

Library Management System (Salesforce)

PREPARED BY

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FACULTY GUIDE

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In Time Tec Visionsoft Pvt. Ltd.

Practice School-2

Submitted in partial fulfillment of the requirements

for the degree of

Bachelor of Technology in Computer Science and Engineering

By:

Madhav Yadav (2018BTECHCSE006)

Faculty Guide:

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May-2022

CERTIFICATE

This is to certify that the Practice School-2 project work entitled **In Time Tec. Visionsoft** submitted by **Madhav Yadav (2018BTechCSE119)**, towards the partial fulfillment of the requirements for the degree of **Bachelor of Technology in Computer Science and Engineering** of JK Lakshmipat University Jaipur is the record of work carried out by them under my supervision and guidance. In my opinion, the submitted work has reached a level required for being accepted for Practice School-II examination.



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ACKNOWLEDGEMENTS

The internship opportunity I had with **In Time Tec. Visionsoft Pvt. Ltd.** was a great chance for learning and professional development. Therefore, I consider myself as a very lucky individual as I was provided with an opportunity to be a part of Sandvine. I am also grateful for having a chance to meet so many wonderful people and professionals who led me through this internship period.

I perceive as this opportunity as a big milestone in my career development. I have taken efforts in completing this internship. However, it would not have been possible without the kind support and help of many individuals and organizations. I would like to express heartfelt gratitude to **Prof Dr.Sanjay Goel**, Director, Institute of Engineering & Technology for providing this opportunity to me. Also, I would like to thank my faculty guide **Dr. S. Taruna** for her constant support and guidance.

I am highly indebted to **In Time Tec.** for their guidance and constant supervision as well as for providing necessary information regarding the project & also for their support in completing the project.

I would like to express my gratitude towards the members of In Time Tec. for their kind co-operation and encouragement which helped me in the completion of this project. I would like to express my gratitude and thanks to industry mentors **Ms. Neha Kumawat**, for giving me such attention and time.



Sincerely yours,

Madhav Yadav
(2018BTechCSE006)

ABSTRACT

Salesforce, Inc. is a famous American cloud-based software company that provides CRM services. Salesforce is a popular CRM tool for support, sales, and marketing teams worldwide. Salesforce services allow businesses to use cloud technology to better connect with partners, customers, and potential customers. Using the Salesforce CRM, companies can track customer activity, market to customers, and many more services. A CRM platform helps you go deeper with all your metrics and data; you could also set up a dashboard that showcases your data visually. In addition to this, you can also have personalized outreach with automation. Another significant benefit is that a CRM platform can also improve customer service's ability to help customers or a sales team's outreach efforts.

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CHAPTER 1: INTRODUCTION

1.1 About the organization

In Time Tec. offers Software Services, In Time Tec partners with clients to deliver long-term software services that enable our partners to meet their business objectives, focus on innovation, and utilize resources most effectively. In Time Tec also offers MPS (Managed Print Service) products that enable customers to better manage their print fleet by automating and simplifying processes.

Website	https://www.intimetec.com/
Industry	Software Services and MPS products
Company size	501-1000 employees
Headquarters	Idaho, United States
Type	Private
Founded	2009
Specialties	Business Intelligence, Data Science, Cyber Security, Devops, Mobile Application Development, Automation, Web Development, Salesforce.

CHAPTER 2: Training Phases.

2.1 Training Workflow

Basically The Training is of 14 weeks in which first 12 weeks is about learning and last 2 weeks is about creating a final project in the training. Thus Training can be divided in two phases.

- **Phase-I** : Phase 1 is of 12 weeks which is learning about salesforce with the help of course made for us on moodle.com.
- **Phase- II**: After trainees are done with the 12 week course, Trainees are supposed to make Library Management Application using Salesforce.

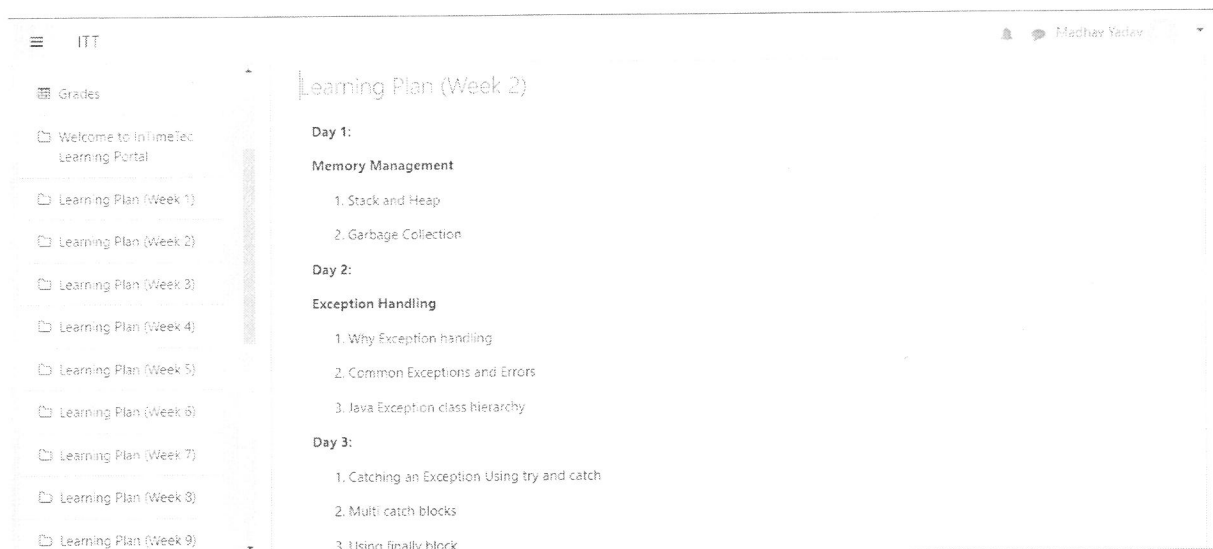
Phase 1:

In phase 1 individuals are required to follow the course given to trainees on moodle in which, individuals are given particular learning resources in each week which also includes practicing daily assignments and a major assignment in the end of each week.

Trainees are told to upload daily practices on bitbucket repositories and submit it to the mentor, who grades us in the end of each week.

Every week segment is divided in different resources required to learn salesforce, first 4 weeks are all about learning java and making java basics strong and then move on to different resources.

Below is the Screenshot of our course to get an idea about it:



Last two weeks which are week 13 and week 14 are about doing a complete project which is Library management System with specifications given to us.

And after the course is complete that is the phase 1, Trainees do not have much idea about the phase 2 except that they will be given projects according to their performances.

Till week 5 we were learning java which is there to improve our basics in oops language, then we are going to use apex in the salesforce which is pretty much similar to java.

Below is screenshot of the course involving weeks with java topics for reference :

Learning Plan (Week 4)

Day 1:

Basics of Unit Testing

1. Introduction to JUnit
2. Using Assertion

Day 2:

JDBC

1. Connect to a Database Using DriverManager
2. The DriverManager Class
3. The JDBC URL
4. JDBC Driver Implementation Versions

Day 3:

1. Submit Queries and Read Results from the Database
2. Statements ResultSets
3. Updating ResultSets

Day 4:

1. Use PreparedStatement and CallableStatement Objects

In a week we are given topics in java to learn in 5 days , We are also given daily assignments that we have to submit in the end of that week as shown below :

Daily Practice Assignments

Day 1:

Write unit test cases for the week 3- weekly assignment

Day 2:

Setup any opensource database.

Create a database for Internet Service Provider.

Create a java utility class that connects to this database and run some sample queries from java and print results on the console.

Day 3:

Write a java code to retrieve all the internet plans and display them on the console with plan name, speed, price, plan duration

Day 4:

Write code to read a plan name from console and query database to retrieve all the customers who have subscribed to that plan most recently(from last 2 months).

Use PreparedStatement/CallableStatements and RowSet for this

Day 5:

Write a program that creates plan subscription for customer. As a final step, ask confirmation on console with yes/no, rollback the transaction if selected No

We also have to submit weekly assignment, which is comparatively a larger one to the daily assignments like this :

Week-4 Assignment

Implement the week 3 assignment using database to store Internet plans, Customer data, Plan subscription data etc.

- Write database logic to retrieve plans on different sorting order(the query should be dynamic to take any parameter(speed, price) for sorting)
- Write search logic using database query
- Write logic to create plan subscription by taking customer and plan as input.

From Week 6 we have started learning Salesforce, In week 6 it was about getting a detail idea of what salesforce is. You can see the topics related in the below image :

Learning Plan (Week 6)

Day 1:

What is CRM?

What is ERP?

Day 2:

Understanding SDLC and Different types of software applications.

Different types of CRM's.

Why we need an Automated CRM Application?

Day 3:

What is salesforce?

What is Force.com

Advantages and features of salesforce.

Day 4:

Salesforce applications / Products

Day 5:

Salesforce Editions and Licenses

Week 7 is about starting with the basics of salesforce platform with a free developer account. Below is an idea of the topics involved in week 7 :

Learning Plan (Week 7)

Day 1:

Creating Developer account.

Setup Visual Studio Code

Day 2:

What is APP, Tabs, Object. standard object vs custom object.

Day 3:

Creating custom Object.

Types of fields and datatypes.

Day 4:

Relationships between objects.

Types of relationship.

Day 5:

Formulas

Cross object formulas.

Currently learning week 8 of salesforce. Every 3-4 trainees in a specific domain are assigned different mentors who pays attention on each student's performance and give them grades according to that.

Implementation :

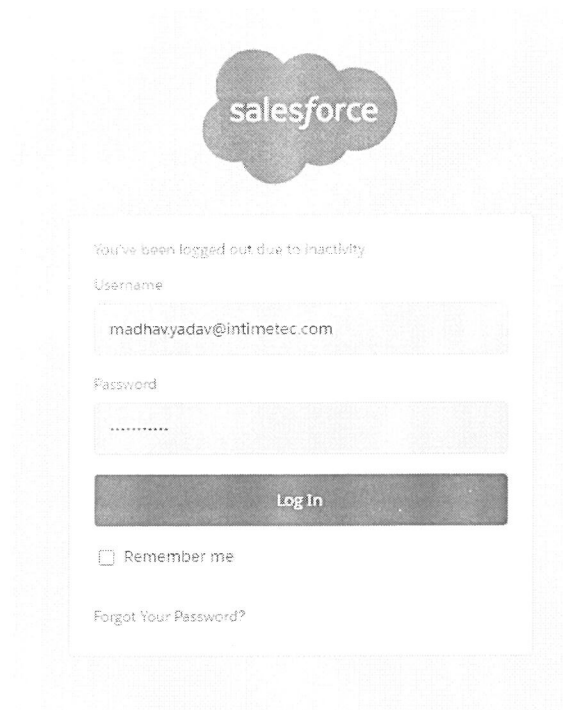
As shown in the above image trainees are given these topics to learn and after the learning trainees are supposed to do a weekly assignment as shown below which is week 7 assignment :

Week-7 Assignment

1. Creating ISP Management app with required Objects and Fields on each Object for ISP Management System.
2. Explain about relationships you created for ISP Management app with reasons.
3. Explain use of standard objects like User, Lead, Account, Contact, Opportunity, Product, and Case.

Step 1 : Creating developer account and setting up visual studio code :

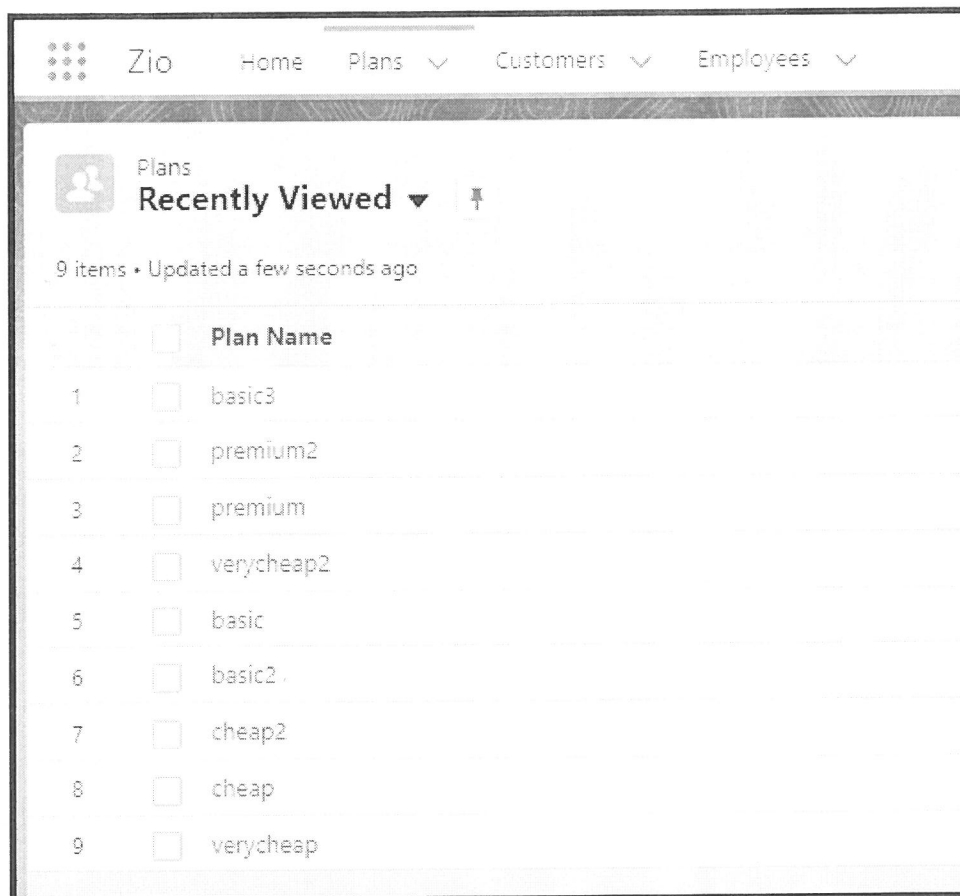
⇒ First we create a salesforce developer account which looks like this :



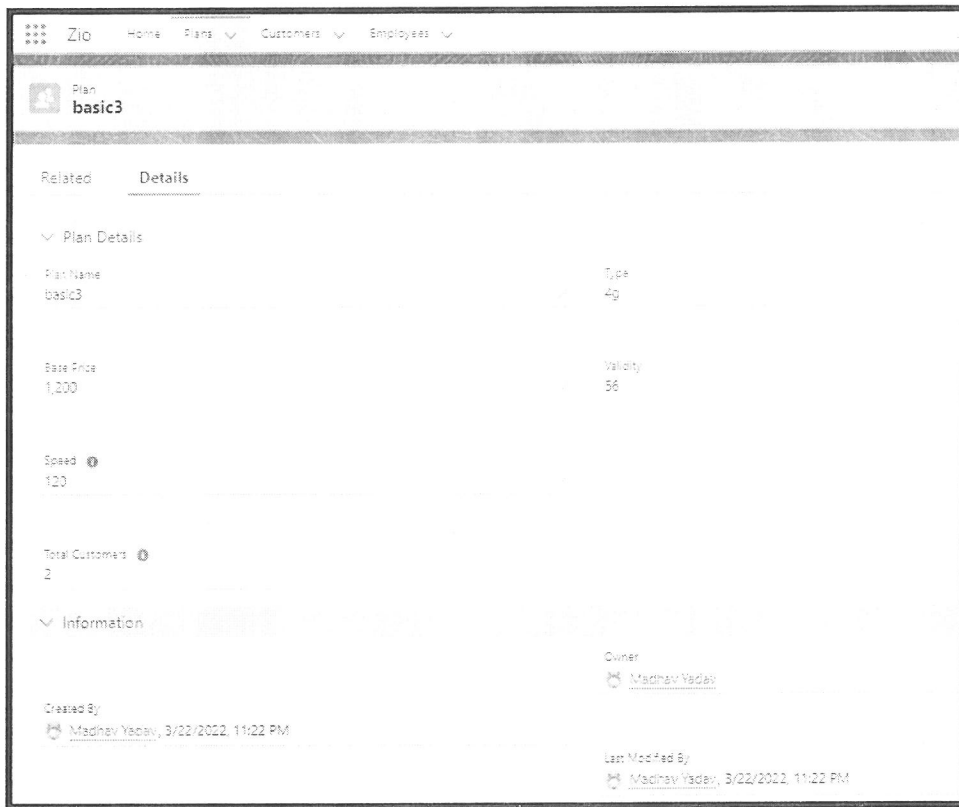
- ⇒ After creating a developer account we have to link our salesforce developer account with visual studio code .
- ⇒ We link visual studio and salesforce with the help of extension provided by visual studio code.

Step 2 : What is APP, Tabs, Object. standard object vs custom object.

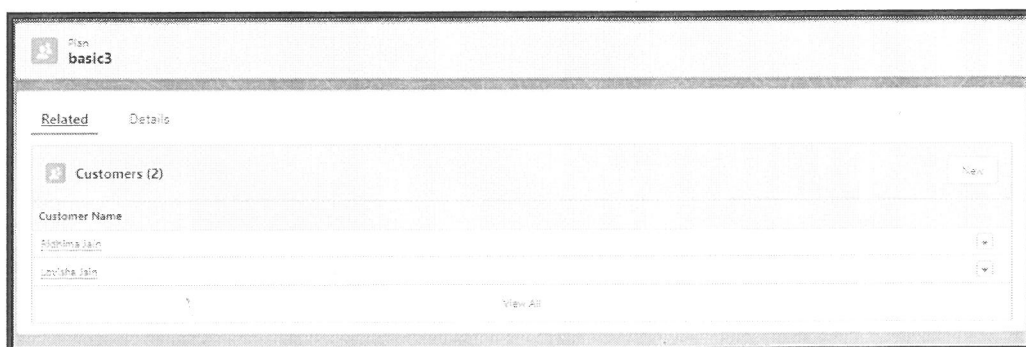
- ⇒ APP, Tabs, Object. standard object vs custom object these are basically containers of a particular category of informations.
- ⇒ One can get an idea with the below picture :



- ⇒ In the image shown above.. Zio is the app name.
- ⇒ Plans customers and Employees are tabs containing respective objects which are plan, customer and employee.
- ⇒ Here Plan is a custom object created by a developer and the plans that we see like basic3 and premium2 are records of the plan.
- ⇒ This is how each record looks like with its respective fields as shown below :



- ⇒ We can edit these fields even after the submission of the records that is one of the flexibility of salesforce that how easy it is to change records.
- ⇒ The Plan object is in relation to the customers and thus when we click on related option that can be seen in the above image we can see the records of customers that are in relation to that particular Plan record.



- ⇒ We can also create a new Customer related to this particular plan record which also an example of salesforce's flexibility.
- ⇒ This is how we create a project/app on salesforce using different tools and we can also build relationship between these objects these objects according to our needs.
- ⇒ This is to give an idea of a basic app created using salesforce app with a free developer account.

Phase 2 (Final Project):

Phase 2 is about the final project that is given to trainees after learning salesforce in the starting 12 weeks. Last two weeks are given to trainees for the final project which was Library Management application. Trainees build a Library Management App through Salesforce Developer Edition Platform.

Shown below are the Specification of the final project :

Specification of Library Management System (LIB-MS)

A state wants to manage the library books borrowing and membership through LIB-MS. The requirement specifications are:

- The library has three categories of Users:
 - Librarian: Mainly responsible for adding and modifying books, book items, and users. The Librarian can also issue, reserve, and return book items and also manage the Users.
 - Library Manager: Mainly responsible for approval of special requests coming from members, approval for any new book requests that needs to be bought..
 - Library Member: Members can search the books, borrow, renew, reserve, and return a book. Library members can borrow a maximum of 3 books and keep the book maximum for 14 days.
 - Library Prime Member: Prime members can do all things Library members do and in addition they can borrow a maximum of 6 books, keep the book maximum for 30 days and also can borrow special books that are not available for normal members.
 - In each state there are libraries in each district. For each district library there is a separate librarian and library manager.
- Librarians need to manage member registration, prime membership and once members are registered they should be able to login to the system.
- Users can search for books that are in the specific district library they are members of.
- Users can see the books based on categories and their availability. Also they should be able to see on which rack it's available.
- There will be a return period for members to return the book, before 2 day of expiration the system should send a reminder email to members.
- If the return period exceeds then the member needs to pay a fine of 2 rupees for each day.
- Library members can renew the same book at a time but maximum one time.
- Members can reserve the book and members should be able to see when the book will be available based on the return period but the system will notify the reserver if the current borrower returns the reserved book early.
- Members can make special requests to borrow more than the book limit or to keep the book for a long time but that needs to get approval from the Library Manager.

- Whenever there is any book that is not available in the library then the librarian or member can create a request to buy/bring those books from the market. This request will be completed only if the Library Manager approves this request.
- System should be able to store all the payments done by members.
- If the members lose the book then they need to pay the full amount of the book as fine.
- Library members need to renew their membership every year by paying a specific amount of money. They need to get a reminder if they are reaching membership expiration. If they don't pay then they lose access to the system as well as the library.

2.1 Tools and Technologies

- **Eclipse IDE:** It is the IDE that trainees used to in the phase 1 while learning Java as the concepts of Java are required in salesforce. Salesforce uses Apex as the language and java is very similar to it.
- **VSCode:** Visual Studio Code is a type of integrated development environment (IDE) that allows developers to write and test code simultaneously. It's also compatible with other platforms such as console and docker. With support for over 200 languages, it's easy to get started with code creation. With the SSH extension, we can easily open a remote folder on any server or virtual machine. It lets us interact with files and folders located on the remote filesystem of our company. We can easily access code present at our lab build and test servers.
- **Salesforce Platform :** Salesforce Platform (also known as Force.com) is a platform as a service (PaaS) that allows developers to create add-on applications that integrate into the main Salesforce.com application. These third-party applications are hosted on Salesforce.com's infrastructure.
- **Git:** It is a DevOps tool used for source code management. It is a free and open-source version control system used to handle small to very large projects efficiently. Git is used to tracking changes in the source code, enabling multiple developers to work together on non-linear development. We can use git commands to access others code changes, commit our changes and put it remotely so that they can be accessed by other employees as well.
- **Java :** Java is a high-level, class-based, object-oriented programming language that is designed to have as few implementation dependencies as possible. It is a general-purpose programming language intended to let programmers write once, run anywhere (WORA),[17] meaning that compiled Java code can run on all platforms that support Java without the need to recompile.
- **Apex :** Apex is a proprietary language developed by Salesforce.com. It is a strongly typed, object-oriented programming language that allows developers to execute flow and transaction control statements on the Force.com platform server in conjunction with calls to the Force.com API.

CHAPTER 3: Final Project

Trainees were given 2 weeks to complete the Library Management System App on the salesforce platform. As there is an idea generated about the salesforce platform in phase One.

3.1 Introduction

Library Management System is application build though Salesforce platform. It is an application built to control all the operations in a library. Suppose there is company which has various libraries in various states and district. They need a proper CRM service to handle their operations. Library Management System is just the app to handle this. The app is responsible to handle the operations from every side of the organizations. It will have Library Members , Managers and Librarians as the users of the application.

3.2 Implementation

3.2.1 Project Structure :

The project structure consists of the relationships between various objects that are used in the application. Each object consists of fields that are required to store the information that are required for the proper functioning of the application.

Below is the Schema of the Library Management Application :

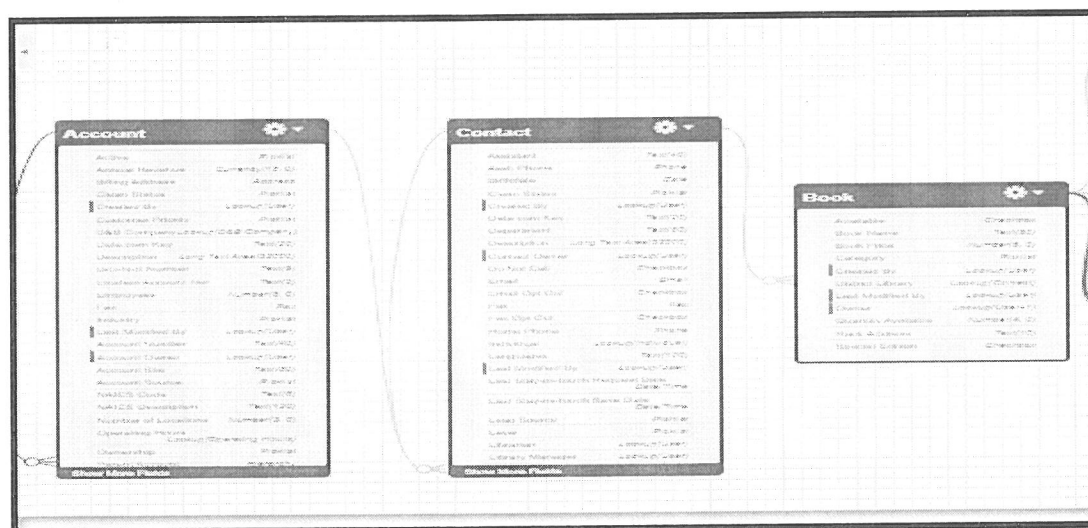


Fig 1.1 It is the relationship between objects in which Account, Contact are standard objects and Book is custom object.

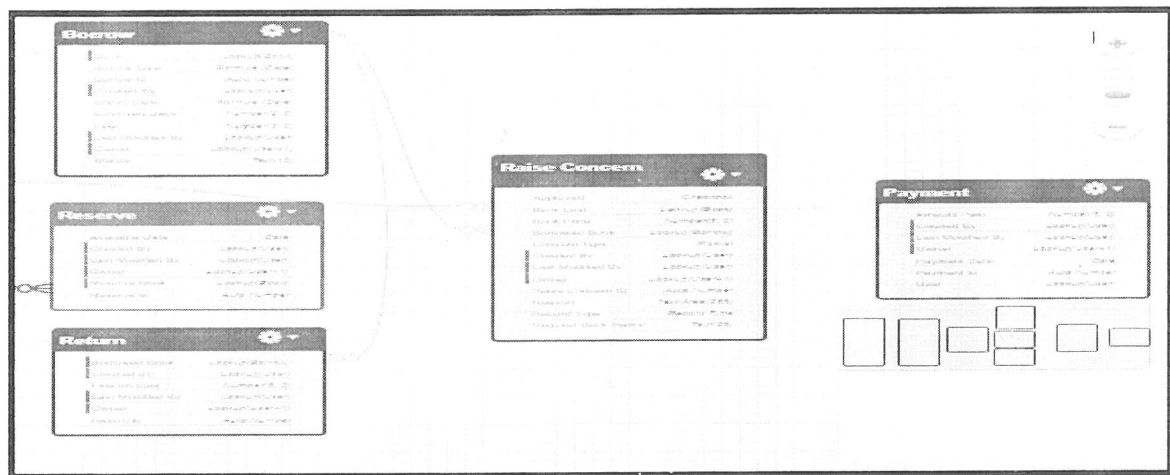


Fig 1.2 It is the continuation of fig 1.1. In this figure all the five objects that we see are custom objects.

Schema Description :

- ⇒ Standard objects are the objects pre build objects provided by salesforce to make the development process easier.
- ⇒ Custom objects are the objects that developers make when there is not pre built objects for the business requirement.
- ⇒ Account and Contacts are two standard objects that is used by me in the Library Management Application.
- ⇒ Book, Borrow, Reserve, Return, Raise Concern, Payment are custom objects build by me to accomplish the requirements in the project.

3.2.2 Objects and their Uses:

1. Account (State Library)

- ⇒ Account is standard object that is uses to store the various states in which the libraries are established

2. Contact (Library District)

- ⇒ Contact object stores the the various libraries in the states.

3. Book

- ⇒ Book is a custom object which store all the necessary information about the books that are there in each library. This object is in relation with various other objects.

4. Borrow

- ⇒ Borrow object stores the information of the books that are issued from the library. This object has a look up relationship with the Book object.

5. Reserve

- ⇒ Reserve object stores the information of the books that are reserved by the library members.

6. Return

- ⇒ Return object stores the information of the books that are returned by the library members.

7. Payment

- ⇒ Payment object stores the payments done by the library members.

8. Raise Concerns

- ⇒ This object stores all the concerns raised by the library users which also includes the records that are to be approved by the Library Manager.

Book Name	District Library	Available	Book Price	Quantity Available	Rack Address	Special Edition
Flight of the Ibis	Uttarakhand	✓	1,200	5	K2-H12	
Remains of the Day	Uttarakhand	✓	600	15	K2-H12	
Real Nankana	Uttarakhand	✓	220	7	K2-H12	
Being a Man	Uttarakhand	✓	655	0	K2-H12	
Searching for Breeze	Mumbai	✓	1,220	8	K2-H12	
Testing the World	Nagpur	✓	220	30	K2-H12	
The Boss	Agri	✓	500	1	K2-H12	
The Apocalypse	Kanpur	✓	490	12	K2-H12	
The Backyard	Agri	✓	440	1	K2-H12	
The Beautiful Mind	Agri	✓	1,000	13	K2-H12	
The Big Stop	Uttarakhand	✓	444	3	K2-H12	
The Dancer	Mumbai	✓	790	10	K2-H12	

Fig 3.1 This image shows the objects that are in use in the application from the system administrators perspective.

3.2.3 Custom Profiles Used :

1. Library Member

⇒ It is a custom profile which will fulfill the requirements of the library members who will log in the application.

⇒ Requirements to be fulfilled are:

Members can search the books, borrow, renew, reserve, and return a book. Library members can borrow a maximum of 3 books and keep the book maximum for 14 days.

2. Librarian

⇒ Librarian is the one who have the responsibility to handle the working of the library.

⇒ Requirements to be fulfilled are:

Mainly responsible for adding and modifying books, book items, and users. The Librarian can also issue, reserve, and return book items and also manage the Users.

3. Library Manager

⇒ Library Manager is mainly responsible to approve the records that are contained in the raised concerns objects such as book requests.

⇒ **Requirements to be fulfilled are:**

Mainly responsible for approval of special requests coming from members, approval for any new book requests that needs to be bought.

3.2.4 Tools and Services Used

1. Flows :

The main tool that was used a lot in the application is Flows. Flows is an automation tool provided by Salesforce.

- ⇒ The tool helped in doing automation on objects such as sending emails to the members who are reaching their expiry dates.
- ⇒ The tool helped in creating records of few objects automatically. When a concern was approved by the Library manager. The flow created by me will automatically created an object which is required. Such as creating a book record if the book request is approved by the library manager.
- ⇒ Through flows I was able to do actions on a schedule as there is an option in flows to schedule actions that we want to do, a flow can be scheduled daily and only for according to our requirement.

3.3 Learnings :

- ⇒ As there are specifications given according to which trainees are meant to build the final project. It took around 3 days to only decide the structure of the as that was the most important part. After giving 3 days to the structure of the project , still there were a lot of times when trainees had to restructure the project.
- ⇒ If we don't decide the project structure well before implementation, we may face problem during the implementation, which will create a lot of barriers during the development process.
- ⇒ In order to develop an application smoothly. Creating a proper project structure is very important. And following the development process in proper direction is also important for a smoother development.

CHAPTER 4: CONCLUSION

In Time Tec. Provided me the opportunity to experience the corporate world and not only the corporate environment but also I feel honored to be given Salesforce as the technology to train on.

The working culture at In Time Tec. is even better than I expected. People here maintain a healthy work environment. Irrespective of their positions everybody here is easy to approach and always ready to help.

Creating Library Management System after learning Salesforce was challenging and also very fruitful at the same as got to have the experience of building a salesforce app from scratch which was very similar to real time project. During this I learned a lot and experienced the technical world environment.

REFERENCES

References :

<https://moodle.intimetec.americas/my/>

<https://bitbucket.org/dashboard/overview>

<https://intimetec-5b-dev-ed.my.salesforce.com/>



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Date: 26th May'22

TO WHOMSOEVER IT MAY CONCERN

Employee Name: Madhav Yadav

Employee ID: ITTV/EMP/2584

Address: Plot no. 1 / 2, Kanakpura Industrial Area, Kanakpura. Sirsi Road, Jaipur-302034.

This is to certify that **Mr. Madhav Yadav** is pursuing internship followed by employment with **In Time Tec Visionsoft Pvt. Ltd** from **1st Feb '22** at our **Jaipur** office located at **Plot no. 1/2, Kanakpura Industrial Area, Kanakpura. Sirsi Road, Jaipur-302034.**

During his Internship period, he is entitled to a stipend of Rs. 15,000/- per month, other details are valid as per the offer letter.

Regards,

Neha Dubey

Sr. HR Associate

In Time Tec Visionsoft (p) Ltd.

Confidential

This is a Computer Generated Document. No Signature Required.

