Cables	220.00	0.00	3500	0.0	
XX-01113-8BR4	1/1.13mm Brown ...	Cables	350.00	0.00	1000	0.0	
XX-07104-CBK1	7/1.04mm Twin FL...	Cables	450.00	0.00	4000	0.0	
XXK-01113-8BL4	1/1.13mm Blue L...	Cables	295.00	0.00	5000	0.0	

Qty: 0  Current Price  Previous Price

click on search

General

DISCOUNT GARAGE DISCOUNT RETURN

HOLD RECALL

TOTAL BILL DISCOUNT PRINT BILL REPRINT

SEARCH ESTIMATION

7 8 9 CHEQUE

4 5 6

1 2 3 CARD

0 . C

OVERPAYMENT  Use .00

*Search Item for invoice*

POS INVOICE

**GROSS** 37,668.95 **BILL DISCOUNT** 0.00 **GARAGE DISCOUNT** 0.00 **NET** 37,668.95 **BALANCE** -37,668.95

Scan Cash

Card Payment

Bank: Commercial Bank

Card Type: Visa

Card No: 102010201020

Amount (Rs): 37668.95

Save Clear

Amount	Discount Amount	Net Line Amount
13,034.16	0	13,034.16
3,468.55	0	3,468.55
12,066.24	0	12,066.24
7,000.00	0	7,000.00
2,100.00	0	2,100.00

Parts Services

Product Code	Description	Unit Price
WCS-E07W	CFL E14 type 7W W/W Spiral	4,344
WG1-025C	GLS Pin type 25W Clear Bulb	693
WLB-P09W	LED Bulb Pin type 09W W/W	4,022
XAC-410C	Ceiling Rose - XAC-410C	350
XAC-410L	Lamp Holder - XAC-410L	210

General

DISCOUNT GARAGE DISCOUNT RETURN

HOLD RECALL

TOTAL BILL DISCOUNT PRINT BILL REPRINT

SEARCH ESTIMATION

7 8 9 CHEQUE

4 5 6

1 2 3 CARD

0 . C

CARD .00

CREDIT .00

OVERPAYMENT  Use .00

*Make Payment*

POS INVOICE

<b>GROSS</b> 37,668.95	<b>BILL DISCOUNT</b> .00	<b>GARAGE DISCOUNT</b> .00	<b>NET</b> 37,668.95	<b>BALANCE</b> -37,668.95
---------------------------	-----------------------------	-------------------------------	-------------------------	------------------------------

Scan Cash Emp Nimal Kalupahana Cus General

Product Code	Description	Unit
WCS-E07W	CFL E14 type 7W W/W Spiral	
WG1-025C	GLS Pin type 25W Clear Bulb	
WLB-P09W	LED Bulb Pin type 09W W/W	
XAC-410C	Ceiling Rose - XAC-410C	
XAC-410L	Lamp Holder - XAC-410L	

Invoice List	No	Product	U.Price	Qty	Discount	Line Total
INV_29_00001						
INV_29_00002						
INV_29_00003						
INV_29_00004	1	WG1-025C	34.68	2	0.0	69.36
INV_29_00005	2	WG1-025CM	10.0	4	0.0	40.0
INV_29_00006	3	WG1-025CM	10.0	6	0.0	60.0

View Invoice

DISCOUNT	GARAGE DISCOUNT	RETURN
HOLD	RECALL	REPRINT
TOTAL BILL DISCOUNT	PRINT BILL	CHEQUE
SEARCH	ESTIMATION	CARD
7	8	9
4	5	6
1	2	3
0	.	C

Click on Reprint

<b>CARD</b> .00	<b>CHEQUE</b> .00	<b>CREDIT</b> .00	<b>OVERPAYMENT</b> .00 <input type="checkbox"/> Use
--------------------	----------------------	----------------------	--

*View invoices*

Auto Mart Service Station & Caean Park  
No : 270, Kandy Road, Godapola, BeliyoaKandy  
TEL :11111111

CUSTOMER NAME : General CASHIER : Shanaka INVOICE NO : INV\_29\_00004 DATE : Mar 26, 2017

#	PART NO/ DESCRIPTION	QTY	UNIT PRICE (Rs)	DISCOUNT (Rs)	AMOUNT(Rs)
1	WG1-025C GLS Pin type 25W Clear Bulb	2	34.68	0.00	69.36
2	WG1-025CM GLS Pin type 25W Clear Bulb	4	10.00	0.00	40.00
3	WG1-025CM GLS Pin type 25W Clear Bulb	6	10.00	0.00	60.00
No of Item(s) 3		12	54.68	0.00	169.36
<b>GROSS (RS)</b>	169.36	<b>ITEM DISCOUNT (RS)</b>	0.00	<b>NET AMOUNT</b>	169.36
<b>TOTAL NET</b>	169.36	<b>PAID AMOUNT(RS)</b>	200.00	<b>BALANCE (RS)</b>	0.00

Page 1 of 1

*Print invoice*

## IX. Stock Management Module

- Point Of sale.

Stock View Form

Search  Category **ALL**

Part No	Description	Category	Buying Price	Current Price	Previous Price	Available Qty
WCS-E05D	CFL E14 TYPE 5W D/L SPI...	mypos_default	13,154.92	16,443.64	0.00	2
WCS-E05W	CFL E14 type 5W W/W Spiral	mypos_default	2,055.45	2,569.32	0.00	15
WCS-E07D	CFL E14 type 7W D/L Spiral	mypos_default	1,107.89	1,384.86	0.00	11
WCS-E07W	CFL E14 type 7W W/W Spiral	mypos_default	3,475.78	4,344.72	0.00	9
WCS-E09D	CFL E14 type 9W D/L Spiral	mypos_default	1,233.27	1,541.59	0.00	26
WCS-E09W	CFL E14 type 9W W/W Spiral	mypos_default	1,490.74	1,863.43	0.00	8
WCS-E11D	CFL E14 type 11W D/L Spiral	mypos_default	4,633.06	5,791.33	0.00	3
WCS-E11W	CFL E14 type 11W W/W S...	mypos_default	15,037.40	18,796.75	0.00	2
WCS-P05D	CFL Pin type 5W D/L Spiral	mypos_default	12,295.73	15,369.66	0.00	1
WCS-P05W	CFL Pin type 5W W/W Spiral	mypos_default	11,775.70	14,719.62	0.00	1
WG1-025C	GLS Pin type 25W Clear Bulb	mypos_default	27.75	34.68	6,937.16	189
WG1-025CM	GLS Pin type 25W Clear Bulb	mypos_default	7.70	10.00	0.00	24
WG1-040C	GLS Pin type 40W Clear Bulb	mypos_default	6,400.44	8,000.55	0.00	3
WG1-040CM	GLS Pin type 40W Clear Bulb	mypos_default	5,138.64	6,423.30	0.00	2
WG1-060C	GLS Pin type 60W Clear Bulb	mypos_default	1,725.00	2,300.00	0.00	3
WG1-060CM	GLS Pin type 60W Clear Bulb	mypos_default	2,162.34	2,702.93	0.00	6
WG1-075C	GLS Pin type 75W Clear Bulb	mypos_default	2,589.87	3,237.34	0.00	2
WG1-075CM	GLS Pin type 75W Clear Bulb	mypos_default	3,940.30	4,925.38	0.00	3
WG1-100C	GLS Pin type 100W Clear B...	mypos_default	230.00	345.00	0.00	0
WG1-100CM	GLS Pin type 100W Clear B...	mypos_default	1,605.35	2,006.69	0.00	9
WG2-025CM	GLS Screw type 25W Clear...	mypos_default	7,749.07	9,686.33	0.00	4
WG2-040CM	GLS Screw type 40W Clear...	mypos_default	3,681.31	4,601.64	0.00	5
WG2-060CM	GLS Screw type 60W Clear...	mypos_default	3,239.39	4,049.24	0.00	11
WG2-075CM	GLS Screw type 75W Clear...	mypos_default	4,894.04	6,117.55	0.00	5
WG2-100CM	GLS Screw type 100W Cle...	mypos_default	1,233.27	1,541.59	0.00	4
WLB-P03D	LED Bulb Pin type 03W D/L	mypos_default	3,288.72	4,110.90	0.00	8
WLB-P05D	LED Bulb Pin Type 05W D/L	mypos_default	1,644.30	2,055.38	0.00	5
WLB-P05W	LED Bulb Pin type 05W W/W	mypos_default	3,288.62	4,110.78	0.00	5
WLB-P07D	LED Bulb Pin type 07W D/L	mypos_default	3,083.18	3,853.98	0.00	4
WLB-P07W	LED Bulb Pin type 07W W/W	mypos_default	411.09	513.87	0.00	10
WLB-P09D	LED Bulb Pin type 09W D/L	mypos_default	1,644.36	2,055.45	0.00	15
WLB-P09W	LED Bulb Pin type 09W W/W	mypos_default	3,217.67	4,072.08	0.00	23

*Current stock view in POS system*

## X. Service Module

- Point of sale.

Service

Service Type

Search

Service Type	Created On
Residential	2017/04/30
Commercial	2017/04/30
Industrial	2017/04/30
Emergency	2017/04/30
Remo	2017/04/30
Facility Maintenance	2017/04/30

New Service Type

Service Type : remodeling

Add Cancel

New Update Delete

## Add New Service Type

The screenshot shows the 'Service' application window with a 'New Service' dialog box open. The dialog box contains the following fields:

- Service Name: Service Upgrade
- Service Type: Emergency
- Service Code: E0120
- Service Cost (Rs): 2900
- Service Charge (Rs): 1520
- Service Discount (%): 0.30

The background table lists various services with columns for Service Name, Service Type, Service Code, Service Cost (Rs), Service Charge (Rs), Service Discount (%), and Created On. The 'New' button is highlighted at the bottom right.

## Add service

The screenshot shows the 'Service' application window with an 'Update Service' dialog box open. The dialog box contains the following fields:

- Service Name: Neon and florescent repairs
- Service Type: Industrial
- Service Code: 1008
- Service Cost (Rs): 58000
- Service Charge (Rs): 45000
- Service Discount (%): 0

The background table lists various services with columns for Service Name, Service Type, Service Code, Service Cost (Rs), Service Charge (Rs), Service Discount (%), and Created On. The 'Update' button is highlighted at the bottom right.

## Update Services

Service	
Service Type	Created On
Residential	2017/04/30
Commercial	2017/04/30
Industrial	2017/04/30
Emergency	2017/04/30
Remodeling	2017/04/30
Facility Maintenance	2017/04/30

*Services List*

## Appendix B – Important Coding Parts

```
162
163
164 public void getProductFromServer(int count) {
165
166     final SyncList resObjects = new SyncList();
167     resObjects.setTypeOfElement(Product.class.getSimpleName());
168     syncResultList.add(resObjects);
169
170     String tokenFromMetaData = functionController.getTokenFromMetaData();
171     String lastDownloadedTimestamp = functionController.getLastDownloadedTimestamp(AppConstance.DOWNLOAD_DATA_TYPE_ALL_PRODUCT);
172     if (lastDownloadedTimestamp != null) {
173         if ("empty".equals(lastDownloadedTimestamp)) {
174             lastDownloadedTimestamp = "0";
175         }
176     }
177
178     try {
179
180         Call<ProductsPojo> loadRepo = ApiClient.get().loadRepo(tokenFromMetaData, lastDownloadedTimestamp, count);
181         Response<ProductsPojo> response = loadRepo.execute();
182
183         if (response.isSuccessful()) {
184             resObjects.setSuccessOrFail("1");
185             resObjects.setTotalCount(String.valueOf(response.body().getProducts().size()));
186             if (response.body().getProducts().size() == 0) {
187                 resObjects.setTotalCount("1");
188                 syncNotification(resObjects, "All Products Are Already Updated.....", "0", "0");
189                 executedMethodCount++;
190                 functionController.setLastDownloadedTimestamp(AppConstance.DOWNLOAD_DATA_TYPE_ALL_PRODUCT, response.body().getTimestamp());
191                 return;
192             }
193
194             int insertCount = 0;
195             int updateCount = 0;
196             Integer productCatId = productCategoryController.getProductCatIdForDimoWeb("mypos_default");
197             Integer supplierId = supplierController.getSupplierIdforDimoWebProduct("mypos_default");
```

*Download products form server*



```

21  /**
22  *
23  *   @author User
24  *   @created 2016-06-09
25  */
26  @Entity
27  @Table(name = "mypos_grn")
28  public class Grn {
29
30      @Id
31      @GeneratedValue(strategy = GenerationType.IDENTITY)
32      @Column(name = "ID")
33      private Long grn_Id;
34
35      @Column(name = "GRN_ID")
36      private Integer grnId;
37
38      @Column(name = "GRN_NO")
39      private String grnNo;
40
41      @ManyToOne(fetch = FetchType.LAZY)
42      @JoinColumn(name = "Po_ID")
43      private Po po;
44
45      @ManyToOne(fetch = FetchType.LAZY)
46      @JoinColumn(name = "SUPPLIER_ID")
47      private Supplier supplier;
48

```

*Hibernate entity class*

```

919
920  public boolean update(Product obj) {
921      Date date = new Date();
922      obj.setUpdatedAt(date);
923      return super.update(obj); //To change body of generated methods, choose Tools | Template
924  }
925
926  public boolean save(Product obj) {
927      Date date = new Date();
928      obj.setCreatedAt(date);
929      obj.setStatus(1);
930      return super.save(obj); //To change body of generated methods, choose Tools | Template
931  }

```

*Save and update users via hibernate ORM*

## Appendix C - Test Cases

### System Login

ID	Function	Testing Procedure	Expected Output	Test Priority
<b>Common Functions</b>				
1.	Logging into the system	Enter invalid username or password	An error message will indicate the error	High
2.	Logging into the system	Enter valid Username and password	User will be logged in to the system and logged in to	High
3.	Logout From the system	Click the logout button	User will be logged out and Redirect to the login	High
4	Change password	Fill the form for password change	Invalid values for the current password	High
5.	Unauthorized access to page(without login in)	A user try in to login through the URL to a page without login in	The user will be redirected to the login page	High

<b>Dealer, Customer Profile Management</b>				
6	Adding an existing customer	Entering details of a customer who is already registered	A error should occur	Medium
7	Adding customer with Invalid details	The required fields are empty	Error message should appear on relevant fields	Medium
8	Add a new customer with valid details	Entering a new Customer	New customer should be added to the system	High
9	Editing an existing customer	Editing an existing customer with invalid details	Error message should appear	High

Sales	Module			
10	Should be able to get a list of customers	Entering an existing customers first 3 letter	A list of customers should be listed	High
11	Should be able to add a customer if he does not exist	Click add new customer button.	Should directed to add new customer form	High
12	Item code should be automatically populated	Select the product name from the product list	Once selected automatically the item code should be loaded	High
13	Entering invalid sales details	Entering a string in quantity field	It should popup an error message	High
14	Adding empty fields	Trying to add item to the invoice with blank fields	It should popup and error	High
15	Adding the same item repeatedly	Trying to add same product and quantity twice into the invoice	It should prompt an error	Medium
16	Submitting with empty fields	Trying to submit ODO meter readings with empty fields	It should not allow to submit	High
17	Adding invalid data	Trying to add invalid meter reading	Should prompt an error	Medium
18	Adding an empty return data	Trying to add empty fields as returned products	It should popup and error	Medium
19	Adding the same entry repeatedly	Trying to add previously added returned product detail again	It should not allow to add the return detail	Medium
20	Print daily report	Click print report	The report should be displayed	Low

<b>Product Module</b>				
21	Adding an existing product Name	Trying to add an existing Item name to the	It should not allow to Submit/Error should be displayed	High
22	Adding an existing item code	Prompting to add an already registered item code	Should prompt an error	High
23	Submitting empty fields	Adding a product with empty fields	Should show an error message	Medium
24	Adding a product	Adding a product with valid details	A success message should appear	High
25	Adding product category	Adding a new product category	The category should be added	Medium
26	Editing product with valid details	Updating an existing product's detail	The success message should appear	Medium
27	Deleting a product	Deleting an existing product from the system	A alert should be appear before deletion	High

<b>Stock Management</b>				
28	Adding stock details	Trying to add invalid details into the form	Should show an error message	High
29	Adding stock details	Adding valid details to the form	A success message should be appeared	Medium
30	View orders	View pending orders submitted by the user	I should only show pending order placed by the user	Low
31	Cancel an order	Click cancel order button	The status should be change to cancelled	Medium
32	Approve order	Click approve button	The status should be changed to approved	Medium
33	Reject an order	Click Reject button	The status should be changed to rejected	Medium

Unit Amount Controller				
34	Updating yearly target	Click Save target button	A success message should appear	High
35	Add unit price for fuel	Prompting to submit empty fields	An error message should appear	Medium
36	Adding valid fuel price	Adding a valid amount	Should show a success message	Low
37	Editing a products commission percentage	Trying to empty the field and submit	It should not allow to submit	Medium

User Management				
38	Add existing user	Trying to add details of an existing user	Prompts an Error message	Medium
39	Add a user	Prompting to submit empty fields	An error message should be appeared	Medium
40	Add a user	Entering a new Employee with valid details	The user should be added and a success message should be appeared	High
41	Editing a user	Updating a user details with valid details	The user details should be updated message should be updated a success message should be appeared	Medium
42	Delete a user	Prompting to delete a user by clicking delete button	A confirmation alert should be alerted before deleting	High
43	Add User Group	Adding a new user group	A success message should be alerted	Medium

Admin Module				
44	Take Backup	Click take backup button	The database should be downloaded as an sql file	High
45	Restore	Clicking restore button without selecting the file path	It should prompt an error message	Medium
46	Restore	Selecting a valid file path And clicking restore button	The database should be restored and a success message should be appeared	High

## High Level Test Cases

### Test Data and Test Results

<b>Test Case ID</b>		1		
<b>Tested Component</b>		System Login		
<b>Module Name</b>		User Management		
<b>Test Case Description</b>				
No	Test Case	Expected Output	Actual Output	Status
01	Entering invalid username and/or password	Display an Error message		Pass
			Invalid username or password!	
02	Entering empty username	Display an Error message	Please enter the Username!	Pass
03	Entering empty password	Display an Error message	Please enter the Password!	Pass
04	Entering empty username and password	Display an Error message	Please enter the Username and Password!	Pass
05	Entering a valid username	Redirect to the Dashboard	Redirected to the Dashboard	Pass

<b>Test Case ID</b>		7		
<b>Tested Component</b>		Adding a customer with invalid details		
<b>Module Name</b>		Dealer, Customer Profile Management		
<b>Test Case Description</b>				
No	Test Case	Expected Output	Actual Output	Status
01	Entering an already existing customer and a valid customer name	Display a message and the submit button should be disabled	Customer Exist	Pass
			Customer Name Already Exist	
			User name available	
			Customer Name Available	