INTRODUCTION

1.1 PROJECT OVERVIEW

The **Enterprise Resource Planning** (ERP) system, show-cases a **business process management software for an organization** to use integrated applications to manage businesses and automate many back-office functions.

System includes modules not only related to business's ERP but also to maintain its core, such as Projects of business, Quality controls, its Teamwork, Document management, Campaigning, Helpdesk, etc., with more features and advanced building logics.

1.2 PROJECT SUMMARY

The Project is part of ABS, a product developed and managed by Axelor Technologies. The Axelor Business Suite allows you to follow the progress of business task by task, as well as their progress through the automatic calculation of their advance or their delay apart from that system includes GST modules for tax calculations of the purchase and sales. Provides a better view of data to measure, report and analyze, whereupon it is showed in form of cards, graphs, charts and calendar events to easily identify the data. And also, data is highlighted according to their status as planned.

1.3 PURPOSE

The purpose of Axelor business suite is to allow you to follow the progress of business task by task, as well as their progress through the automatic calculation of their advance or their delay apart from that system includes GST modules for tax calculations of the purchase and sales. Provides a better view of data to measure, report and analyze, whereupon it is showed in form of cards, graphs, charts and calendar events to easily identify the data. And also, data is highlighted according to their status as planned. Also managing relation with customer handling through CRM, and employee's management through HRM module, providing marketing campaigns

1.4 OBJECTIVE

The main objective of any ERP is Centralized management of Data. Apart from that Objectives of ABS Falls under the same tree with different goals such as,
Better Information Management through Business Automation

Improved Workflow

Streamlining Of Processes

Modular Yet Integrated Approach

Elimination of Redundancies

1.5 SCOPE

The Axelor Business Suite modules not only related to business's ERP but also to maintain its core, such as Projects of business, Quality controls, its Teamwork, Document management, Campaigning, Helpdesk, etc., with more features and advanced building logics and developments.
Abs is way ahead of its competitors in terms of rapid developments as well as providing modules according to client's requirements.

1.6 TECHNOLOGY

Technologies:

- Technologies: HTML, JavaScript, JQuery, NodeJS, JAVA8, Java
- Framework: Axelor Development Kit
- Databases: PostgreSQL
- Web/Application server: TomCat 8.5

Tools

- IDE: Eclipse

PROJECT MANAGEMENT

2.1 PROJECT PLANNING

2.1.1 Project Development Approach and Justification (Process Model Used)

Agile software development methodology is a process for developing software which differs Significantly from other methodologies. In English, Agile means ability to move quickly and easily and responding swiftly to change – this is a key aspect of agile software development as well.

And As our project is continually developing, having changes based on feedback from customer Agile is best suited Software development process model.

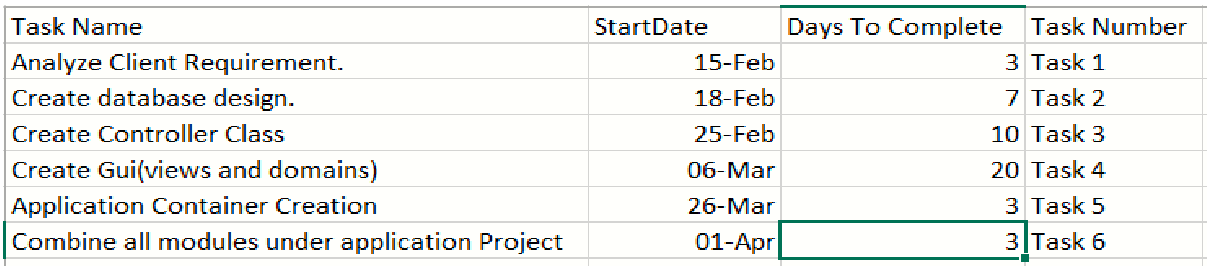
2.1.2 Tools Used

The Project includes various technologies in Front-end and Back-end. The Axelor Business Suite is developed Using Axelor Development Kit.

- Eclipse: Integrated Development Environment.
- PostgreSQL: PostgreSQL is a powerful, open source object-relational database system that uses and extends the SQL language combined with many features that safely store and scale the most complicated data workloads.
- Hibernate: Hibernate is an open source object relational mapping (ORM) tool that provides a framework to map object-oriented domain models to relational databases for web applications.

2.2 PROJECT WORK SCHEDULING

2.2.1 Gantt Chart



Task Name	StartDate	Days To Complete	Task Number
Analyze Client Requirement.	15-Feb	3	Task 1
Create database design.	18-Feb	7	Task 2
Create Controller Class	25-Feb	10	Task 3
Create Gui(views and domains)	06-Mar	20	Task 4
Application Container Creation	26-Mar	3	Task 5
Combine all modules under application Project	01-Apr	3	Task 6

Fig 2.1 Gantt chart

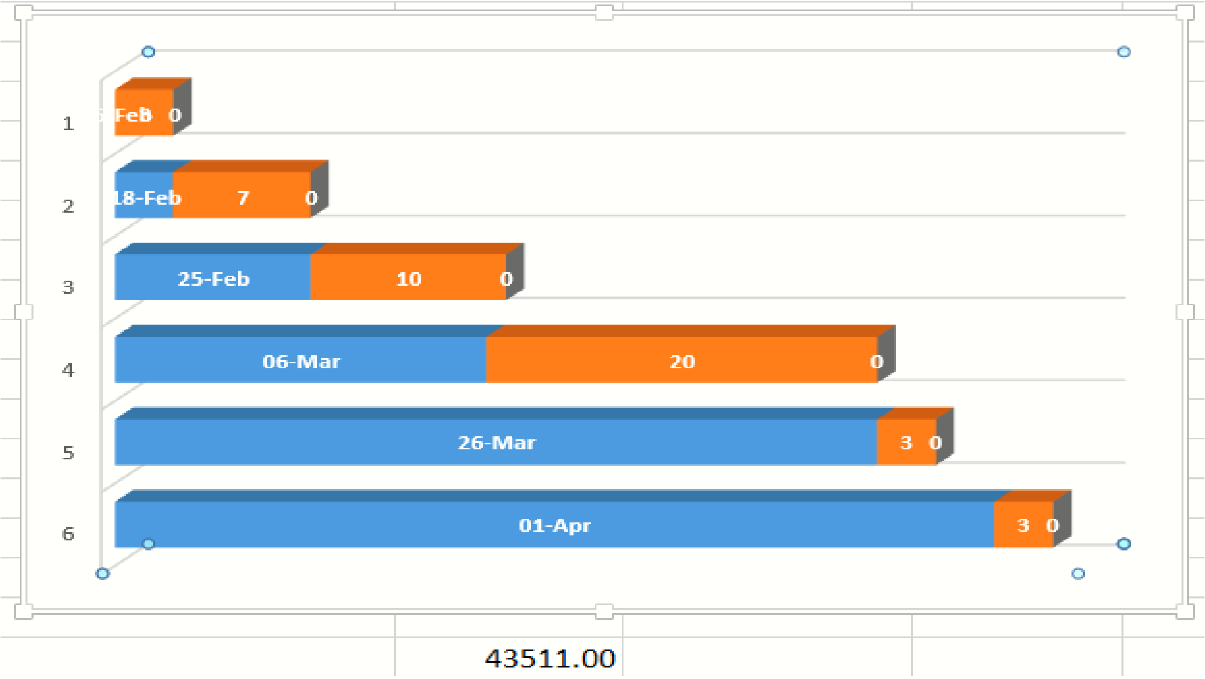


Fig 2.2 Gantt chart

2.2.2 PERT Chart

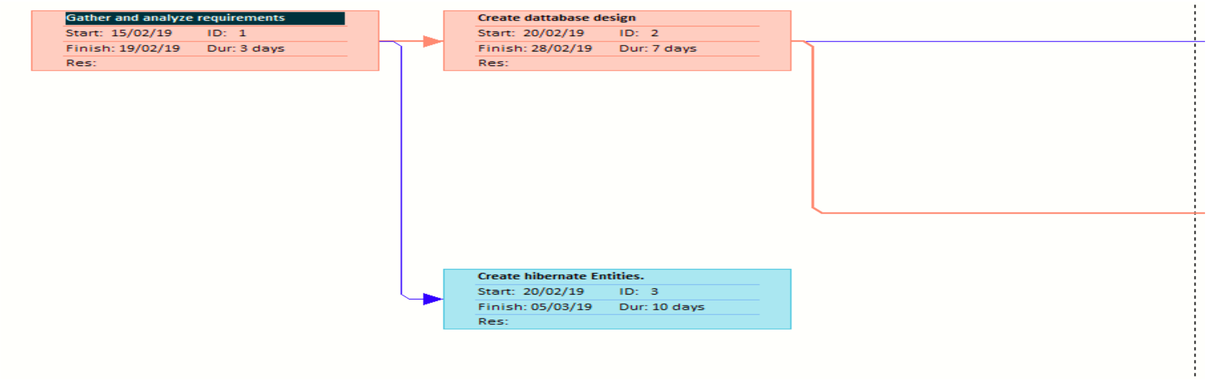

Gather and analyze requirements
Start: 15/02/19 ID: 1
Finish: 19/02/19 Dur: 3 days
Res:
Create dattabase design
Start: 20/02/19 ID: 2
Finish: 28/02/19 Dur: 7 days
Res:
Create hibernate Entities.
Start: 20/02/19 ID: 3
Finish: 05/03/19 Dur: 10 days
Res:

Fig 2.3 PERT Chart- I

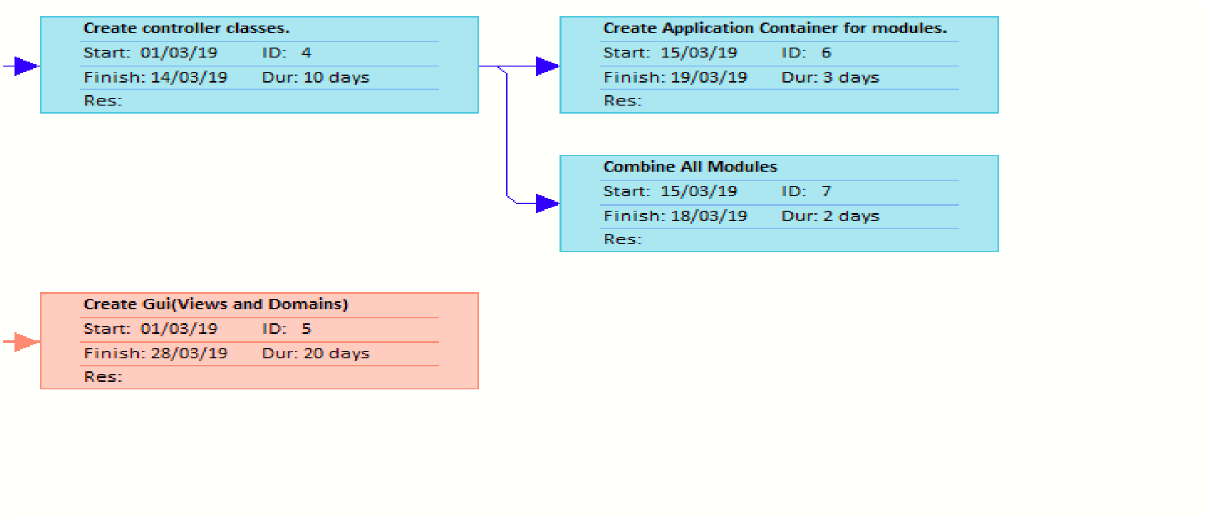

Create controller classes.
Start: 01/03/19 ID: 4
Finish: 14/03/19 Dur: 10 days
Res:
Create Application Container for modules.
Start: 15/03/19 ID: 6
Finish: 19/03/19 Dur: 3 days
Res:
Combine All Modules
Start: 15/03/19 ID: 7
Finish: 18/03/19 Dur: 2 days
Res:
Create Gui(Views and Domains)
Start: 01/03/19 ID: 5
Finish: 28/03/19 Dur: 20 days
Res:

Fig 2.3 PERT Chart- II

2.3 FEASIBILITY STUDY

Once the scope has been identified, it is reasonable to ask whether we can build software that meets this scope. Is this project feasible?

The feasibility of software can be tested in four dimensions:

2.3.1 Technical Feasibility

What we have planned to implement is technically feasible. Do we have a sufficient amount of knowledge or technology to make it a reality? And the answer is fairly easy because we have found out that development is done through the ADK(Axelor Development Kit) and its quite easy to manage the Controller and model with the hibernate entities.

2.3.2 Time Schedule Feasibility

We checked whether our system can be ready in time without any error. We have planned all its phase keeping the aspect in our mind, that if we find any bug or error after testing phase then we can move our deadline to 2-4 days, as we set our deadline before the actual submission date to the client

2.3.3 Operational Feasibility

How the project will work and who will use it, all such concerns arise in this phase. We have to study the requirements of the client carefully as its just raw data with no functional direction.

Our Client ranges in various fields form manufacturing of goods to IT sector fields.

2.3.4 Implementation Feasibility

The Implementation of project is checked in here.

We have found out that with MVC structure and rapid development provided by Hibernate entities it's quite easy to implement the requirements of clients in the real-world applications.

SYSTEM REQUIREMENTS STUDY

3.1 USER CHARACTERISTICS

This application mostly intended to be used by the administrator or User with Access Rights of using it.

Admin is going to be the super user interacting with the system with highest access privileges and will be able to create new user and assign them access to the system.

Here are some of the function admin will be using to access the system.

Sale Module

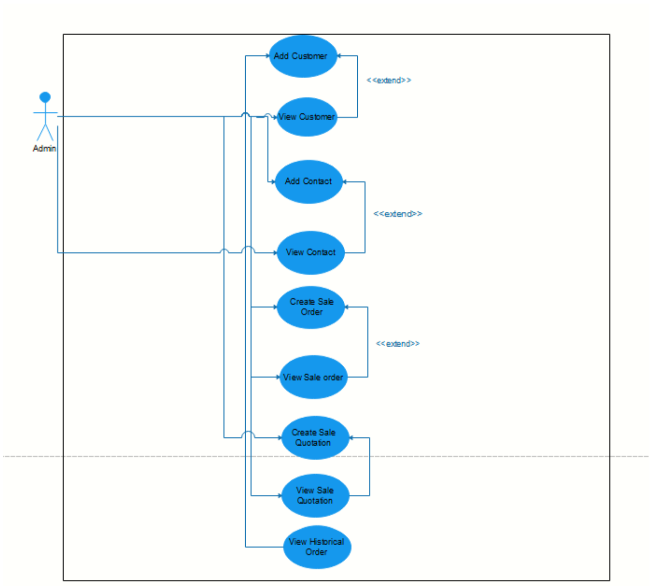


Fig 3.1 Use-Case Diagram

Purchase Module

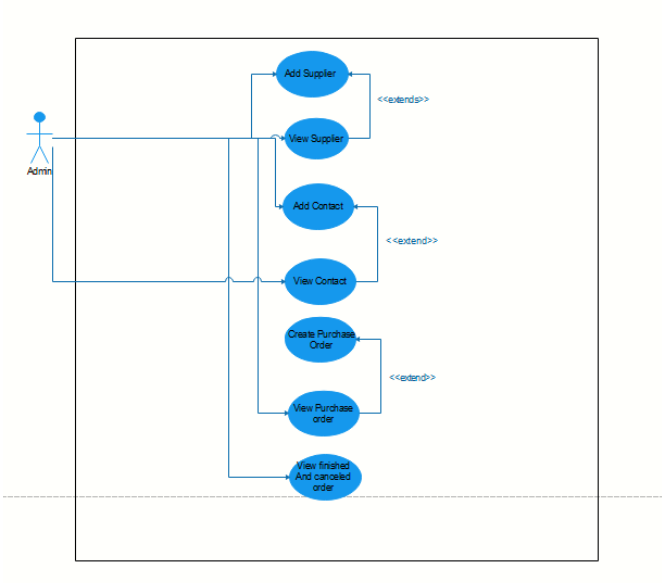


Fig 3.2 Use-Case Diagram

3.2 Hardware and Software Requirements

Hardware configuration of machine used

- Processor : Intel Core I5 with 2.40 GHz
- RAM : 4.00 GB or Higher
- Hard Disk : 80 GB or Higher

Software used along with the version

- Operating System: Linux
- Language: Java
- Technologies: HTML, JavaScript, JQuery, NodeJS, JAVA8
- Framework: Axelor Development Kit
- Databases: PostgreSQL
- Web/Application server: TomCat 8.5

3.3 ASSUMPTIONS AND DEPENDENCIES

Following are the assumptions that have been taken while documenting the report:

- The code is error-free and bug-free.
- The instance has enough storage to store the data.
- The user is well-versed in the English language.
- All the software and hardware requirements are fulfilled.

Following are the dependencies that should be taken care of before using this software:

- This application is based on Java, Gradle, Hibernate, and PostgreSQL.
- The Application Should be hosted on a Server.

SYSTEM ANALYSIS

4.1 STUDY OF THE CURRENT SYSTEM

There are several existing ERP's available in the market. Some of the famous ERP are the SAP. One common thing between all the ERP is the centralised management of data. After reading about existing ERP, we found that there is no feature provided to customer about changing the fields of the form of various module. Here's where ABS differs where change in the views or domain of the system can be done by the user.

4.2 PROBLEMS AND WEAKNESSES OF THE CURRENT SYSTEM

The existing system does provide the rapid development of views, domain and controller but with ADK we can achieve this. Also a client with bit of technical knowledge can make changes in the views and domains, so for changes client doesn't have to reach developer each and every time.

Usually the ERP software's are large and very complex to understand but in ABS complexity is reduced by introducing Hibernate entities, what it does is it act as an layer between the underlying Database and the controller.

4.3 REQUIREMENTS OF NEW SYSTEM

4.3.1 Functional Requirements

Manage Sales: This application manages the sales of the company. It allows to create quotations, to print them or to generate them in PDF format and to send them directly from the application. Once the estimate has been validated and finalized, it automatically changes into a sales order.

Manage Purchase: It will include the basic functionalities related to purchasing of any kind of raw materials or things required in organizations. It also specifies functionalities to add suppliers manage contracts, purchase orders viewing historical data related to purchases made.

Manage Customer: CRM module helps to manage & track detailed information of the customer like communication history, calls, meetings, details of purchases made by customer, contract duration etc. CRM module can be integrated with Sales module to enhance sales opportunities.

Manage Modules: App builder will allow the clients to make changes in their system without consulting any help from the owner the ERP, it reduces the time and cost of maintenance for the both parties.

4.3.2 Non-Functional Requirements

Authentication: Proper Authentication has been maintained, along with flexibility to modify and view data.

Minimized Code: We have minimized the lines of code as well as kept reusability of code as top priority. Less processing and loading time have been kept under consideration.

Performance Improvements: The application shall accommodate high number of Users without any fault.

Customizable Modules: Many modules related to ERP has been included, out of which, according to the user's requirement modules can be included, excluded and modifiable.

Error Handling: System shall handle expected and non-expected errors in ways that prevent loss in information and long downtime period.

4.4 FEASIBILITY STUDY

Once the scope has been identified, it is reasonable to ask whether we can build software that meet this scope. Is this project feasible?

4.4.1 Does the System Contribute to The Overall Objectives of The Organization?

How the project will work and who will use it, all such concerns arise in this phase. We have to study what the existing system's problem is, and is it worth solving or not. And yes, System does contribute to the overall objective of the organization, as discussed early in the document the System has its unique features as being an ERP Product like rapid development, managing of modules that gives the product an edge in the market and in turn it does contribute the overall objective of the organization.

4.4.2 Can the System be Implemented Using the Current Technology and within the Given Cost and Schedule Constraints?

What we have planned to implement is technically feasible. Do we have a sufficient amount of knowledge or technology to make it a reality? And the answer is fairly easy because we have found that development done using the POJO classes so its very easy and efficient to develop modules and manage them.

4.4.3 Can the System Be Integrated with Other Systems Which Are Already in Place?

Our system cannot be integrated with other systems. It's an ERP system developed and managed by the Axelor Technologies.

4.5 Activity /Process in New System (Use event table/activity diagram)

Purchase Module

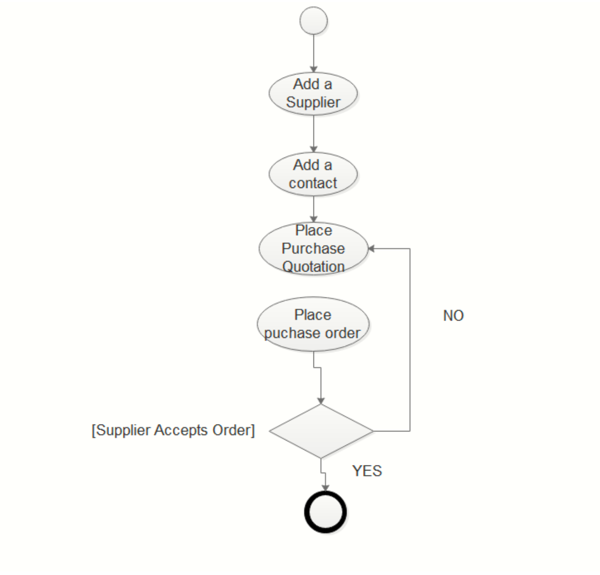


Figure 4.1 Activity Diagram

Sales Module

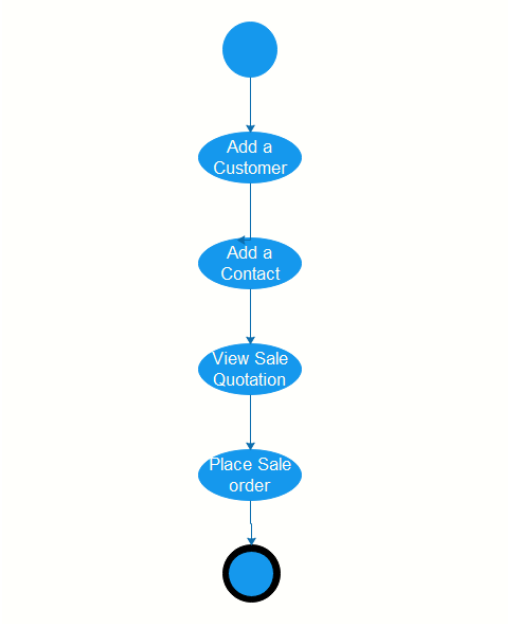


Figure 4.2 Activity Diagram

HR Module

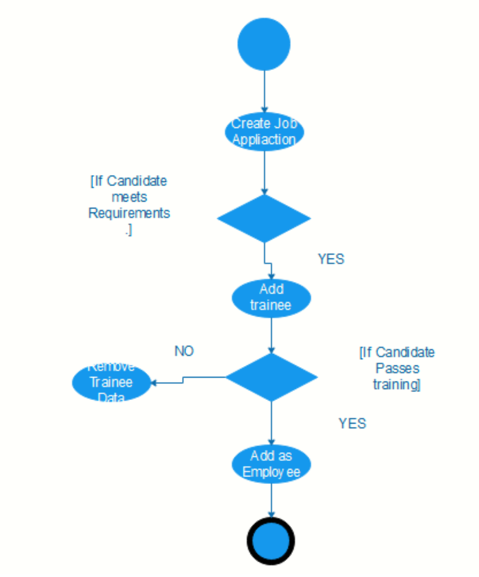


Figure 4.3 Activity Diagram

4.6 FEATURES OF NEW SYSTEM

As discussed early during the document new features in the system can be considered as the rapid development as well as the handling of database through the POJO classes.

4.7 USE CASE DIAGRAM

Purchase Module

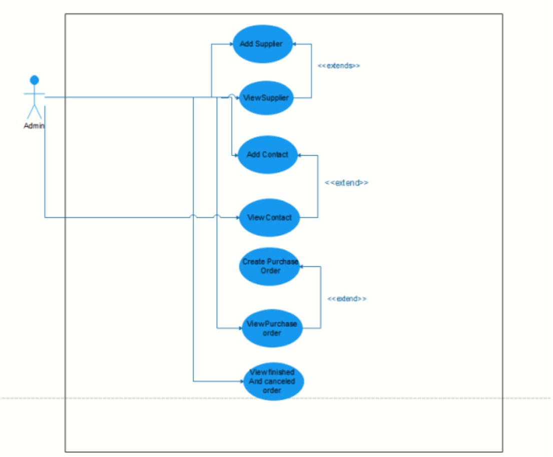


Figure 4.4 Use Case Diagram

Sale Module

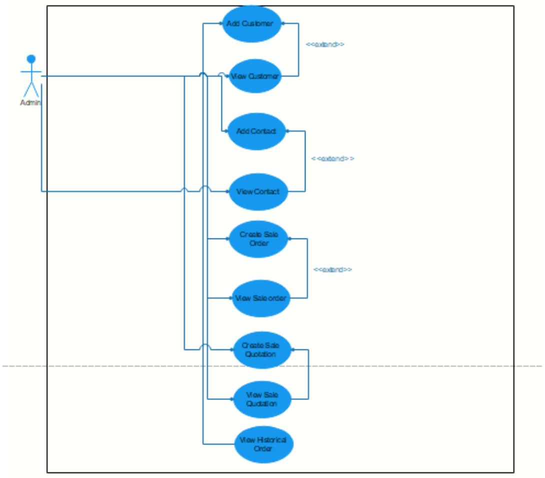


Figure 4.5 Use Case Diagram

HR Module

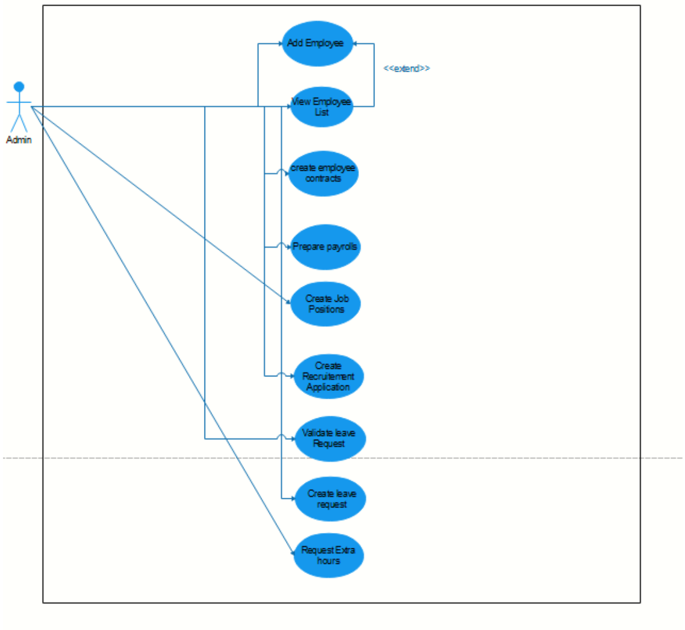


Figure 4.6 Use Case Diagram

GST Module

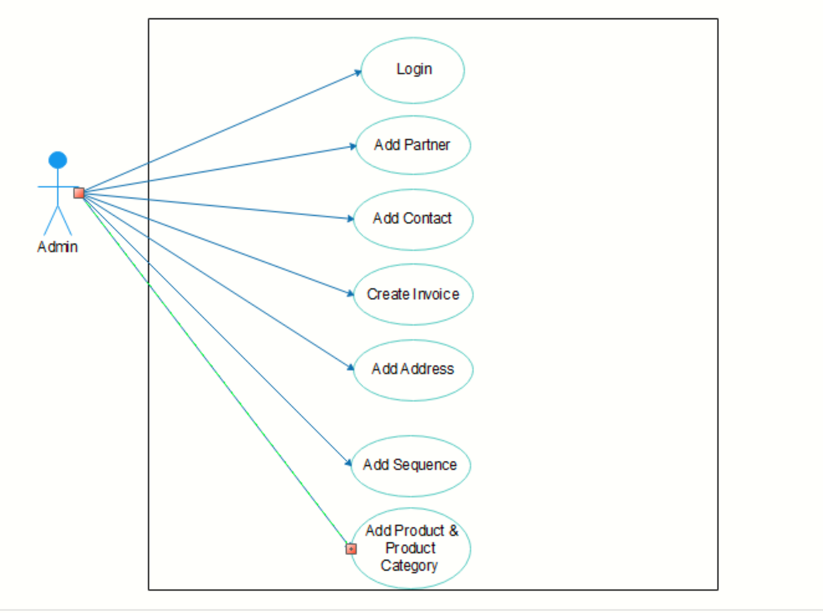


Figure 4.7 Use Case Diagram

4.8 List Main Modules of New System

Sales

This application manages the sales of the company. It allows to create quotations, to print them or to generate them in PDF format and to send them directly from the application. Once the estimate has been validated and finalized, it automatically changes into a sales order.

Purchase

This application allows to manage the purchases of the company. It allows you to create quotations that, once validated and finalized, automatically transform into purchase orders. You can generate supplier arrivals from a purchase order to schedule the associated stock movements, and generate the control invoice.

The application also makes it possible to send quotation requests to several suppliers, thus making it possible to select the most competitive offer.

The sub-application "Purchase requests" generates pricing requests on specific products to your suppliers.

CRM

The CRM application allows you to manage company interactions with prospects and customers. First of all, it allows to manage the prospects.

The first step is to create leads to track sales and marketing of these new leads. A lead is usually created at the beginning of the business relationship.

It is a person/company interested in your products and services, with whom you are in the early stage of the business relationship.

HR

This application allows you to manage the company’s human resources. It consists of different sub applications covering a broad spectrum of human resources. It allows to

manage: - Management of employees including employee contracts, payroll preparation, restaurant vouchers and bonuses. - Leave requests. - Expenses. - Timesheets. - Extra hours. - Recruitment. - Training courses. - Appraisals.

4.9 SELECTION OF HARDWARE AND SOFTWARE JUSTIFICATION

4.9.1 Hardware Justification

Ingesting voluminous data requires hardware of higher configuration that stores this data.

4.9.2 Software Justification

The Axelor Business suite is mainly developed on JAVA, and for that Eclipse is used ass IDE.

In ABS back-end the DB used is PostgreSQL along with that hibernate is used for quick development of the domains and getter setter methods.

SYSTEM DESIGN

5.1 SYSTEM APPLICATION DESIGN

5.1.1 Method Pseudo code

Purchase Module

Purchases/: Purchase management application.

Purchases/Suppliers/: This menu gives access to the list of suppliers and allows you to create new suppliers records.

Purchases/Contacts/: This menu gives access to the list of contacts and allows you to create new contacts records.

Purchases/Purchase requests/: Purchase request management application.

Purchases/Purchase requests/All purchase requests/: Displays purchase requests to suppliers and creates new ones.

Purchases/Purchase requests/All requests sent/: Displays purchase requests sent to suppliers and creates new ones.

Purchases/Purchase requests/All requests accepted/: Displays purchase requests that have been accepted.

Sales Module

Sales/: Sales management application.

Sales/Customers/: This menu gives access to the list of customers and allows you to create new customers records.

Sales/Contacts/: This menu gives access to the list of contacts and allows you to create new contacts records.

Sales/Products & services/: This menu gives access to the list of products/services and allows to create new product/ service forms.

Sales/Sale orders/ : Allows to create new sale orders and displays the current and completed orders.

HR Module

Human resources/ Human resources/Employee Management/: Application of human resources management.

Human resources/Employee Management/List of employees/: Displays the list of employees and allows you to create employee records.

Human resources/Employee Management/Employment Contracts/: Allows to create employment contracts for employees.

Human resources/Employee Management/Payroll Preparation/: Menu for managing employee payroll preparation.

Human resources/Employee Management/Lunch voucher management/: Allows to manage lunch voucher.

GST Module

GST/Party: Add, remove, and edit party

GST/Contact: Add, remove, and edit contact

GST/Invoice: Create sale invoice of the customer (party)

GST/Dashboard: view the paid, unpaid invoice per customer, customer per state, invoice per status and unpaid invoice of last month.

GST/Address: Add address to be used in party and contact creation and associate with it

5.2 DATABASE DESIGN/DATA STRUCTURE DESIGN

GST Module

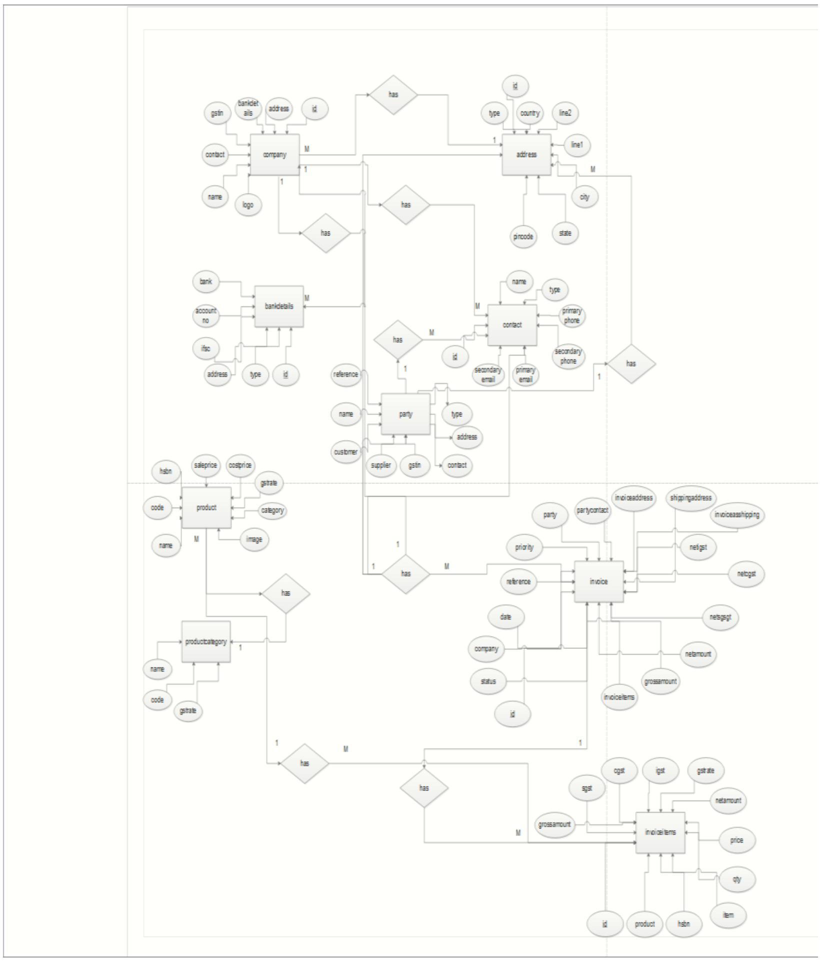
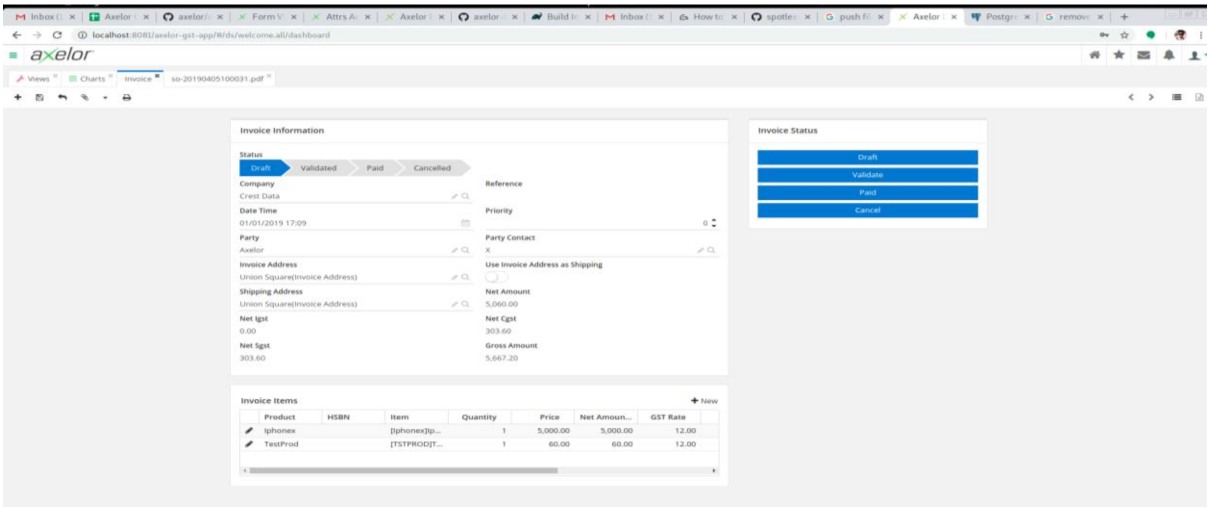


Fig 5.2.1 ER Diagram

5.3 INPUT/ OUTPUT INTERFACE DESIGN

5.3.1 Samples of Forms, Reports and Interface



Invoice Information

Status: Draft | Validated | Paid | Cancelled

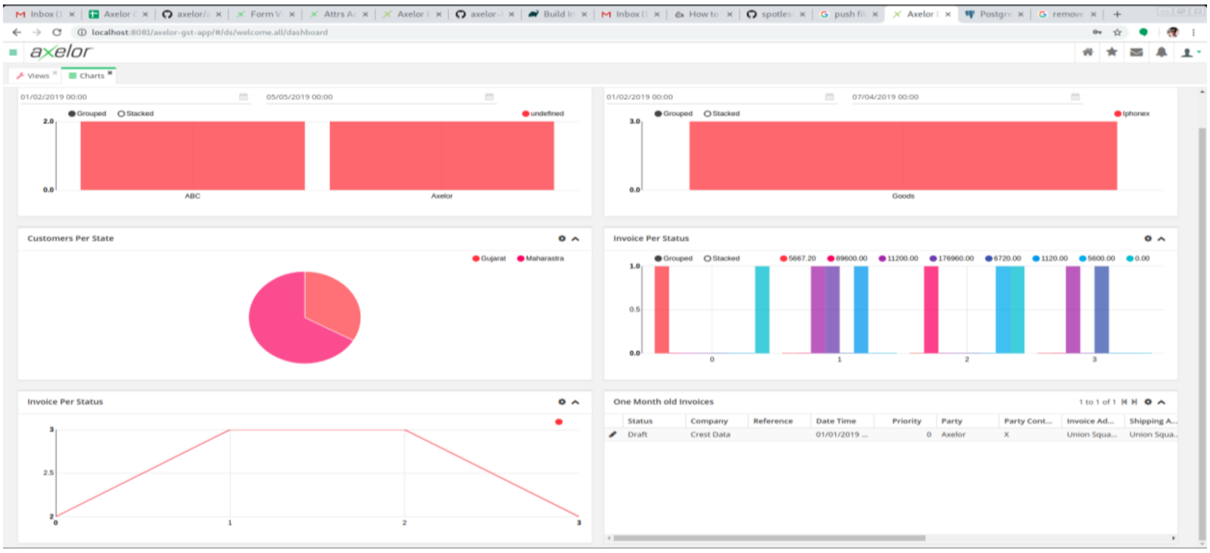
Company Crest Data	Reference
Date Time 01/01/2019 17:09	Priority 0
Party Axelor	Party Contact X
Invoice Address Union Square(Invoice Address)	Use Invoice Address as Shipping
Shipping Address Union Square(Invoice Address)	Net Amount 5,060.00
Net Igst 0.00	Net Cgst 303.60
Net Sgst 303.60	Gross Amount 5,667.20

Invoice Items

Product	HSBN	Item	Quantity	Price	Net Amoun...	GST Rate
Iphonex		[Iphonex]Ip...	1	5,000.00	5,000.00	12.00
TestProd		[TSTPROD]T...	1	60.00	60.00	12.00

Fig 5.3.1 Create Invoice

User can generate sale invoice here.

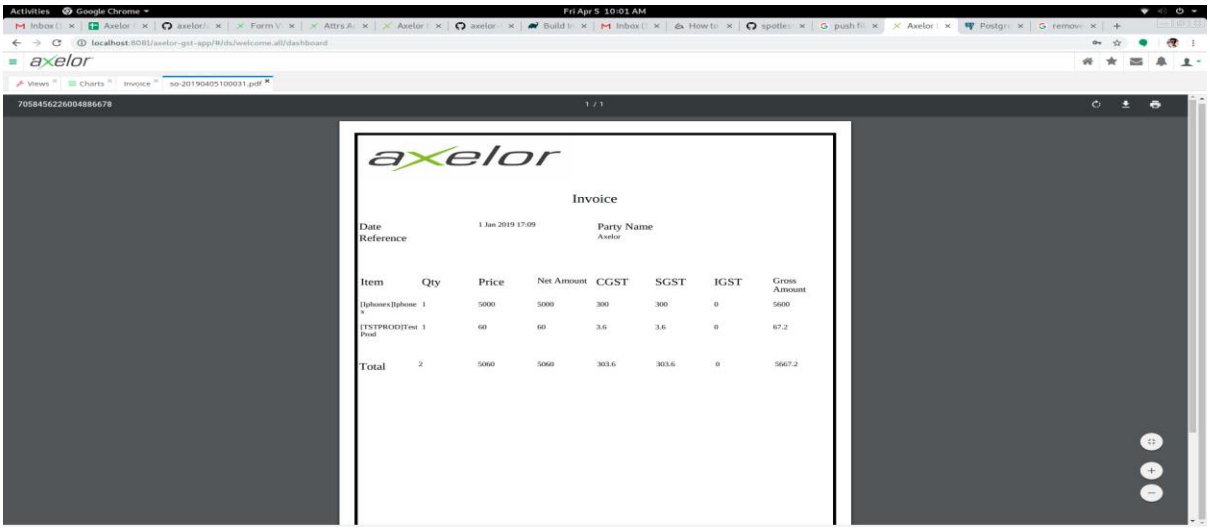


One Month old Invoices 1 to 1 of 1

Status	Company	Reference	Date Time	Priority	Party	Party Cont...	Invoice Ad...	Shipping A...
Draft	Crest Data		01/01/2019 ...	0	Axelor	X	Union Squa...	Union Squa...

Fig 5.3.2 Dashboard

User can see the data in the form of graph generated through JPQL, which shows the invoice, user data.



Invoice

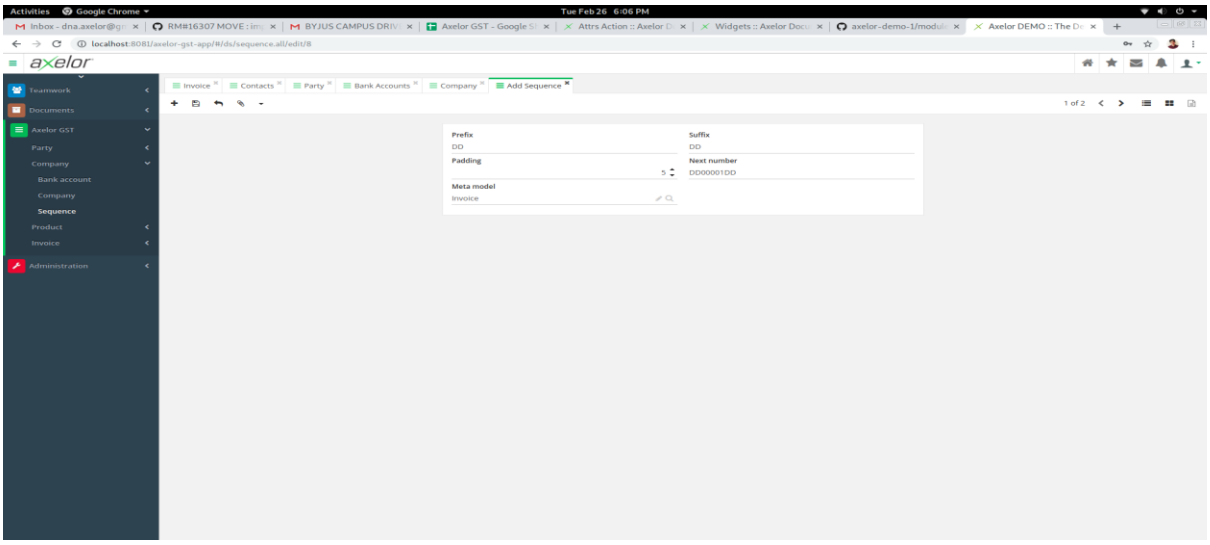
Date 1 Jan 2019 17:09
Reference

Party Name
Axelor

Item	Qty	Price	Net Amount	CGST	SGST	IGST	Gross Amount
[Iphonex]Iphone x	1	5000	5000	300	300	0	5600
[TSTPROD]Test Prod	1	60	60	3.6	3.6	0	67.2
Total	2	5060	5060	303.6	303.6	0	5667.2

Fig 5.3.3 Invoice Generation

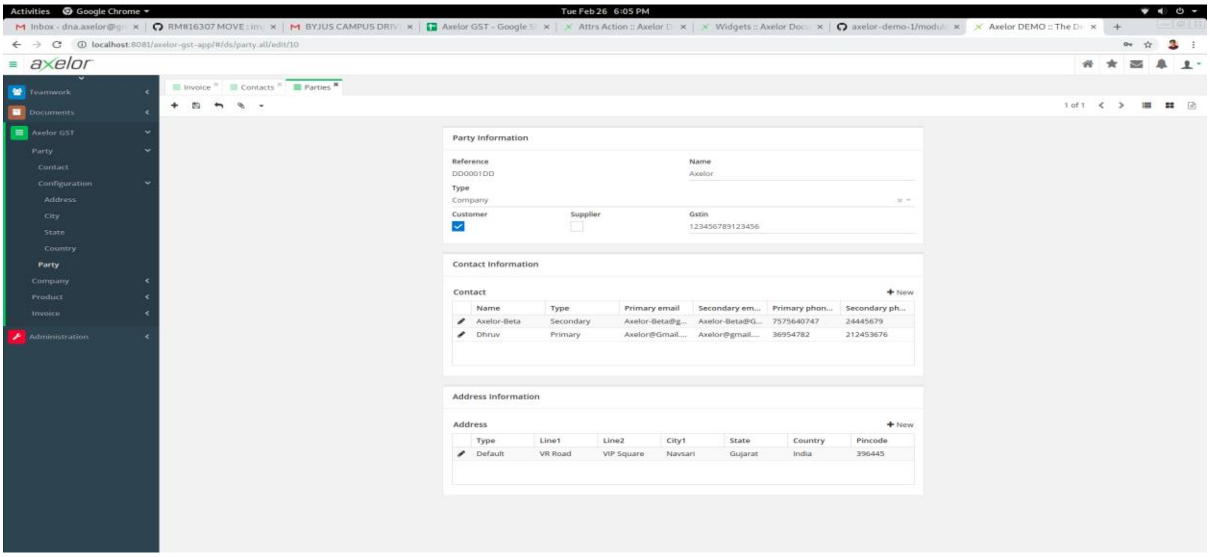
This is the bill generated of the sale invoice, which is created with BIRT report generator.



Prefix: DD
Suffix: DD
Padding: 5
Next number: DD00001DD
Meta model: Invoice

Fig 5.3.4 Sequence Generation

Here user can generate Sequence for party and invoice.



localhost:8081/axelor-gst-app/#/ds/party.all/edit/10

Party Information

Reference DD0001DD		Name Axelor
Type Company		
Customer ☑	Supplier ☐	Gstin 123456789123456

Contact Information

Contact + New

Name	Type	Primary email	Secondary em...	Primary phon...	Secondary ph...
Axelor-Beta	Secondary	Axelor-Beta@g...	Axelor-Beta@G...	7575640747	24445679
Dhruv	Primary	Axelor@Gmail....	Axelor@gmail....	36954782	212453676

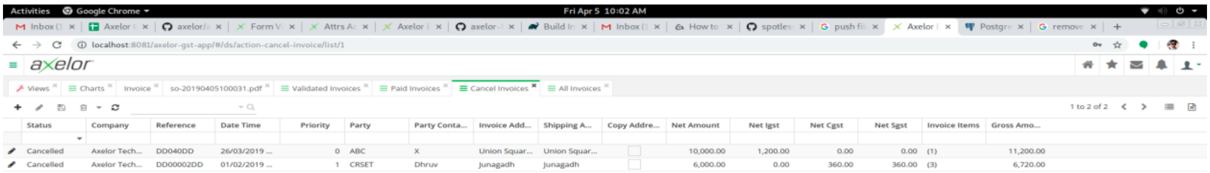
Address Information

Address + New

Type	Line1	Line2	City1	State	Country	Pincode
Default	VR Road	VIP Square	Navsari	Gujarat	India	396445

Fig 5.3.5 Party Generation

Here Admin can generate Party and contacts of the party

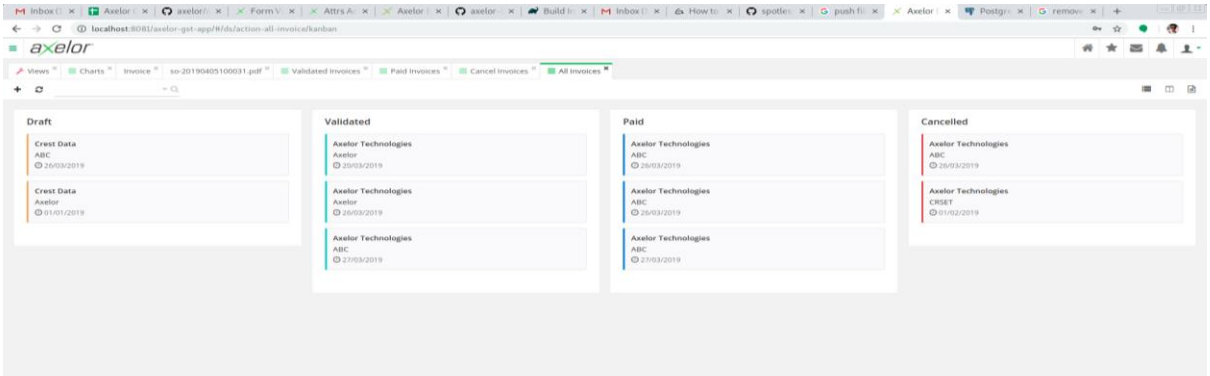


localhost:8081/axelor-gst-app/#/ds/action-cancel-invoice/list/1

Status	Company	Reference	Date Time	Priority	Party	Party Conta...	Invoice Add...	Shipping A...	Copy Addre...	Net Amount	Net Igst	Net Cgst	Net Sgst	Invoice Items	Gross Amo...
Cancelled	Axelor Tech...	DD040DD	26/03/2019 ...	0	ABC	X	Union Squar...	Union Squar...	☐	10,000.00	1,200.00	0.00	0.00	(1)	11,200.00
Cancelled	Axelor Tech...	DD00002DD	01/02/2019 ...	1	CRSET	Dhruv	Junagadh	Junagadh	☐	6,000.00	0.00	360.00	360.00	(3)	6,720.00

Fig 5.3.6 Conditional Invoice

Here user can see the conditional views of the invoice which are based on the status of the invoice.



Draft

Crest Data
ABC
26/03/2019

Crest Data
Axelor
01/01/2019

Validated

Axelor Technologies
Axelor
20/03/2019

Axelor Technologies
Axelor
26/03/2019

Axelor Technologies
ABC
27/03/2019

Paid

Axelor Technologies
ABC
26/03/2019

Axelor Technologies
ABC
26/03/2019

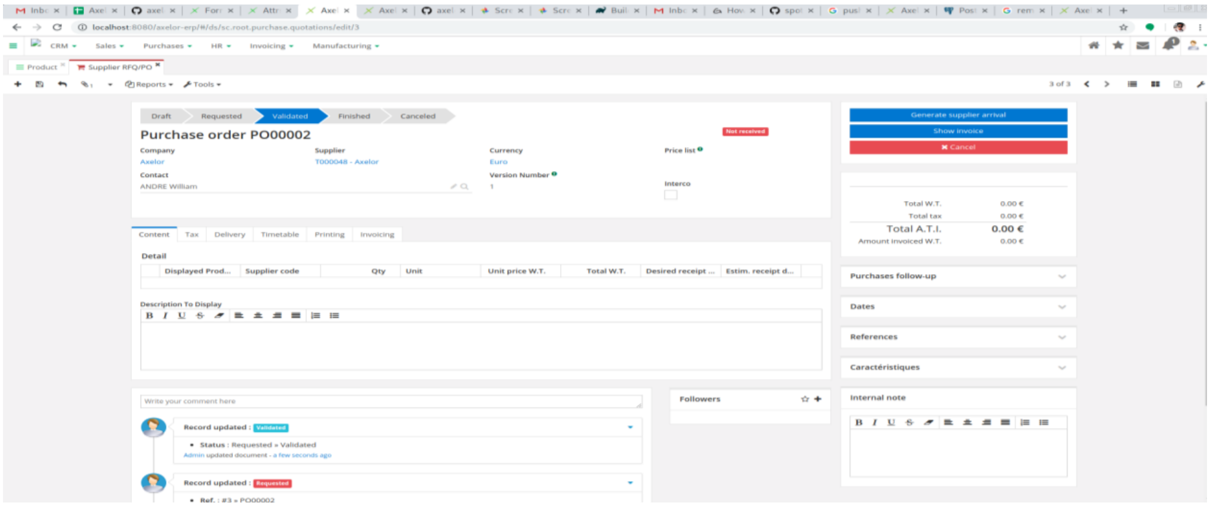
Axelor Technologies
ABC
27/03/2019

Cancelled

Axelor Technologies
ABC
26/03/2019

Axelor Technologies
CRSET
01/02/2019

Fig 5.3.7 Kanban View



Purchase order PO00002

Company: Axelor
Supplier: T000048 - Axelor
Currency: Euro
Price list
Contact: ANDRE William
Version Number: 1
Interco: □

Detail

Displayed Prod...	Supplier code	Qty	Unit	Unit price W.T.	Total W.T.	Desired receipt ...	Estim. receipt d...

Description To Display

Total W.T.	0.00 €
Total tax	0.00 €
Total A.T.I.	0.00 €
Amount invoiced W.T.	0.00 €

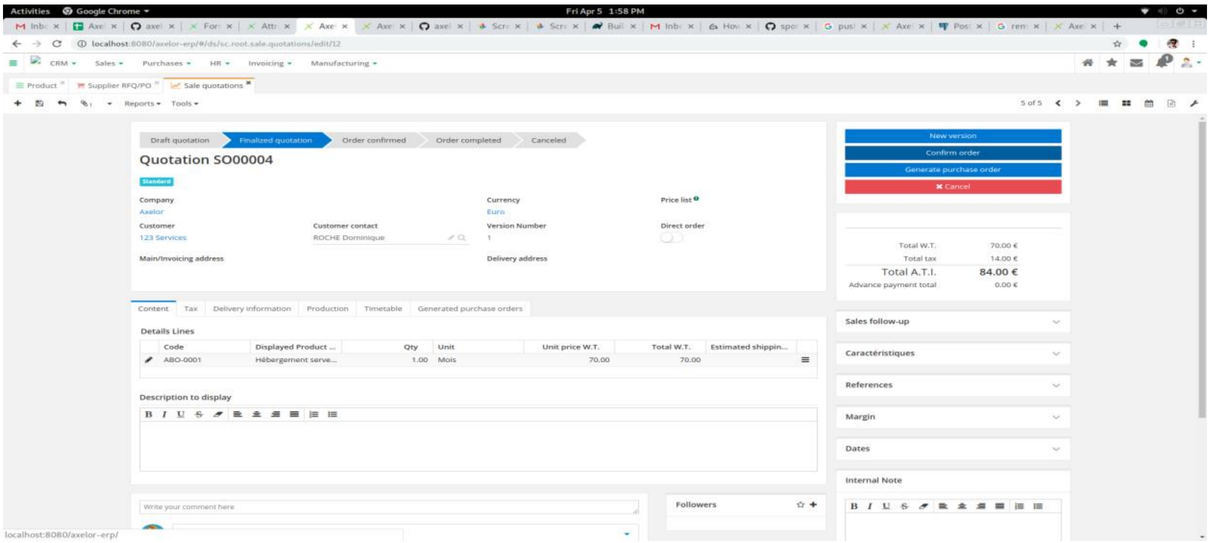
Record updated : Validated
- Status : Requested » Validated

Admin updated document - a few seconds ago

Record updated : Requested
- Ref. : #3 » PO00002

Fig 5.3.8 Purchase Order

Here user can place the purchase order of the products.



Quotation SO00004

Standard

Company: Axelor

Currency: Euro

Price list

Customer: 123 Services

Customer contact: ROCHE Dominique

Version Number: 1

Direct order

Main/invoicing address

Delivery address

Total W.T.	70.00 €
Total tax	14.00 €
Total A.T.I.	84.00 €
Advance payment total	0.00 €

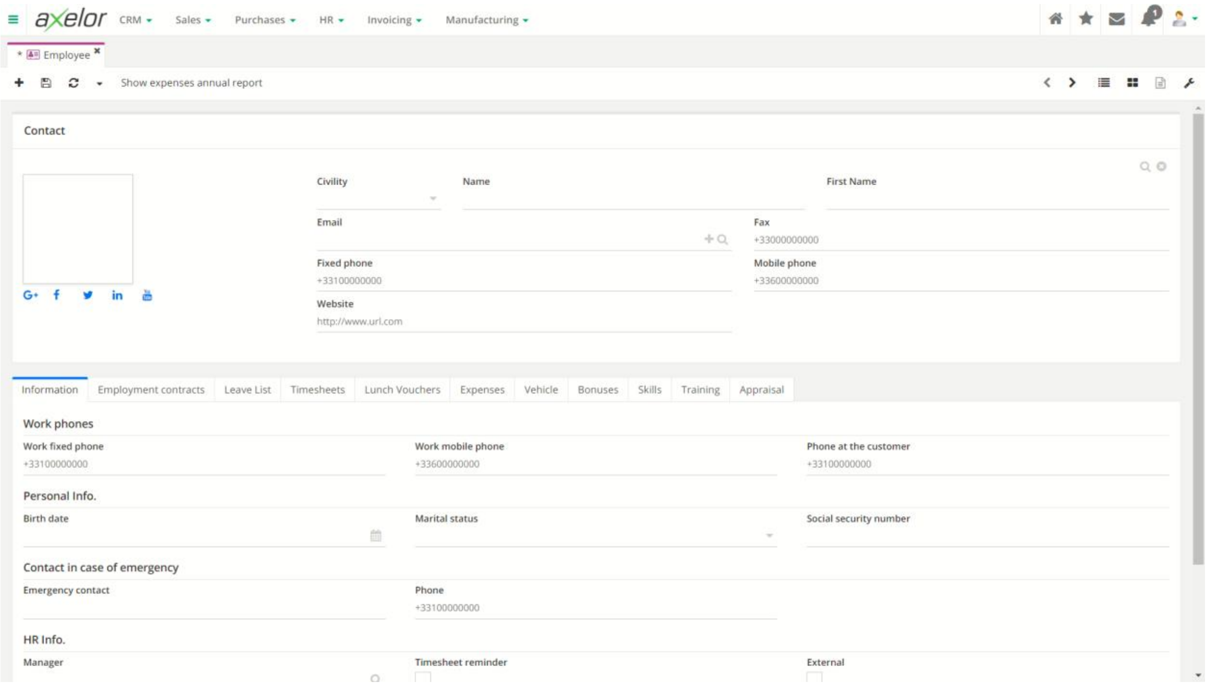
Details Lines

Code	Displayed Product ...	Qty	Unit	Unit price W.T.	Total W.T.	Estimated shippin...
ABO-0001	Hébergement serve...	1.00	Mois	70.00	70.00	

Description to display

Fig 5.3.9 Sale Order

Here user can place the sale order of the products.



Contact

Civility

Name

First Name

Email

Fax: +33000000000

Fixed phone: +33100000000

Mobile phone: +33600000000

Website: http://www.url.com

Work phones

Work fixed phone: +33100000000

Work mobile phone: +33600000000

Phone at the customer: +33100000000

Personal Info.

Birth date

Marital status

Social security number

Contact in case of emergency

Emergency contact

Phone: +33100000000

HR Info.

Manager

Timesheet reminder

External

Fig 5.3.10 Employee Creation

Here user can enter the employee information

Implementation Planning

6.1 Implementation Environment

In this project our implementation environment is mainly JAVA and Axelor Development Kit (ADK).

- Axelor development kit

We have used ADK to create the Domain and view of the system, which are the model and view of the MVC structure.

- JAVA

JAVA language is used to create the controller of the MVC Structure, which bridges the gap between the domain and view.

6.2 Program/Modules Specification

Main modules of the system are:

Sales

This application manages the sales of the company. It allows to create quotations, to print them or to generate them in PDF format and to send them directly from the application. Once the estimate has been validated and finalized, it automatically changes into a sales order.

Purchase

This application allows to manage the purchases of the company. It allows you to create quotations that, once validated and finalized, automatically transform into purchase orders. You can generate supplier arrivals from a purchase order to schedule the associated stock movements, and generate the control invoice.

6.3 Security Features

Only an authenticated user with valid credentials will be allowed to login in Axelor Business Suite.

A user can only access to the modules and functionality which is assigned them for access except an admin which is the super user of the system.

6.4 Coding Standards

6.4.1 Purpose of coding standards and best practices

To develop reliable and maintainable applications, one must follow coding standards and best
Practices.

The naming conventions, coding standards and best practices described in this document are those referred by us. There are several standards that exist in the programming industry. None of them are wrong or bad and one may follow any of them. What is more important is, selecting one standard approach and ensuring that the set of standards defined are well adopted.

6.4.2 Here are several reasons why coding specifications are important:

Your peer programmers have to understand the code you produce. A coding standard acts as the blueprint for all the team to decipher the code.

Simplicity and clarity achieved by consistent coding save you from common mistakes.

If you revise your code after some time then it becomes easy to understand that code. Its industry standard to follow a particular standard to be more quality in software.

There are few guidelines which can be followed while coding in JAVA:

Coding Standards for Components: It is recommended to write components name by its purpose. This approach improves the readability and maintainability of code.

Coding Standards for Classes: Usually class name should be noun starting with uppercase letter. If it contains multiple word than every inner word should start with uppercase.

Eg: String, String Buffer, and Dog

Coding Standards for Interface: Usually interface name should be adjective starting with uppercase letter. If it contains multiple word than every inner word should start with uppercase.

Eg: Runnable, Serializable, And Comparable

Coding Standards for Methods: Usually method name should either be verb or verb noun combination starting with lower letter. If it contains multiple word than every inner word should start with uppercase.

Eg: print (), sleep(), setSalary()

Coding Standards for Variables: Usually variable name should be noun starting with lowercase letter. If it contains multiple word than every inner word should start with uppercase.

Eg: name, age. mobileNumber

Coding Standards for Constants: Usually constant name should be noun. It should contain only uppercase If it contains multiple word than words are separated with (_) underscore symbol. Usually we declare constants with public static and final modifiers.

Java Bean Coding Standards: A Java Bean is a simple java class with private properties and public getter and setter methods

Getter Methods:

1. It should be public method
2. Method name should be prefixed with “get”
3. It should not take any argument

Setter Methods:

1. It should be public method
2. Return Type should be void
3. Method name should be prefixed with “set”
4. It should take some argument

```
public class StudentBean{

private String name;

public void setName(String name){

this.name=name;

}public String getName(){return name;
```

}}

Note: For boolean properties getter method can be prefixed with “get” or “is”

Coding convention for Listners:

- To register a Listner method name should prefixed with add

Eg: public void addMyAccountListner(MyActionListner);

- To unregister a Listner method name should prefixed with remove

Eg: public void removeMyAccountListner(MyActionListner);

TESTING

7.1 TESTING PLAN

The objective of the system testing is to ensure that all individual programs are working as
Expected, that the programs link together to meet the requirements specified and ensure that the computer system and the associated clerical and other procedures work together. Systems are not designed as entire systems but they are tested as a single system. The analyst must perform both unit and system testing.

Different types of testing methods are available. We have tested our system for different Aspects like Does the application meet the goals for which it has been designed? This was a
Very important question that stood before us as the application was designed to be implemented on such a large network.

To fulfil its goal of being able to run on different systems we went through a series of tests at
Different places where this is supported to be used the most. As we need to make our system
Efficient enough, we need to test it thoroughly.

Finally, we tested the system with the real-time data, for which it is actually designed. We are
Almost successful in satisfying our needs as it was designed according to their requirements. But it is very necessary to maintain this application and so our work is still not over.

7.2 TESTING STRATEGY

Once source code has been generated, software must be tested to uncover as many errors as
Possible before delivery to customers. Your goal is to design a series of test cases that have a
High likelihood of finding errors. Software testing techniques provide systematic guidance for Designing tests that

1. Exercise the internal logic of software components

2. Exercise the inputs and outputs domains of the program to uncover errors in program

Function, behaviour and performance.

For testing of modules developed, we tried to make sure that each and every view like form and grid works accordingly. We also checked whether reports are being generated properly and checked them against the records of database to make sure data getting passed to report generator is correct.

Testing Objectives

Testing is a process of executing a program with the intention of finding an error.

- A good test case is one that has a high probability of finding an as-yet undiscovered error.
- A successful test is one that uncovers an as-yet undiscovered error.

7.3 TEST SUITE DESIGN

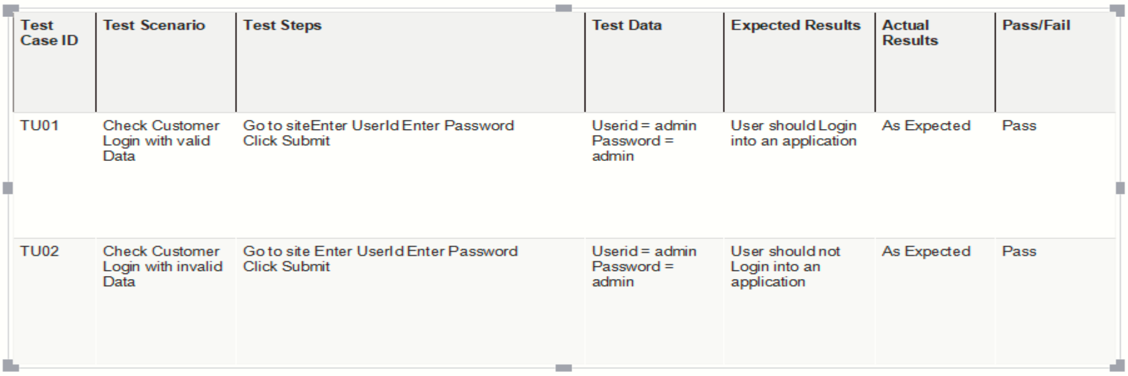
To minimize the number of errors in software, a rich variety of test design methods has evolved for software. These methods provide the developer with a systematic approach to testing. More important, methods provide a mechanism that can help to ensure the completeness of test and provide the highest likelihood for uncovering errors in software.

An engineering product can be tested in one of two ways:

- Knowing the specified function that product has been designed to perform, tests can be Conducted that demonstrate each function is fully operational while at the same time Searching for errors in each function:

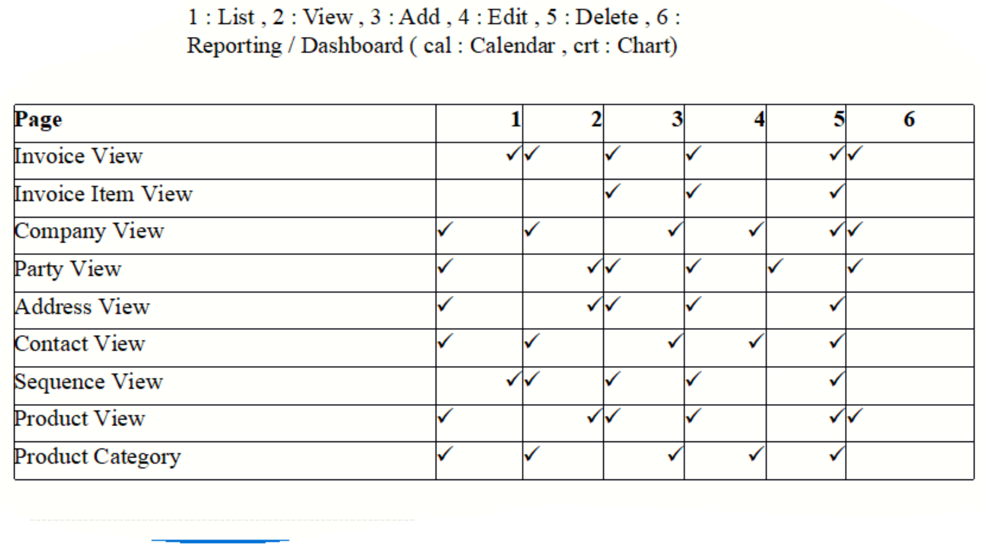
- Knowing the internal workings of a product, tests can be conducted to ensure that “all gear mesh “, that is, internal oppression is performed according to specifications and all internal components have been adequately exercised.

  Here are the testes that have been performed on the views and domains of the module developed.



Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Pass/Fail
TU01	Check Customer Login with valid Data	Go to siteEnter UserId Enter Password Click Submit	Userid = admin Password = admin	User should Login into an application	As Expected	Pass
TU02	Check Customer Login with invalid Data	Go to site Enter UserId Enter Password Click Submit	Userid = admin Password = admin	User should not Login into an application	As Expected	Pass

Fig. 7.3.1 Test Case



1 : List , 2 : View , 3 : Add , 4 : Edit , 5 : Delete , 6 : Reporting / Dashboard (cal : Calendar , crt : Chart)

Page	**1**	**2**	**3**	**4**	**5**	**6**
Invoice View	✓	✓	✓	✓	✓	✓
Invoice Item View			✓	✓	✓	
Company View	✓	✓	✓	✓	✓	✓
Party View	✓	✓	✓	✓	✓	✓
Address View	✓	✓	✓	✓	✓	
Contact View	✓	✓	✓	✓	✓	
Sequence View	✓	✓	✓	✓	✓	
Product View	✓	✓	✓	✓	✓	✓
Product Category	✓	✓	✓	✓	✓	

Fig. 7.3.2 Test Case

CONCLUSION AND DISCUSSION

8.1 SELF ANALYSIS OF PROJECT VIABILITIES

The basic scope of the project included the centralised management of data as well as providing quick and efficient models. One of the major vulnerabilities can be the complexity of the product.

The vulnerabilities can arise from the user requirements, for e.g. if user wants certain models the product need to be configured according to that models only which can sometime lead to unorthodox behaviours.

8.2 PROBLEMS ENCOUNTERED AND POSSIBLE SOLUTIONS

One of the main problems while developing was developing module as separate standalone app and then integrating it in the ABS.

As ERP is a complex and integrated application making changes in existing software is a tedious work, but with the help of POJO classes it can reduce the complexity at the Database level.

8.3 SUMMARY OF PROJECT WORK

The ultimate aim is that the user can get productivity, flexible and standardized business processes.

It eliminates redundant processes and tasks through automation. Robust, flexible, and configurable modules.

They are not a one-size-fixed modules but can be tailored to the unique needs of a business and can adapt to the ever-changing needs of a growing business. Processes are generally automated; it allows businesses to standardize their own processes and system's transparency is greatly improved while errors are greatly reduced.

LIMITATION AND FUTURE ENHANCEMENT

9.1 LIMITATIONS

“No *software is completely failure proof”.* Every software ever built is limited to a specific scope and though a developer should keep in mind every possible scenario while developing a new software, every software is demarcated by its scope and hence has its own limitations

This section will discuss the limitations of the concerned add-on.

9.1.1 Developed according to specific region

Currently the ABS is being used in the FRANCE region with there being the common language French it came with the local languages. In future release the company decided to launch the product in the India where addition tax will be added. Currently it’s been hardcoded according to the France region.

9.2 FUTURE ENHANCEMENT

Provide mobile application for this web application.

Providing localization to support more language.

BIBLIOGRAPHY

- *https://docs.axelor.com/*
- *https://github.com/axelor*
- *https://www.youtube.com/*