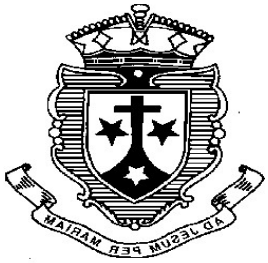


PROJECT REPORT

ON

"DATA ARRAY NODE"

FOR

EBiX.BiZ, BENGALURU

Submitted in partial fulfillment of the requirements
of Mount Carmel College, Autonomous
for the award of the Post Graduate Degree of

MASTER OF COMPUTER APPLICATIONS

By

API YOKA
Register No: M18MC03

Department Of MCA

MOUNT CARMEL COLLEGE AUTONOMOUS,
No. 58, PALACE ROAD, BENGALURU — 560058

EBiX.BiZ

15-05-2021

Bangalore

INTERNSHIP COMPLETION LETTER

This is to certify that **API YOKA (M18MC03),** is a Bonafide student of **MCA** from **Mount Carmel College Autonomous Bangalore** , completed the internship **"Data Array Node (DAN) method for big data integrations"** successfully during the period from 15th Feb 2021 to 15th May 2021 at our organization **EBiX.BiZ,** Bangalore, under my guidance and intern has completed the work to my satisfaction.

EBiX.BiZ
Abhinav M
Team Lead

Team Lead

EBiX.BiZ

343/14, SR Arcade, 2nd Floor, Banaswadi, Bangalore - 560 043
Email : abhinav@ebixbiz.co.in | Website : www.ebixbiz.co.in | Mobile : +91 9740640203

COLLEGE CERTIFICATE

This is to certify that the project entitled **"DATA ARRAY NODE"** by **API YOKA(M18MC03),** student of MASTER OF COMPUTER APPLICATIONS, batch [2018-2021], of MOUNT CARMEL COLLEGE, AUTONOMOUS, BENGALURU, affiliated to BENGALURU CITY UNIVERSITY, is hereby accepted and approved as a credible work. It is further certified that this work has not been submitted for similar purpose anywhere else. Her work has been found satisfactory for the partial fulfillment for the award of MCA (affiliated to Bengaluru City University and approved by AICTE).

Internal Guide

Head

Department of MCA

Date:

Register Number: M18MC03

Examiners:

1. _____

2. _____

3. _____

College Seal

DECLARATION

I, API YOKA (M18MC03), hereby declare that the project work entitled "DATA ARRAY NODE" is an authenticated work carried out by me at EBiX.BiZ under the guidance of ABINAV M for the partial fulfillment of the award of the degree of MASTER OF COMPUTER APPLICATIONS and this work has not been submitted for similar purpose anywhere else except to MOUNT CARMEL COLLEGE, AUTONOMOUS, MASTER OF COMPUTER APPLICATIONS, BENGALURU affiliated to BENGALURU CITY UNIVERSITY, BENGALURU.

Date: Signature

Place: Bangalore Api Yoka(M18MC03)

ACKNOWLEDGEMENT

The success and final outcome of this project required a lot of guidance and assistance from many people. We respect and thank Dr. Sr .Arpana, for providing us an opportunity to do the project work in Mount Carmel College and giving us all support and guidance which made us complete the project duly.

We are very thankful to **Mrs. Renju** K the HOD of Computer Science Department and also highly indebted to **Mrs. Vijay Laxmi N** for their guidance and constant supervision as well as for providing necessary information regarding the project and also for their support in completing the project.

We would like to express our gratitude towards our parents for their kind co-operation and encouragement which helped us in completion of this project.

COMPANY PROFILE

EBIX is Bangalore based Software Company generalized in the Accounting and E commerce applications. The company has developed product name T Square which has in- build platform for developing the application for accounting feature.

This product has feature like imperial imposing the coding, the teaming coding etc. This product is a domain independent with this product we can use the code coverage in the any application with any vicinity.

EBIX has the developers who work with ecommerce and accounting domain so the product T square has been developed with special unique feature over the e commerce applications.

EBIX is specialized in developing the E commerce applications and the portal (templates) for the E commerce software. E two retail template is one of the templates developed by EBIX as part of E commerce software building.

The templates are licensed software for the EBIX and cannot be used in developing the other organisation without written permission from the authorities. The idea behind the E two retail template is there are many organisation spending money and time for developing from scratch so if we can provide them the software then developers can save huge time and effort for the software developing.

But the application will be cost money and this cost will be one third of the actual cost for the software. T square is software developed by the EBIX for ERP application. ACE is template developed by EBIX for accounting software.

Table of Contents

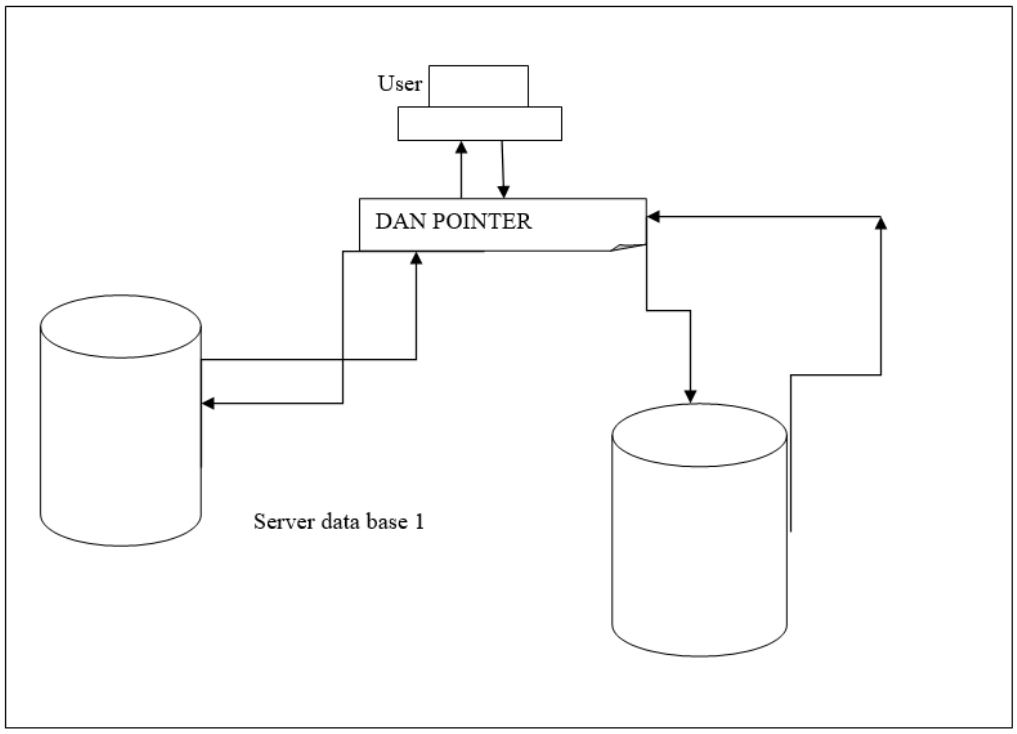
INTRODUCTION

1.1 About the Project

The technology of the Data Array Node (DAN) is the integrated data communication method used in the business operations. This application will help the multiple system server based big data migration more systematic, fast and secured. In this technology the application algorithm will find the required data for the searching and store in the array format for the better searching. The advantage is the application can reduce time to search required data in the multiple servers or big data server.

The traditional techniques of linear searching, bubble sorting are not used in the DAN method unless the required data is not found in the first attempt. The algorithm will automatically set path to the table array and the searching will occur only in the preselected array line. The developers can decide to which line the pointer needed to move and the search the data. This is purely based on the developers programming and the nature of the business.

For example if the application is implemented in bank and when the users entered the IFSC code the application will search list of transaction made with IFSC code and data will be displayed in the radio button. Here DAN is focusing only in the selected data and other details. The application pointer will be pointing to the detail like total balance amount, previous received amount etc. If the technology of DAN is not implemented the application will navigate through all the big data details of the bank and with DAN implementation the searching occurs only for selected arrays form the history.



Searching data using the DAN Pointer.

In the above picture the user request will be passed to the algorithm where the Pointers are set for the searching the data from the respective SQL server data base. For example if the data in the SQL server data base one is in the 1000th row the DAN pointer will set the path to the respective 1000th row and if the data path still required the data from the another server the DAN pointer will set the node with the server data base 2. So the detail from the two servers will be connected in a single row.

For example the data base one has the details of the sales and the amount payable and data base which has the details regarding the bank balance. So the DAN pointer will merge both together and the make the transaction more accurate. In the early steps the transactions are made block wise where the transaction in the database 2 will start after the fully completion if the data base 1transaction is completed successfully. Explained how two data base transaction occurred in functional requirement deeply

1.2 Problem Statement

- Customized application and the developers needed to code separate module with respect to the client requirements.
- The pointer will fetch the data to the first raw so there will be a technical limitation that not all the required data are filled in the stack.
- If the data are missing then application will search again or use other searching techniques again for the data searching.
- Data from the single server are used for the searching.

1.3 Expected Result

- The DAN uses linear data searching techniques for the first time, the position of the data row will be saved in the DAN pointer.
- When the more data are added the position of the data in the row can be changed, so the algorithm will code to find the data pool in each server.
- That is if the data pool is found 10 per second, next time instead of searching data in the 100^{th} row the application will search in the 110^{th} row (real time this will be in millions row).
- If the algorithm found the pooling is less the search will start from the 100^{th} row itself.

1.4 Tools and Technologies

This DAN pointer application is developed with Microsoft Visual studio IDE. The plug in for the DAN pointer are also added with IDE for the better performance. The tools and technology used in the application is as follows.

- Visual studio IDE
- ASP.NET with C#
- SQL server
- TFS
- IntelliTrace
- SVN

Visual studio IDE

The integrated development environment used for the DAN pointer application is visual studio IDE, (professional edition, 2014 release). The work of IDE is to integrate and make the communication among the different tier in the software development objects.

ASP.NET with C#

The application front end design and the respective middleware components are made with ASP and C#. The business logic needed for the DAN pointer searching and filtering are coded in the C# languages. The inputs for the DAN searching, the output generated from the data searching are displayed in ASP platform.

SQL server

The server used for the data storage and migrations. The request form the front end will be passed to the SQL server where the authentication and the authorization for the server access will be checked with in this software tool.

TFS

Team foundation server has extended features for the visual studio and the DAN pointer integrations. That is when the software is fetching the data from two servers located remote area then the developers used the TFS for the communication of these server. The storage unit of the TFS is SQL Server, the details over the number of request send, the data transferred, the user login time and ID will be saved within the FS

IntelliTrace

The software used to debug the application is IntelliTrace. This software will auto find the line where the error has occurred and also the online solution for the errors occurred. When the application is connected with multiple server then IntelliTrace software is recommended to use to reduce the time and effort to search the error list. If the software is not used then the developers needed to manually check to fix the error which is more time consuming.

SVN

The software used for version control is SVN (Sub Version). This will help to saved the updates code or the data values for the future reference. The DAN application can reduce the data collection which are occurred when the two people works in the same page, the users can prevent other users to make changes in the same module with help of SVN software.

1.5 Advantages

- DAN or Data array Node is the technology used for effective easy and accurate data search in the big data modules.
- The application uses virtual node (matrix format) to save the data in the SQL or in session storage format.
- This data storage is temporary and will be deactivated when the application is closed or navigated to different modules.
- The traditional searching techniques like bubble sorting/linear searching are not used for the data shorting in the DAN.
- In DAN format entire data in the data base is not included for the searching and the short list is created on the basis of algorithm coded in the middleware.
- DAN can integrate more than one server big data.

ANALYSIS

2.1 Introduction

The technology of the Data Array Node (DAN) is the integrated data communication method used in the business operations. This application will help the multiple system / server based big data migration more systematic, fast and secured . In this technology the application algorithm will find the required data for the searching and store in the array format for the better searching. The advantage is the application can reduce time to search required data in the multiple servers or big data server.

The traditional techniques of linear searching, bubble sorting are not used in the DAN method unless the required data is not found in the first attempt. The algorithm will automatically set path to the table array and the searching will occur only in the preselected array line. The developers can decide to which line the pointer needed to move and the search the data. This is purely based on the developers programming and the nature of the business.

2.2 System Requirement Specification

2.2.1 Introduction

A software requirements specification is a detailed description of a software system to be developed with its functional and non-functional requirements. The SRS is developed based the agreement between customer and contractors. It may include the use cases of how user is going to interact with software system.

2.2.2 Scope of the project

This project is helpful in calculating the salary for each employee and it also focuses on each employee's attendance and the number of leaves taken per month/year. There is also a possibility of checking salary report at any time so that it doesn't lead to any miscalculation.

2.2.3 Functional Requirements

DAN or Data array Node is the technology used for effective easy and accurate data search in the big data modules. The application uses virtual node (matrix format) to save the data in the SQL or in session storage format. This data storage is temporary and will be deactivated when the application is closed or navigated to different modules.

- **Functional requirement number 1:**

  Functional requirement name: search ID generation

  Definition: auto generated ID for the search the data.

  Inputs: button click event

  Process: The auto generated ID for the each DAN data call. This ID is used to keep the tracking of all the transactions in the server. That is if two server are connected the same search ID will be transferred and saved as reference code for the further communications

  Output: search ID is generated successfully.

- **Functional requirement number 2:**

  Functional requirement name: DAN search ID increment

  Definition: when there are more search attempts the application auto generate more than one search ID, application codes to fin the largest search ID then add with 1 to increment.

  Inputs: MAX (searched)

  Process: fetch the ID with MAX () method, write function to increment the MAX () with one that is if the ID is 85 then the function will increment 85+1 and make the search ID as 86, and in the next attempt the maximum of 85 and 86 will carried and add one with 86 and 87 will be generated.

  Output: display the large ID

- **Functional requirement number 3:**

  Functional requirement name: server connection status.

  Definition: check the authentication, the user ID password matching

  Input: server ID, database, user ID and password

  Process: send request from the connection string from ADO.NET, receive the resposed form the SQL server

  Output: either connection failed or connection passed

- **Functional requirement number 4:**

  Functional requirement name: Data virtual join

  Definition: The code for the join the data from the multiple server and make the virtual path for the DAN pointer to search the data.

  Inputs: the search key word,

  Process: transfer the search ID in the stack, filter the data attributes from the search ID passed

  Report: display the filtered data.

- **Functional requirement number 5:**

  Functional requirement name: data report generation.

  Definition: display the result in table format, grid view report style

  Input: search ID

  Process: fetch the data and save in the data set in the client machine. The data stored in the matrix format with the data ID in the first row of the stack

  Output: display the data in the grid view

2.2.4 Interface Requirements

External interface requirements are types of functional requirements. They're important for embedded systems. And they outline how your product will interface with other components.

There are several types of interfaces you may have requirements for, including:

- **User**

Users Types

This users of the application are employee of the organization where the software is implemented and also the supporting engineers for debugging the technical errors in the organization. The list of employees is as follows.

- **The domain clerks**
- **Network managers**
- **Client or third-party users**
- **Administration managers**

The domain clerks

These are the employees of the organization working over the daily business operations. The admin of the organization are authorized to create employees to operate the DAN based searching and result analysis. The authentication of the users are as follows

Module	**Permission to view content**	**Permission to alter the content**	**Permission to remove the content.**
The network operations,	Yes	NO	No
The business modules operations,	Yes	Yes	Yes
The Administration operations	No	No	NO
Algorithm	Yes	NO	Yes

Network managers

The users are created to view the new work order received from the admin. The details regarding the security of the data to be shared, the create authorization for the existing users and authorization for the new users.

Module	**Permission to view content**	**Permission to alter the content**	**Permission to remove the content.**
The network operations,	Yes	Yes	Yes
The business modules operations,	Yes	No	No
The Administration operations	No	NO	No
Algorithm	Yes	Yes	No

Client or third party users

The users who are the client of the organization where the DAN is implemented. These users are permitted to give instruction over the service, the view the business response etc. These users are not permitted to access all the data migration or all the modules in the applications.

Module	**Permission to view content**	**Permission to alter the content**	**Permission to remove the content.**
The network operations,	No	No	No
The business modules operations,	Yes	Yes	Yes
The Administration operations	No	NO	No
Algorithm	No	NO	No

Administration managers

The top level users of DAN operation work supervision, and the top level managements like HR, CEO, Directors of the organization will come under administration manager level. These users have permission access all the module created in the application.

- **Hardware**

RAM (**without DAN POINTER**)	2 GB
Hard Disk (**without DAN POINTER**)	250 GB
Server (**without DAN POINTER**)	IIS, HTTP caching server
Processor (**without DAN POINTER**)	Pentium 4
RAM (**DAN POINTER**)	128 GB
Hard Disk (**DAN POINTER**)	16 TB
Server (**DAN POINTER**)	IIS, TFS

- **Software**

Test (**DAN POINTER**)	MTM
Front end (**DAN POINTER**)	ASP.NET
Middleware (**DAN POINTER**)	C#.NET
IDE (**DAN POINTER**)	Visual studio
Back end (**DAN POINTER**)	SQL server 2008 R2
Processor (**DAN POINTER**)	Pentium 4

- **Communications**

The DAN panel act a intermediate between the application and the SQL server data base. The data searching techniques from the SQL is controlled by the three -tier architecture developed in the Front end and the middleware, the data fetched is saved in DAN panel and will be accessed t the application users on the basis of the request send by each users.

2.2.5 Operational Requirements

The operational requirement is to make sure the DAN pointer application is standing by to face the challenges occur in the following areas.

- **The reliability**

  The reliability stands for the stack location where the DAN pointer moves. If the pointer moves to the wrong stack the application will fail to recover the needed data from the big data server. So the developers will program and pass the key search ID with respect to the search history or with respect to the programmed.

  That is if the module opened by the client is with respect to sales the developers will program to pass the pointer to the stack where the sales related data are stored, by avoiding other unrelated data. This will help the DAN pointer to find and search in the respective tack location.

- **The Integrity**

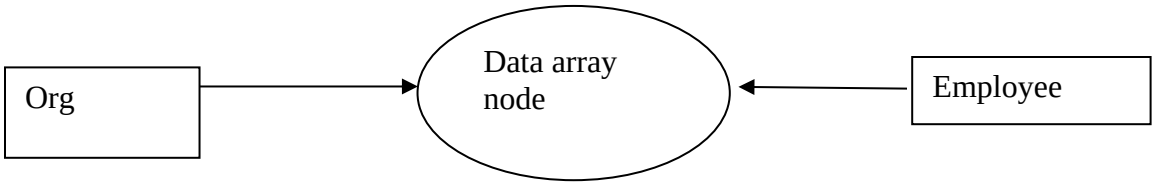
  The integrity has most important role in the application since existing system do not have the integrity server searching. Old system the searching is called in the single server and in the new process the developers has created modules for understanding. The application will auto generate search ID, the integrity of the data connection, the data migration based on DAN pointer etc are managed with integrity part.

- **The Reusability**

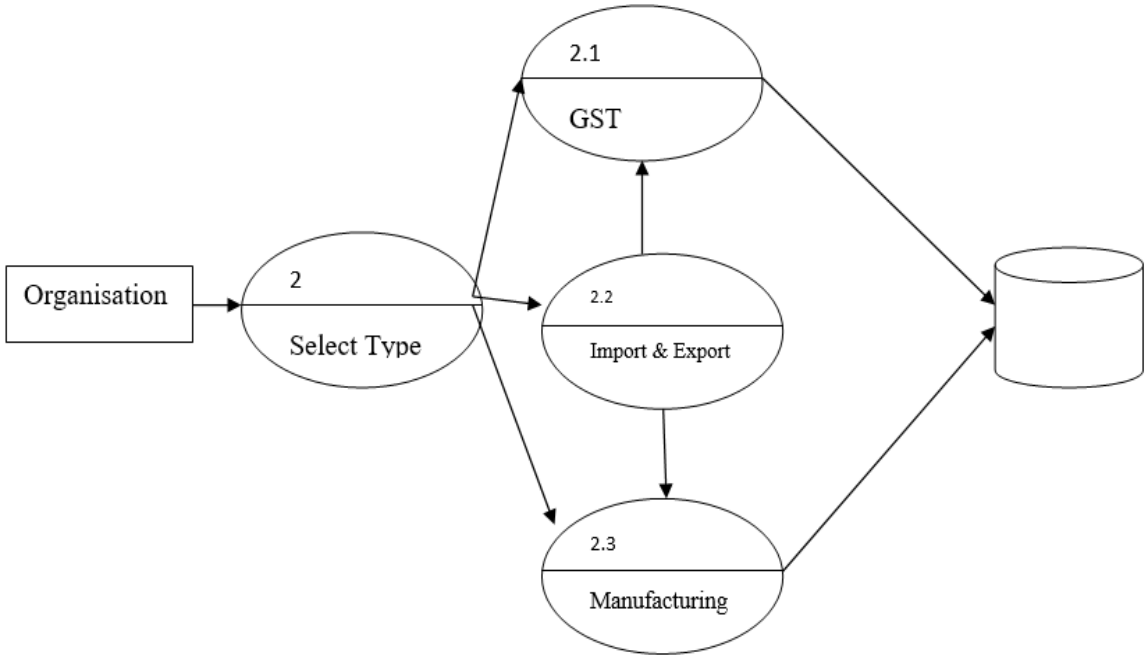
  Another main advantage of DAN pointer application is its reusability in the software domain. The algorithm for the data searching can be used for the various business operations like banking to connect cheque and online transactions, to connect with tax and inventory module with little alternation in the module. This reusability feature helps the developers end to save time and widely implemented in the multiple clients business requirements.

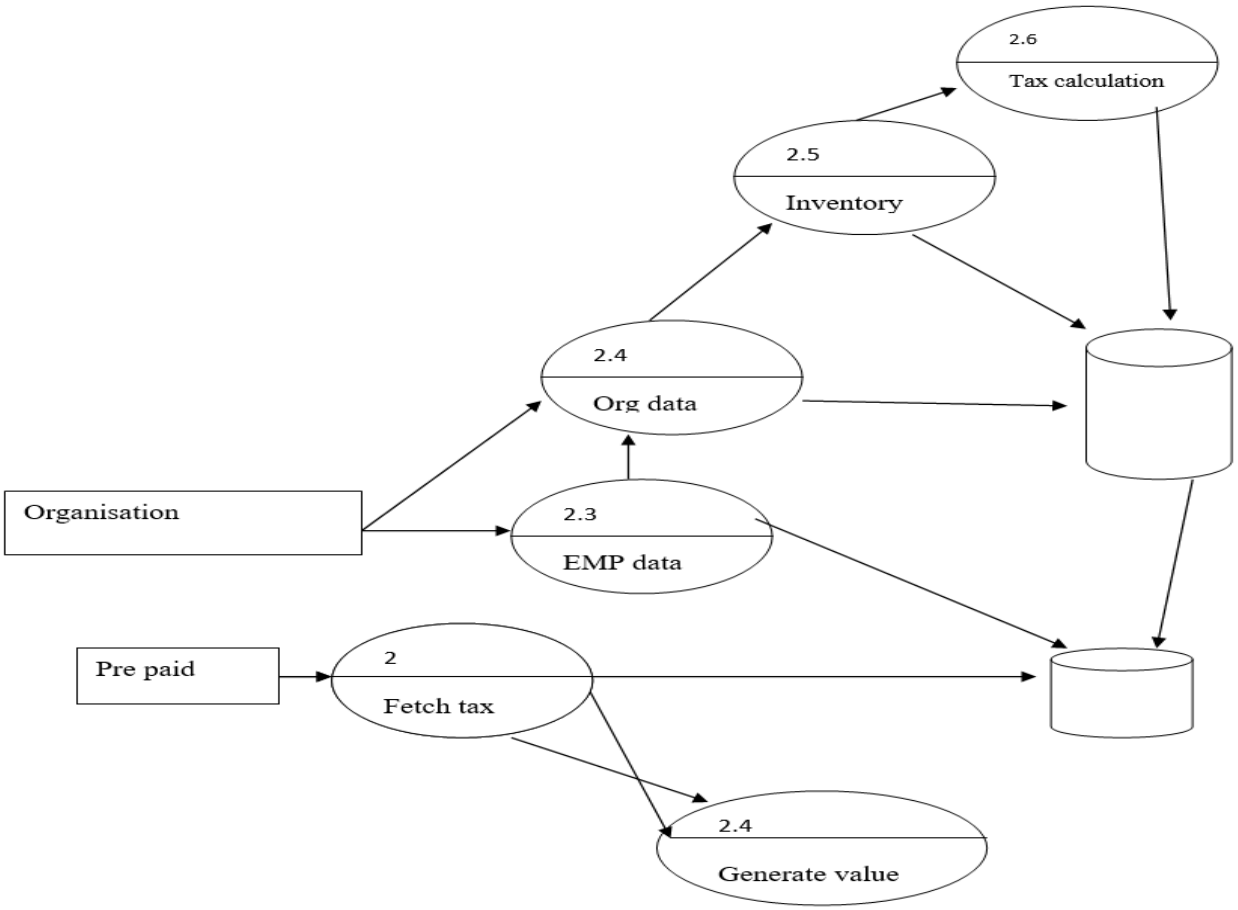
2.3 Data Flow Diagram

DFD level 0



DFD level 1




2.6
Tax calculation
2.5
Inventory
2.4
Org data
Organisation
2.3
EMP data
Pre paid
2
Fetch tax
2.4
Generate value

SYSTEM DESIGN

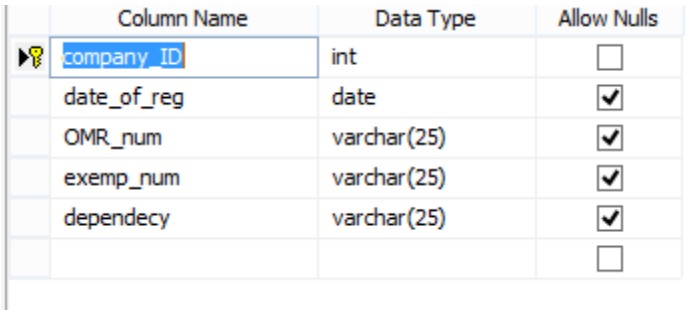
3.1 Data Dictionary and Diagrams

A data dictionary is a collection of the names, definitions, and attributes for data elements and models. The data in a data dictionary is the metadata about the database. These elements are then used as part of a database, research project, or information system.

Data Dictionary

TABLE NAME DBO.COMPANY

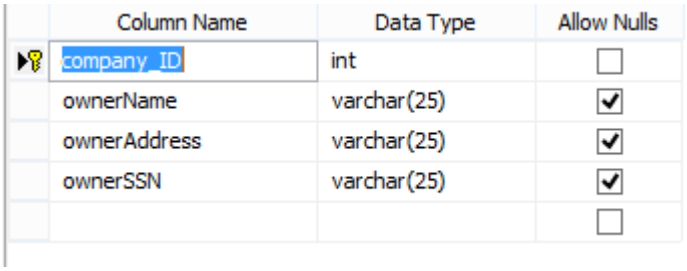
FIELD	PARAMETER	CONSTRAINTS
DAN_MDH_COMPANY_ID	INT	PRIMARY KEY,
DAN_MDH_DATE_OF_REG	DATE,	NA
DAN_MDH_OMR_NUM	VARCHAR(25),	NA
DAN_MDH_EXEMP_NUM	VARCHAR(25),	NA
DAN_MDH_DEPENDECY	VARCHAR(25)	NA



Column Name	Data Type	Allow Nulls
company_ID	int	☐
date_of_reg	date	☑
OMR_num	varchar(25)	☑
exemp_num	varchar(25)	☑
dependecy	varchar(25)	☑
		☐

TABLE NAME DBO.COMPANY_OWNER_INFO

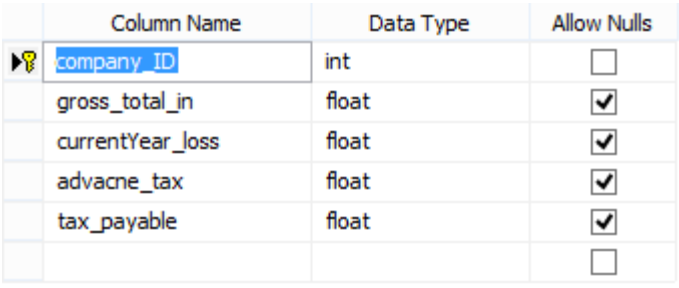
FIELD	PARAMETER	CONSTRAINTS
DAN_MDH_COMPANY_ID	INT	PRIMARY KEY
DAN_MDH_OWNERNAME	VARCHAR(25)	NA
DAN_MDH_OWNERADDRESS	VARCHAR(25)	NA
DAN_MDH_OWNERSSN	VARCHAR(25)	NA



Column Name	Data Type	Allow Nulls
company_ID	int	☐
ownerName	varchar(25)	☑
ownerAddress	varchar(25)	☑
ownerSSN	varchar(25)	☑
		☐

TABLE NAME DBO.TAX_INFO

FIELD	Data type	CONSTRAINTS
DAN_MDH_COMPANY_ID	INT	PRIMARY KEY,
DAN_MDH_GROSS_TOTAL_IN	FLOAT,	NA
DAN_MDH_CURRENTYEAR_LOSS	FLOAT,	NA
DAN_MDH_ADVACNE_TAX	FLOAT,	NA
DAN_MDH_TAX_PAYABLE	FLOAT	NA



Column Name	Data Type	Allow Nulls
company_ID	int	☐
gross_total_in	float	☑
currentYear_loss	float	☑
advacne_tax	float	☑
tax_payable	float	☑
		☐

TABLE NAME DBO.TAX_INFO

FIELD	PARAMETER	CONSTRAINTS
DAN_MDH_COMPANY_ID	INT	PRIMARY KEY,
DAN_MDH_ADVACNETAXREFUND	FLOAT	NA
DAN_MDH_TAX_REFUND_REASON	FLOAT	NA
DAN_MDH_FORM14C	VARCHAR(25)	NA
DAN_MDH_RECEIPTNUM	DATE	NA
DAN_MDH_RECEIPT_DATE	DATE	NA

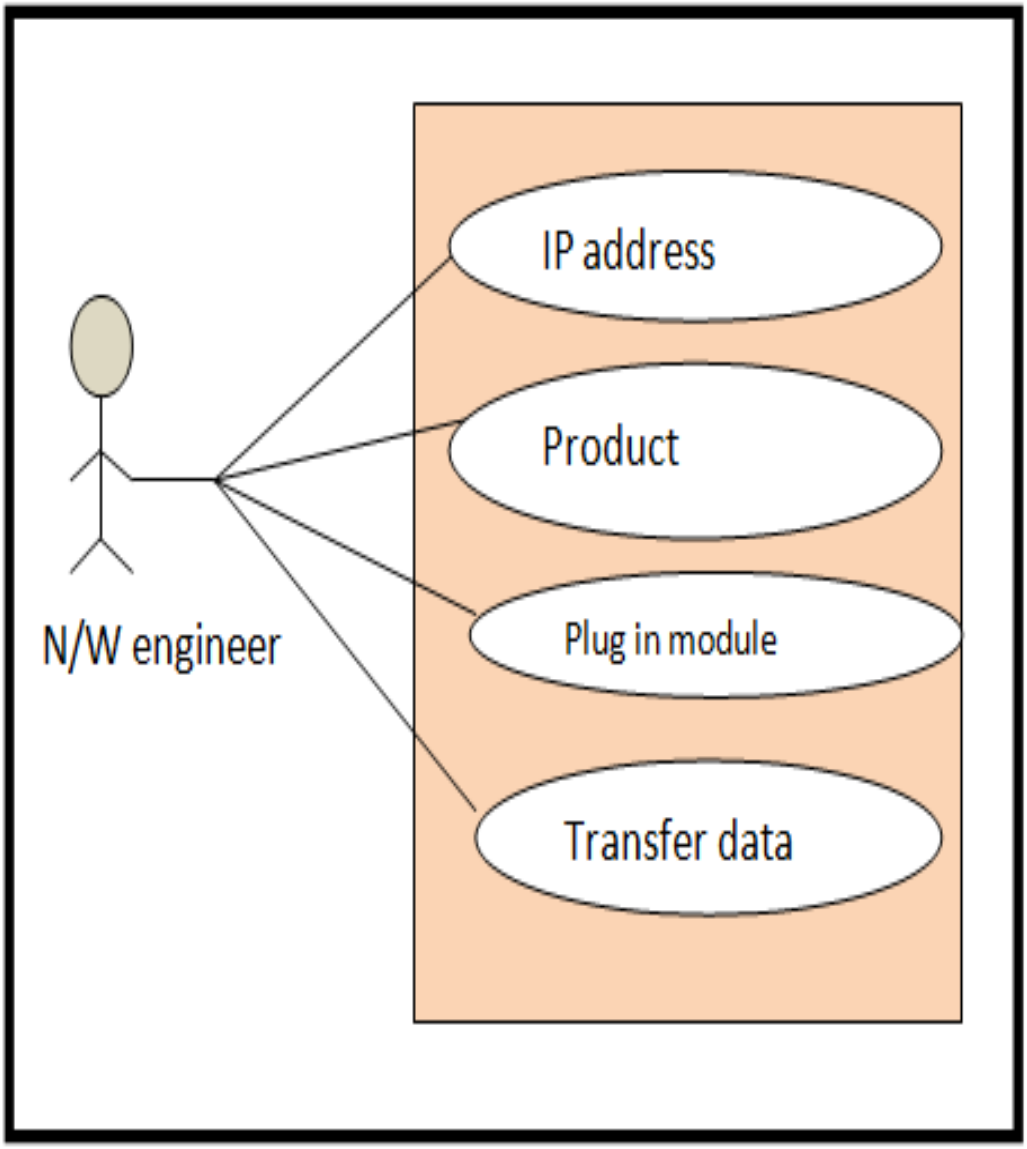
Column Name	Data Type	Allow Nulls
company_ID	int	☐
advacneTaxRefund	float	☑
tax_refund_reason	float	☑
form14C	varchar(25)	☑
receiptNum	date	☑
receipt_date	date	☑
		☐

Diagrams

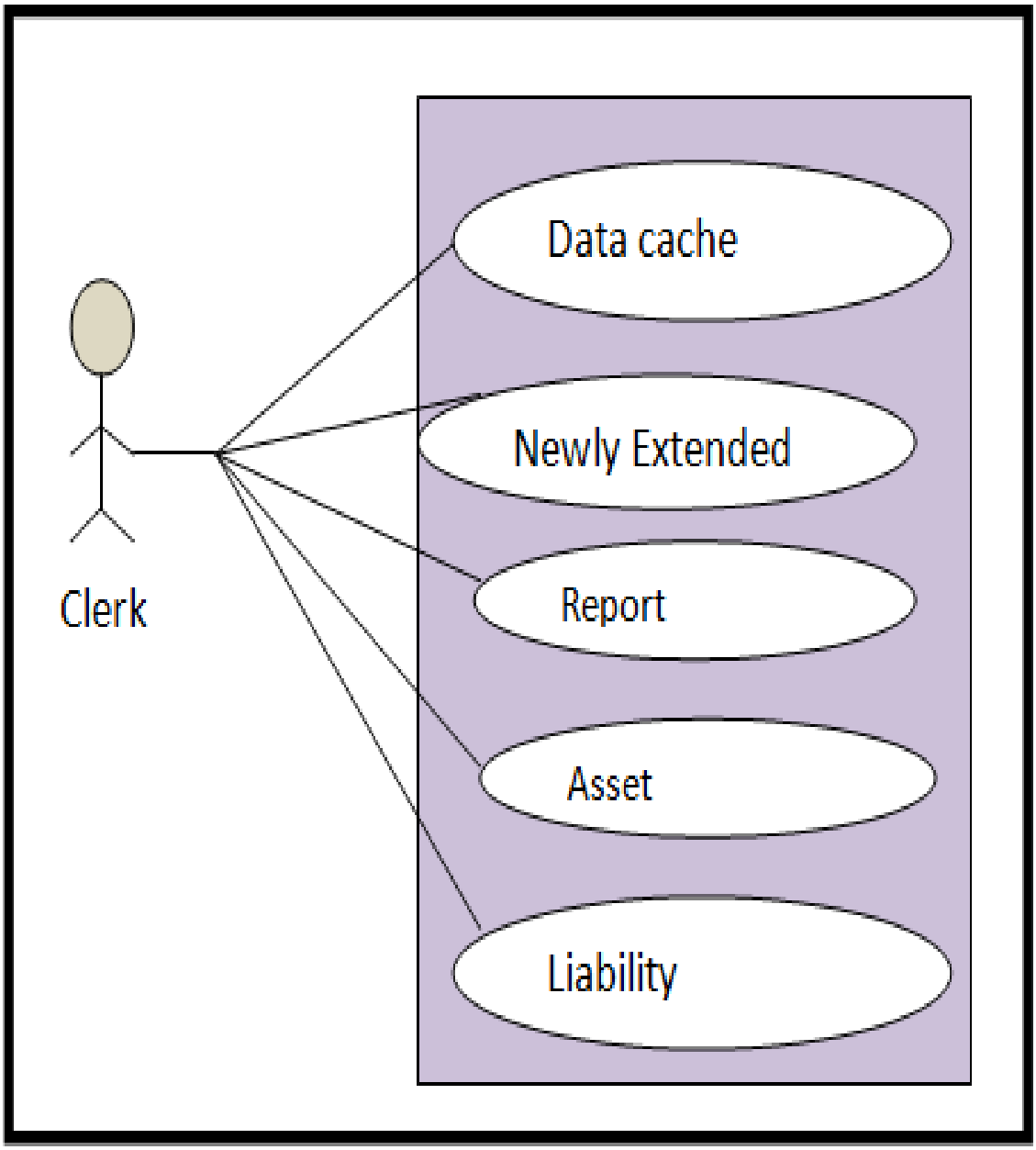
In software engineering, a class diagram in the Unified Modeling Language is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations, and the relationships among objects.

- **Use Case Diagram**
- **Class Diagram**
- **Sequence Diagram**
- **ER Diagram**

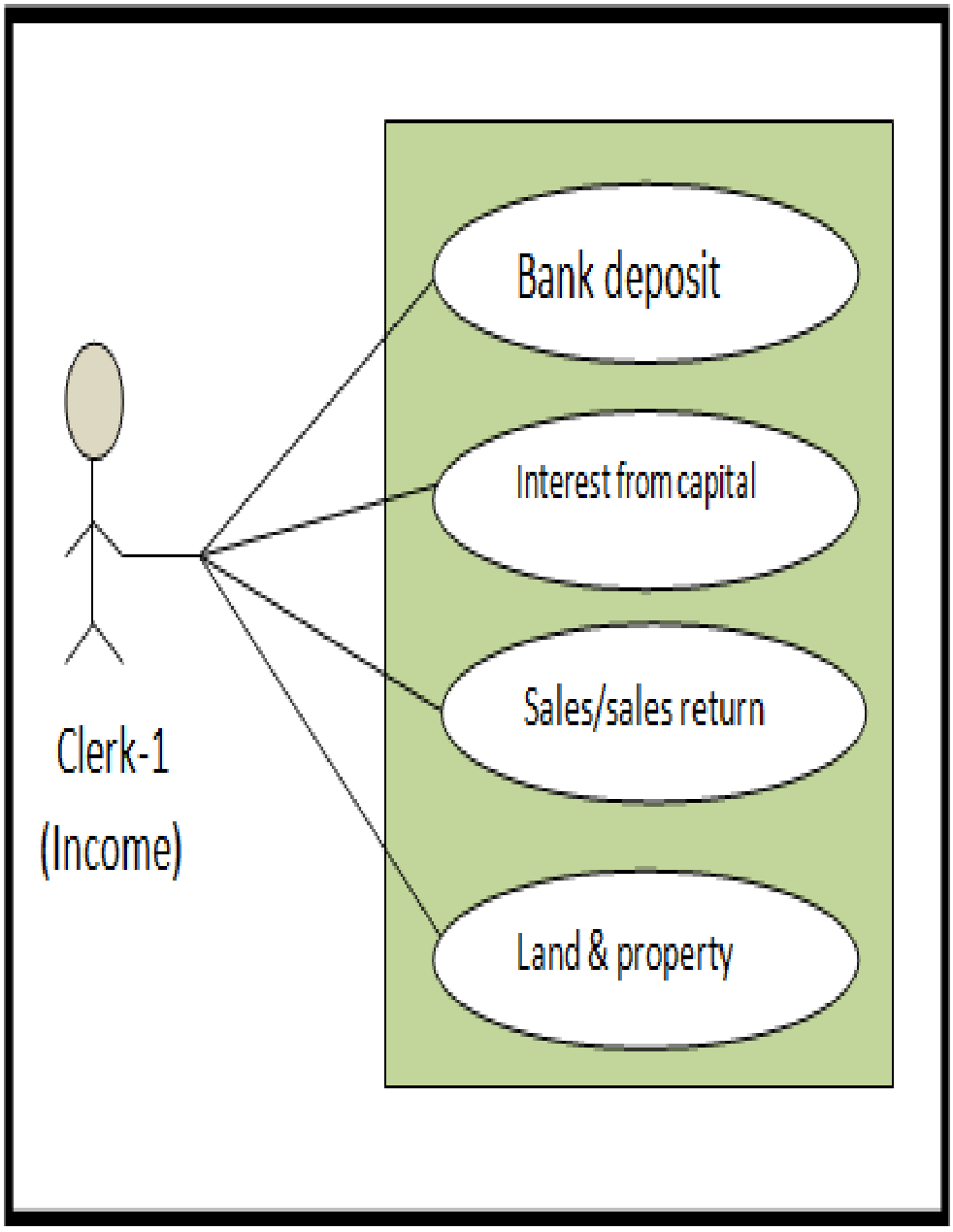
Use Case Diagram



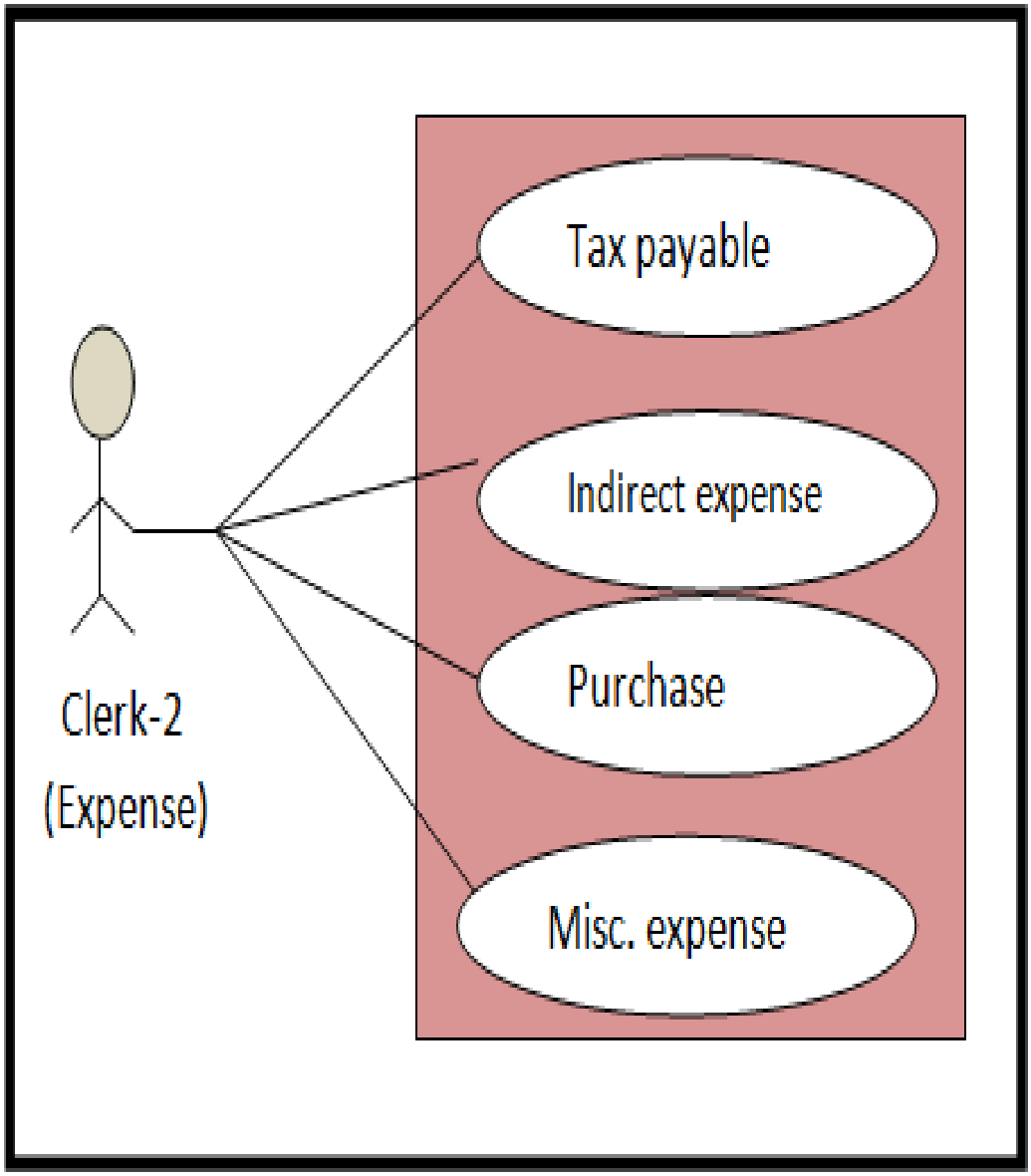
The use case diagram for the DAN based network engineers for managing the network connection among the different system used in the searching techniques.



The use case diagram for storing the liability or expense based data in the DAN storage unit.

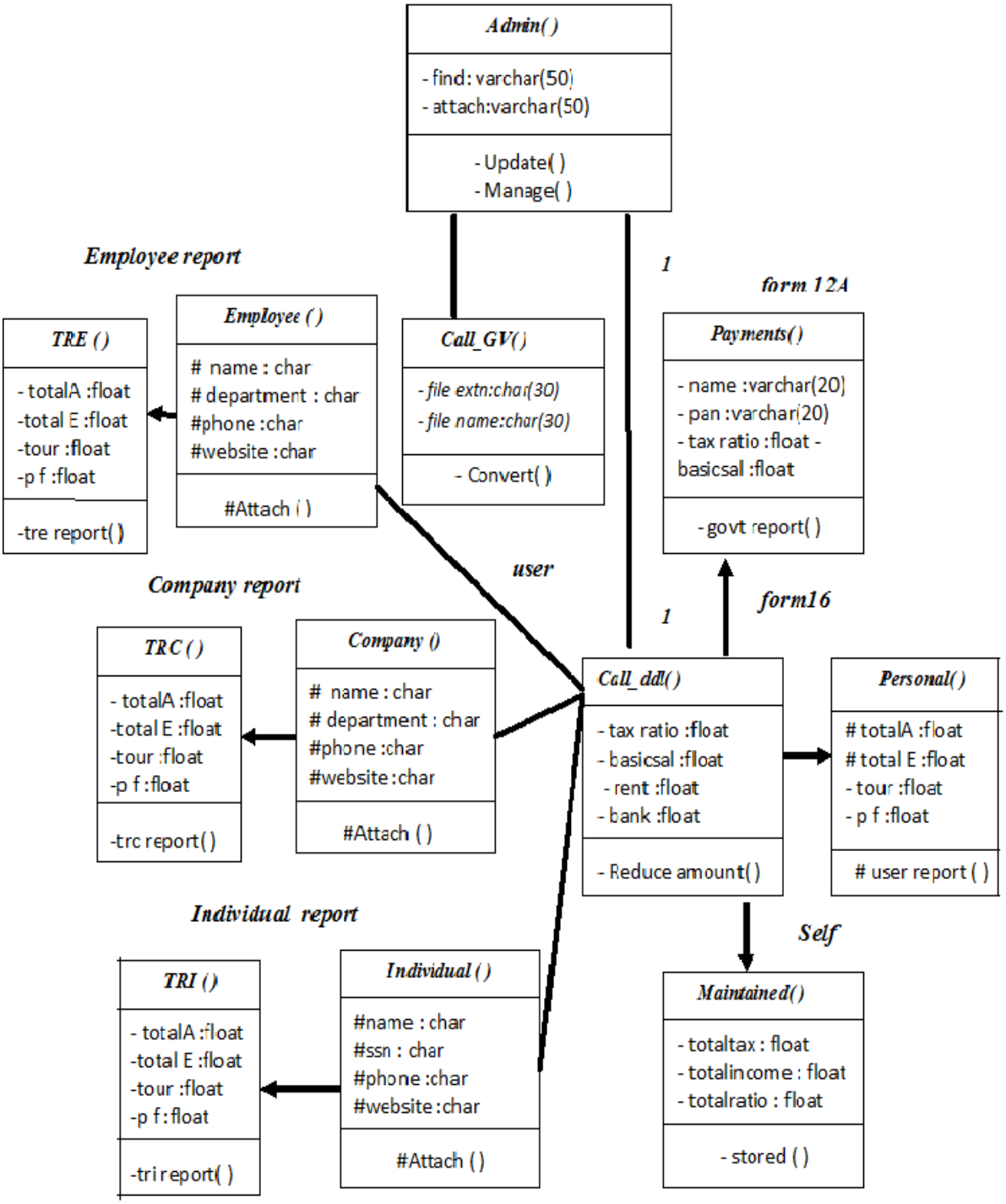


The use case diagram for finding and storing the sales and income based methods and update in DAN storage method.

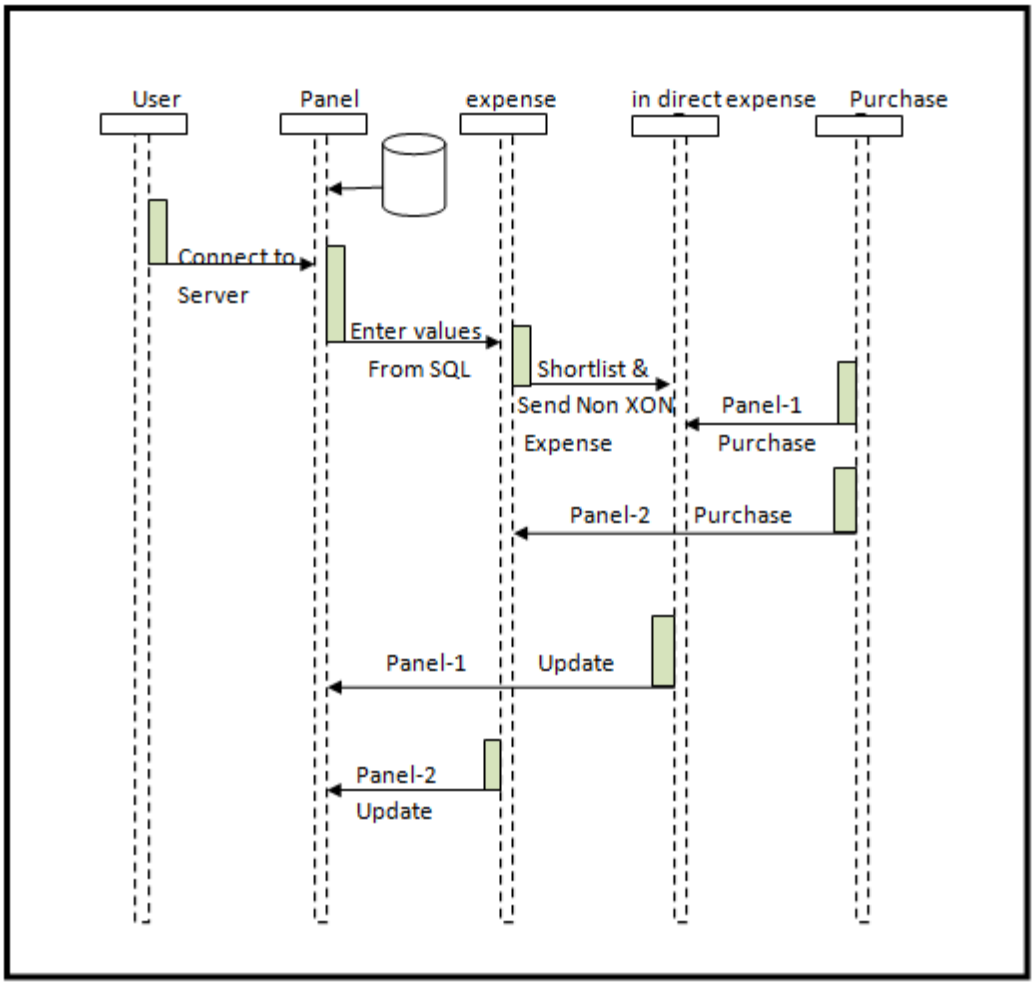


The user case diagram for DAN stack loading with expense objects. The algorithm is coded to identify ad fetch expense based data in the DAN stack for the further tax calculations.

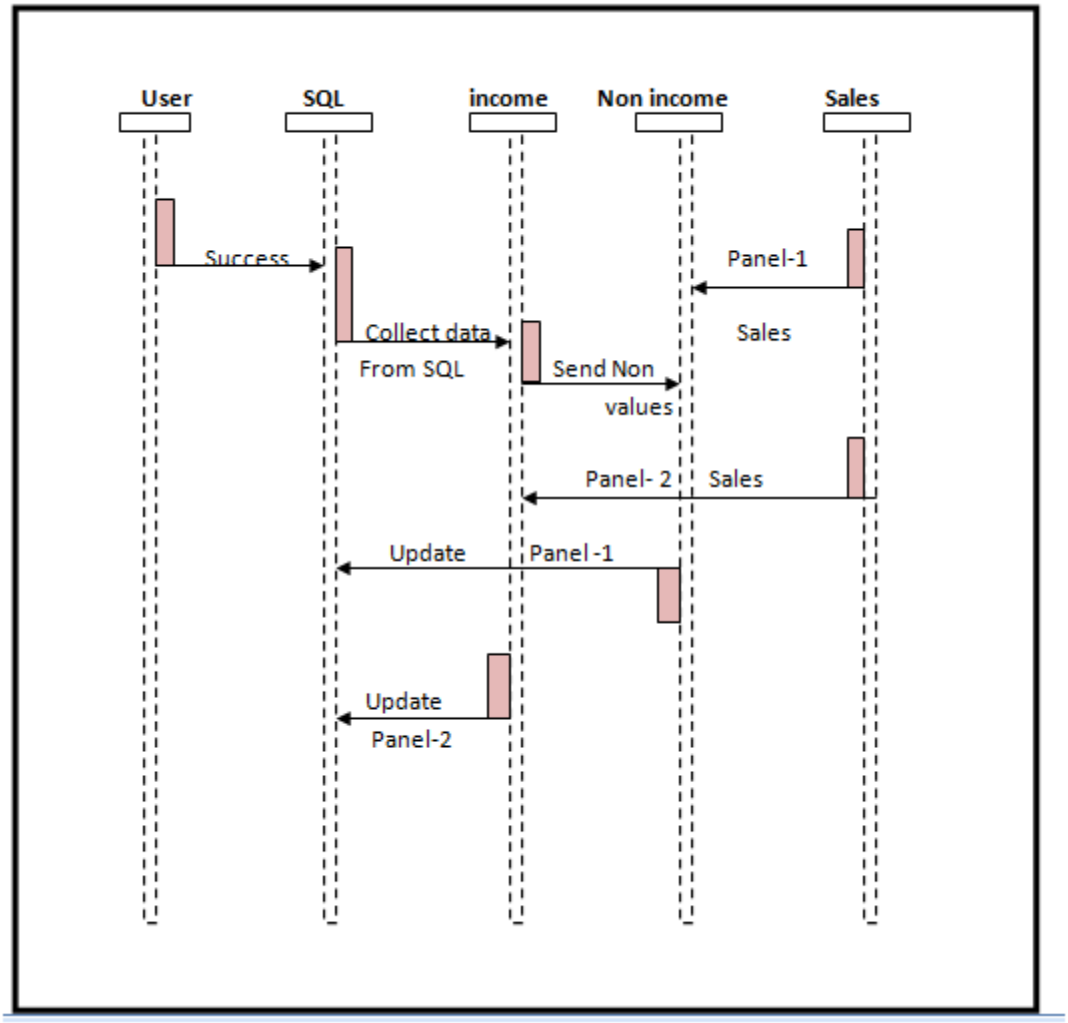
Class Diagram



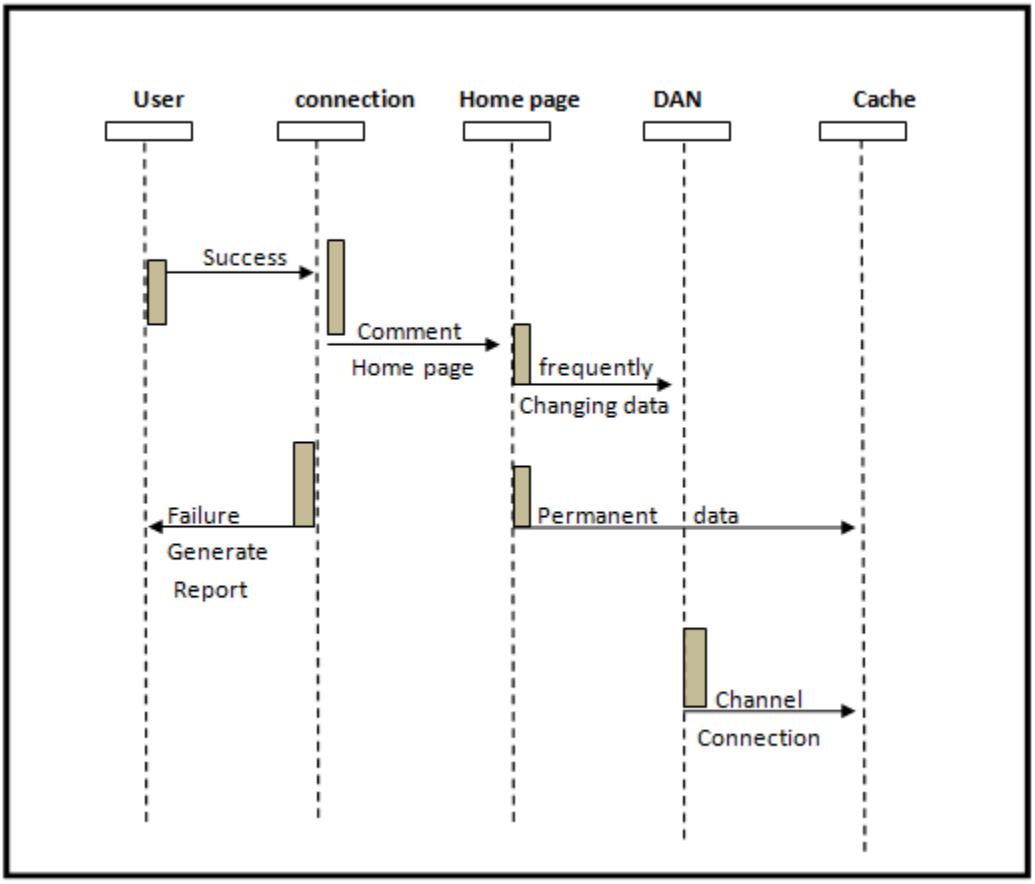
Sequence Diagram



The sequence diagram for the data etching the with respect to the expense and the indirect expense. The data related to local SQL server (tax percentage) and the original content of the expense from the organization is loaded in the DAN panel.

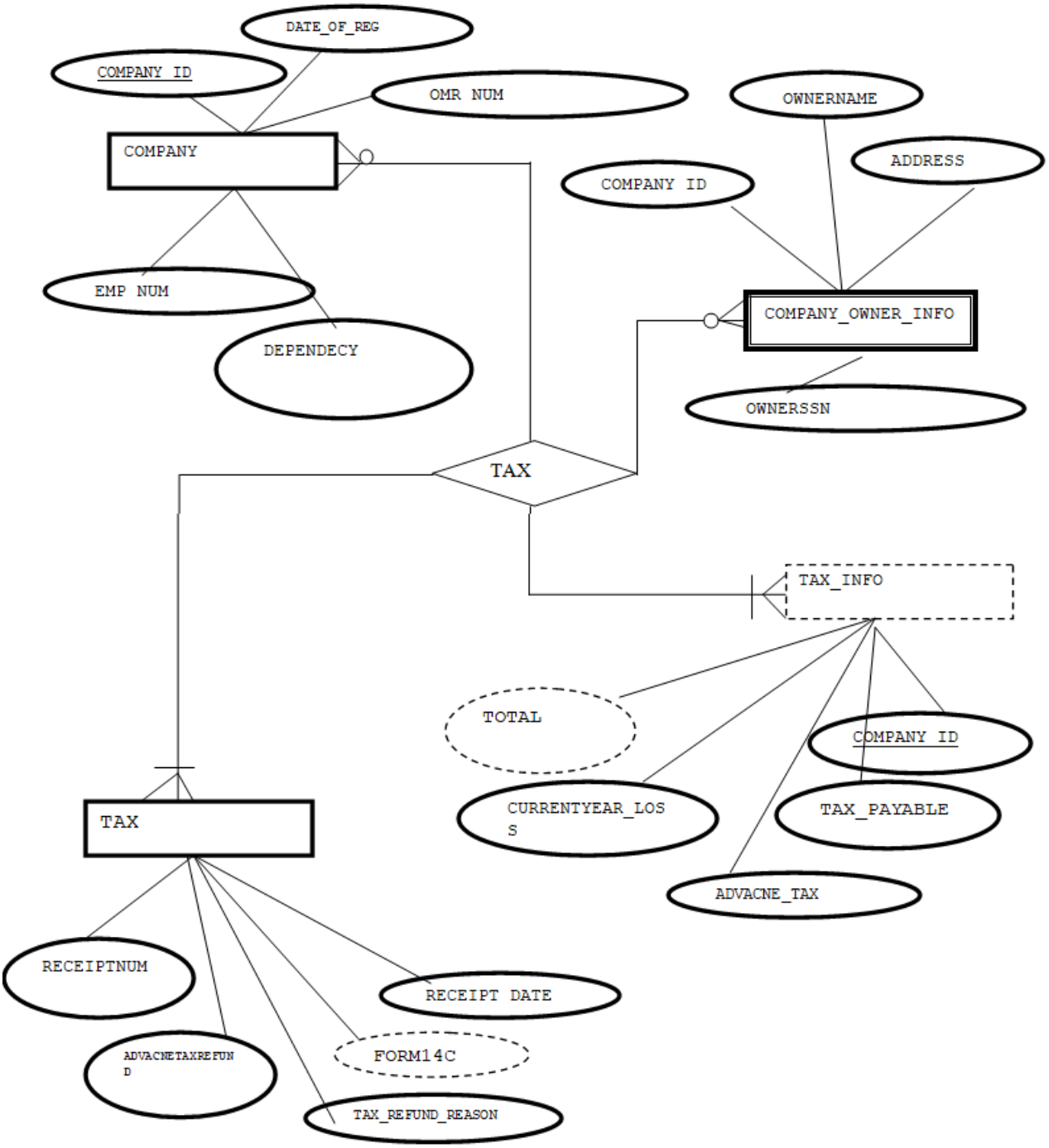


The sequence diagram for income related data loading in the Dan server. Here the data from the local server for CA is not included and all the data must be fetched from the clients remote system for the data value generation.

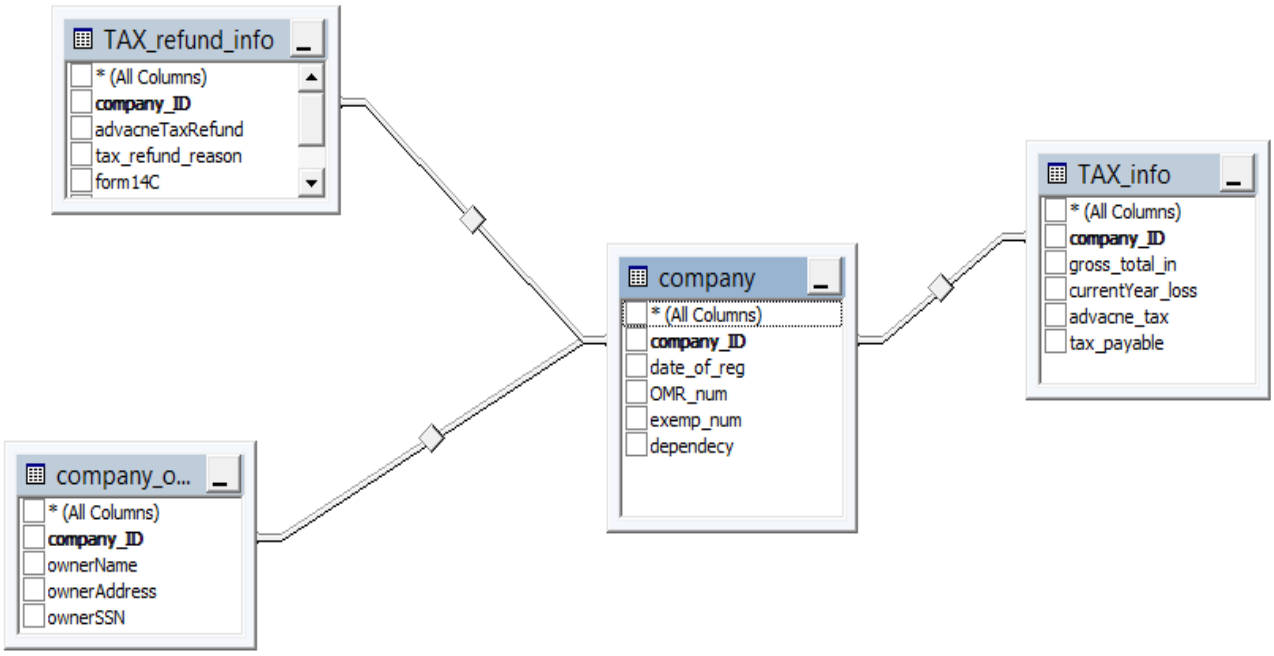


Sequence based on the DAN storage in the cache memory. When the users send request and if the authentication approves the data will be loaded in the cache memory and searching for data is managed by the DAN stack.

ER Diagram

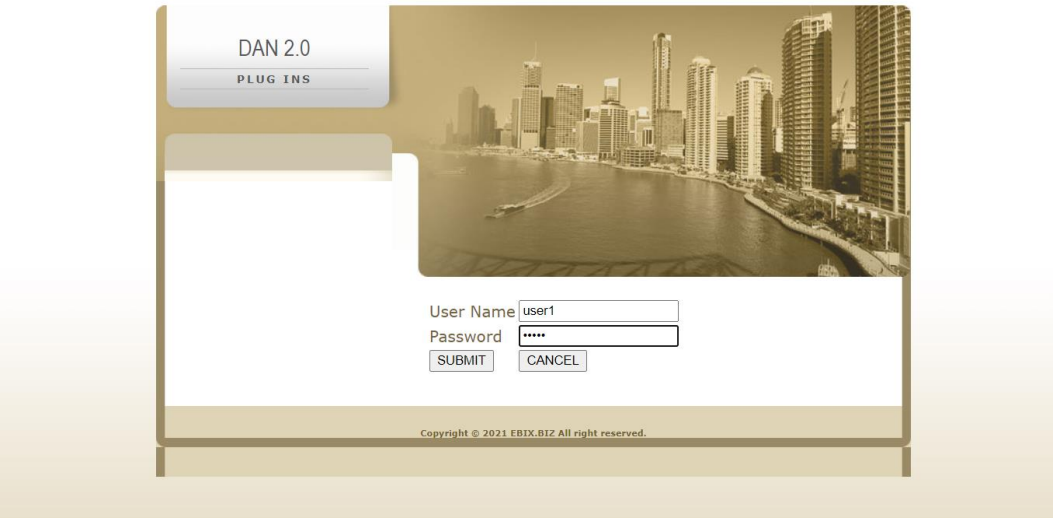

DATE_OF_REG
COMPANY ID
OMR NUM
COMPANY
EMP NUM
DEPENDECY
OWNERNAME
ADDRESS
COMPANY ID
COMPANY_OWNER_INFO
OWNERSSN
TAX
TAX_INFO
TOTAL
COMPANY ID
CURRENTYEAR_LOSS
TAX_PAYABLE
ADVACNE_TAX
TAX
RECEIPTNUM
RECEIPT DATE
ADVACNETAXREFUND
FORM14C
TAX_REFUND_REASON

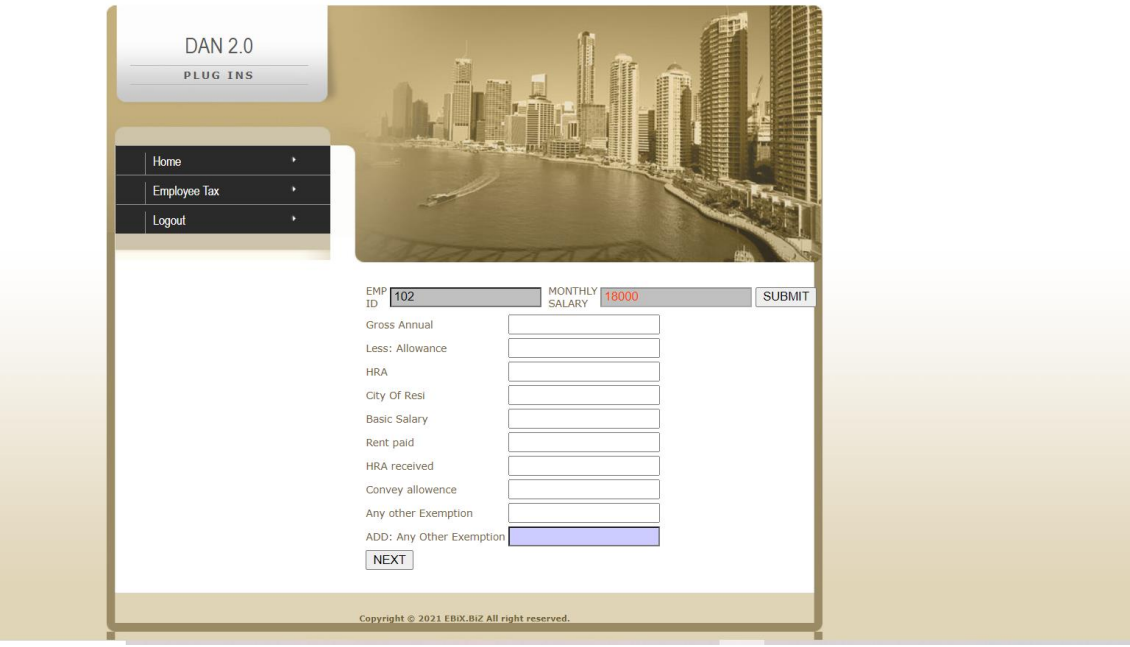
3.2 Database Design



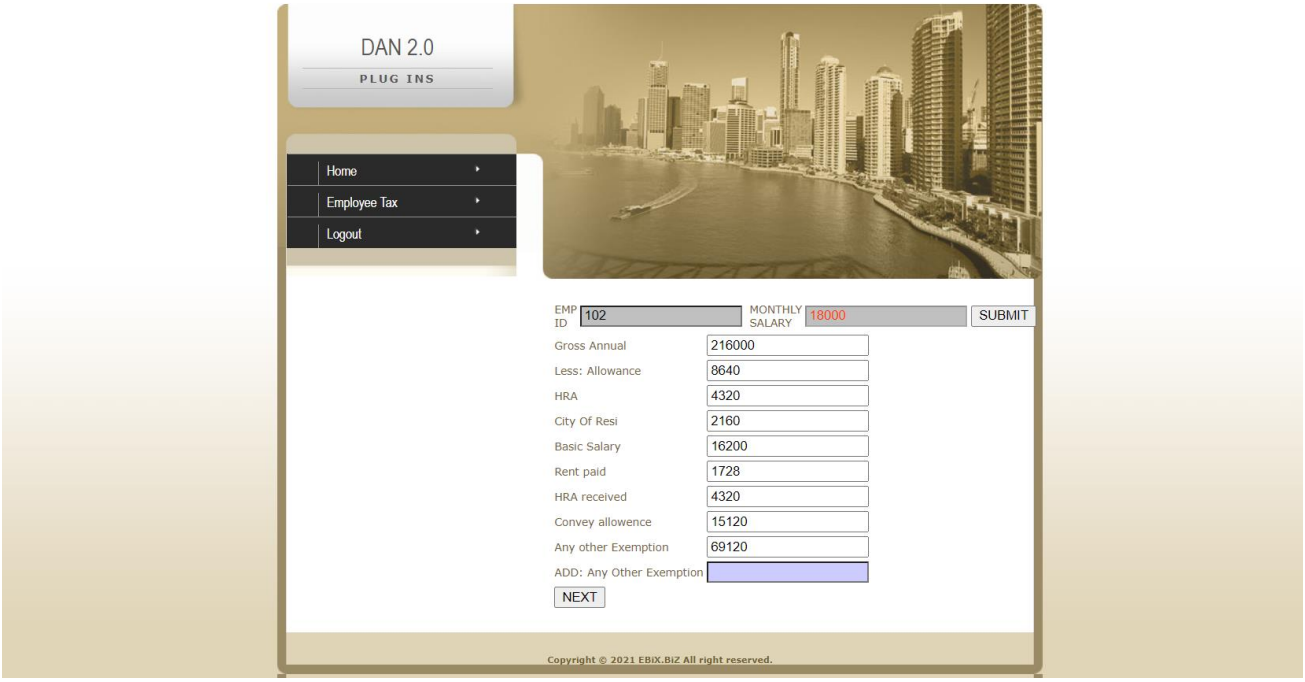
USER INTERFACES

4.1 Input Screens

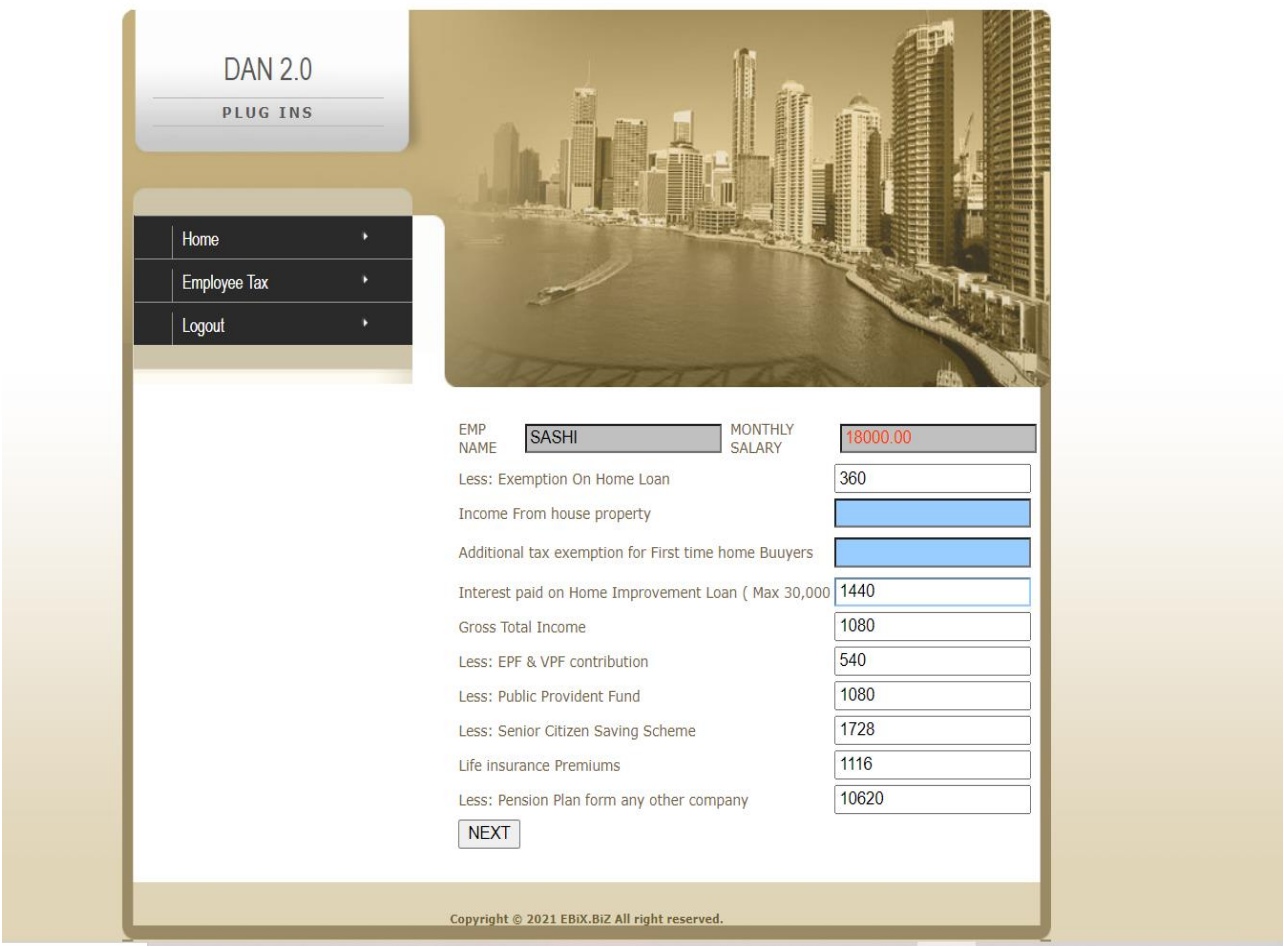




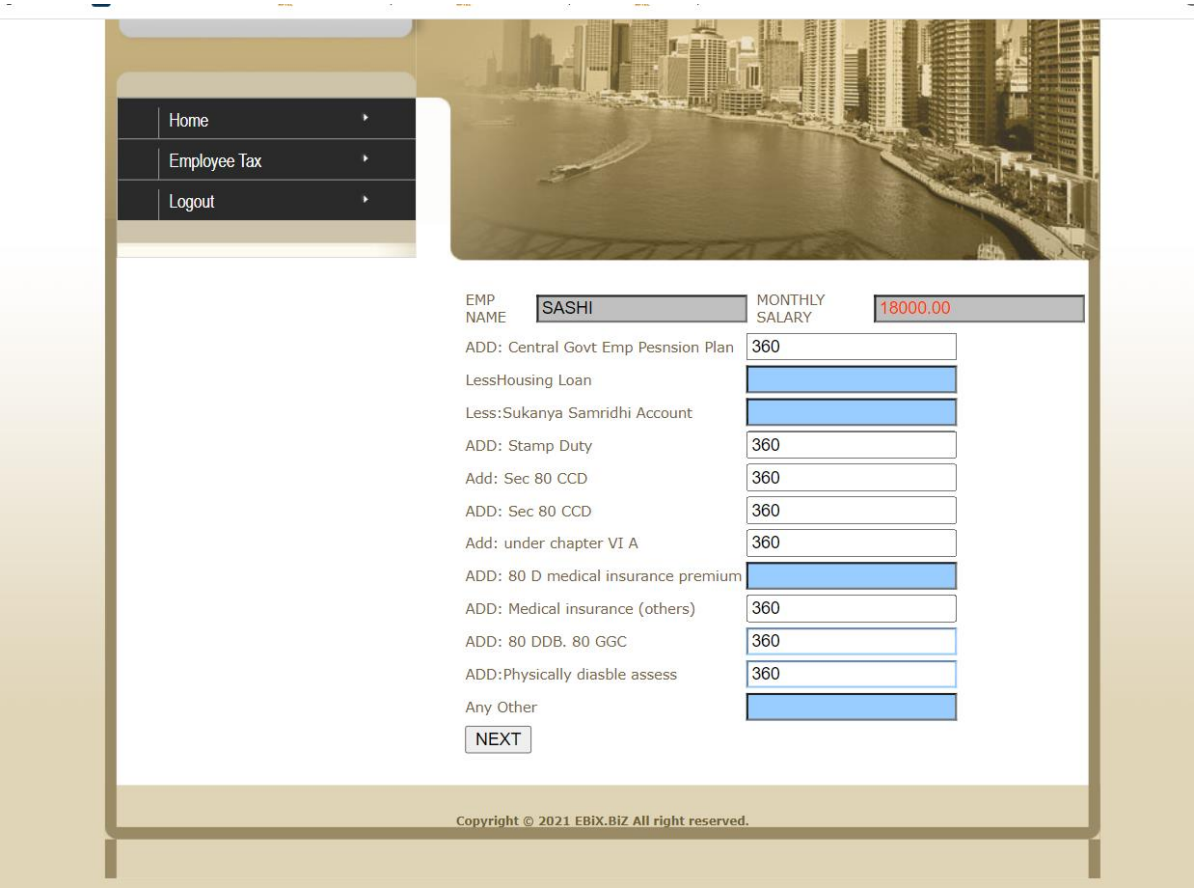
The welcome page. After the user log in the DAN application will connect the server 2 which has loaded with TAX percentage and latest payroll percentage.



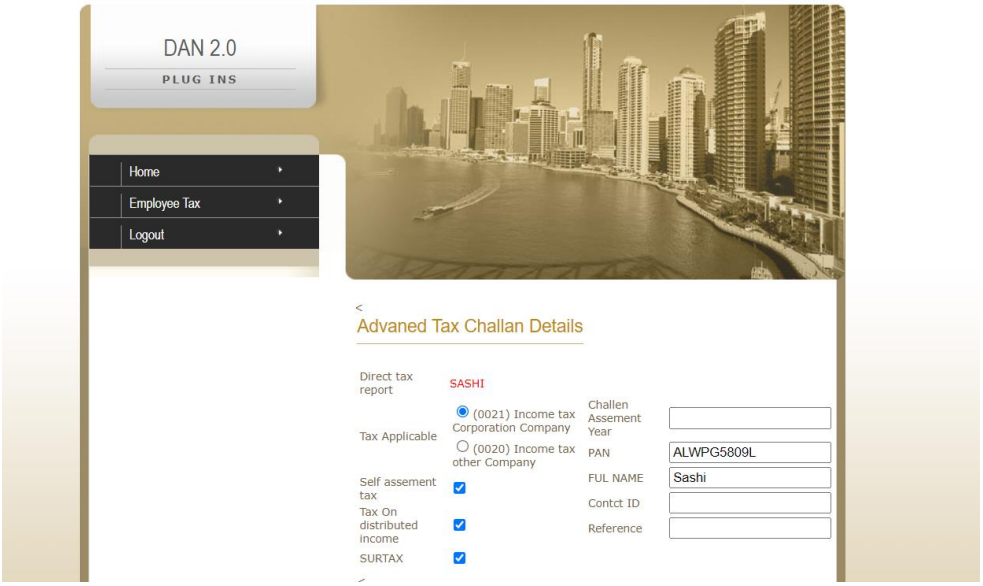
When the user clicks the next the both details are saved in cache memory of DAN and application will calculate and generate the values in the web page.



The user are allowed to make updates in the page which will reflect in both DAN stack and the server form where actual data are collected.



The new SQL server based data are again loaded in the DAN stack and will be integrated with other servers which are included in the tax value generations.


DAN 2.0
PLUG INS
Home
Employee Tax
Logout
Advaned Tax Challan Details
Direct tax report
SASHI
Tax Applicable
(0021) Income tax Corporation Company
(0020) Income tax other Company
Self assement tax
Tax On distributed income
SURTAX
Challen Assement Year
PAN
ALWPG5809L
FUL NAME
Sashi
Contct ID
Reference


Details of payment
income tax
2200.00
Surcharge
Education cess
Interest
Other
Penalty
Pending
Prepaid
Other Carried
CounterFoil
PAN
Received from
Amount In words
Type of payment
Bank Book Refernace
Bank Approval
BSR code
Tender Code
Serial number
Paid Status
NEXT
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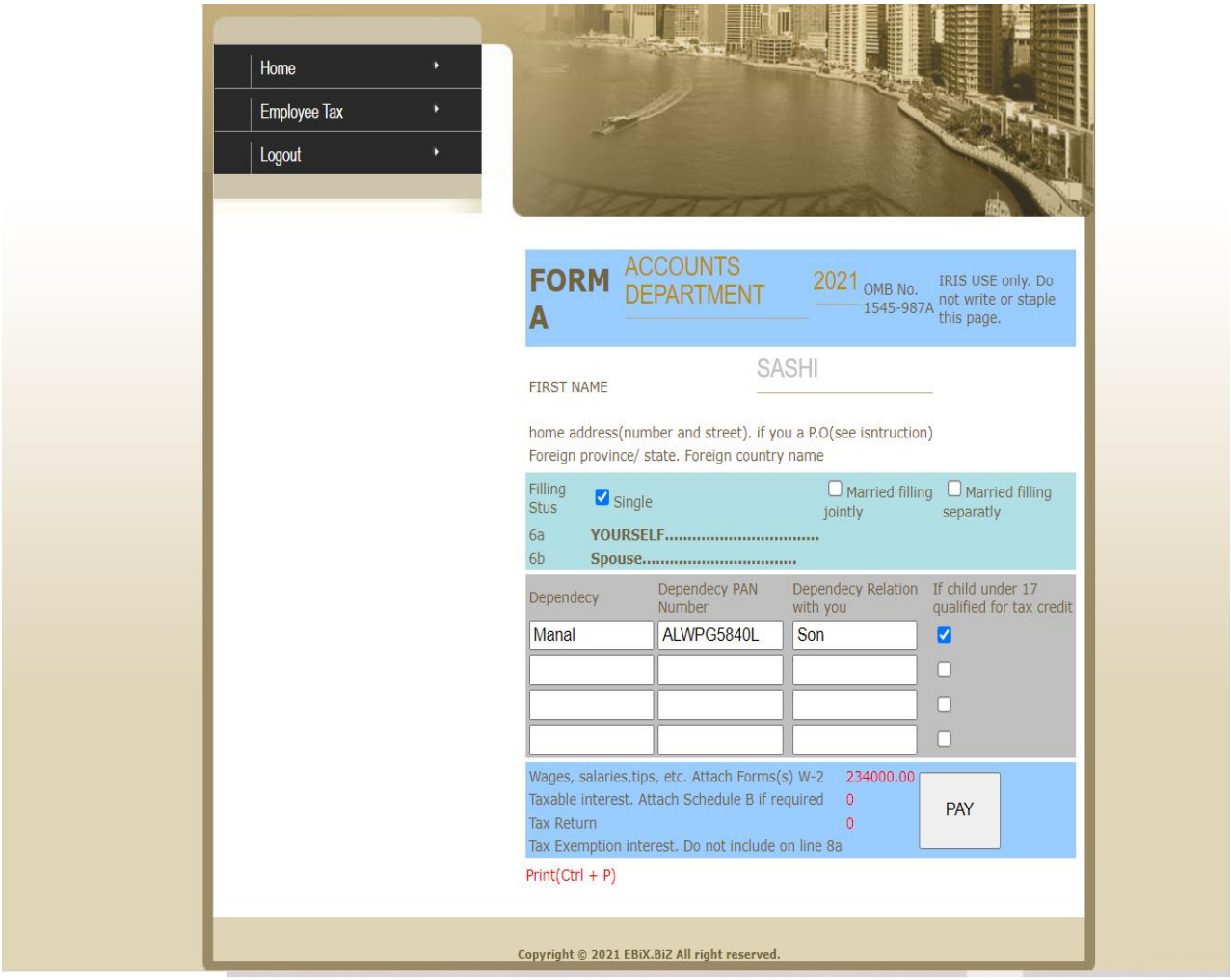
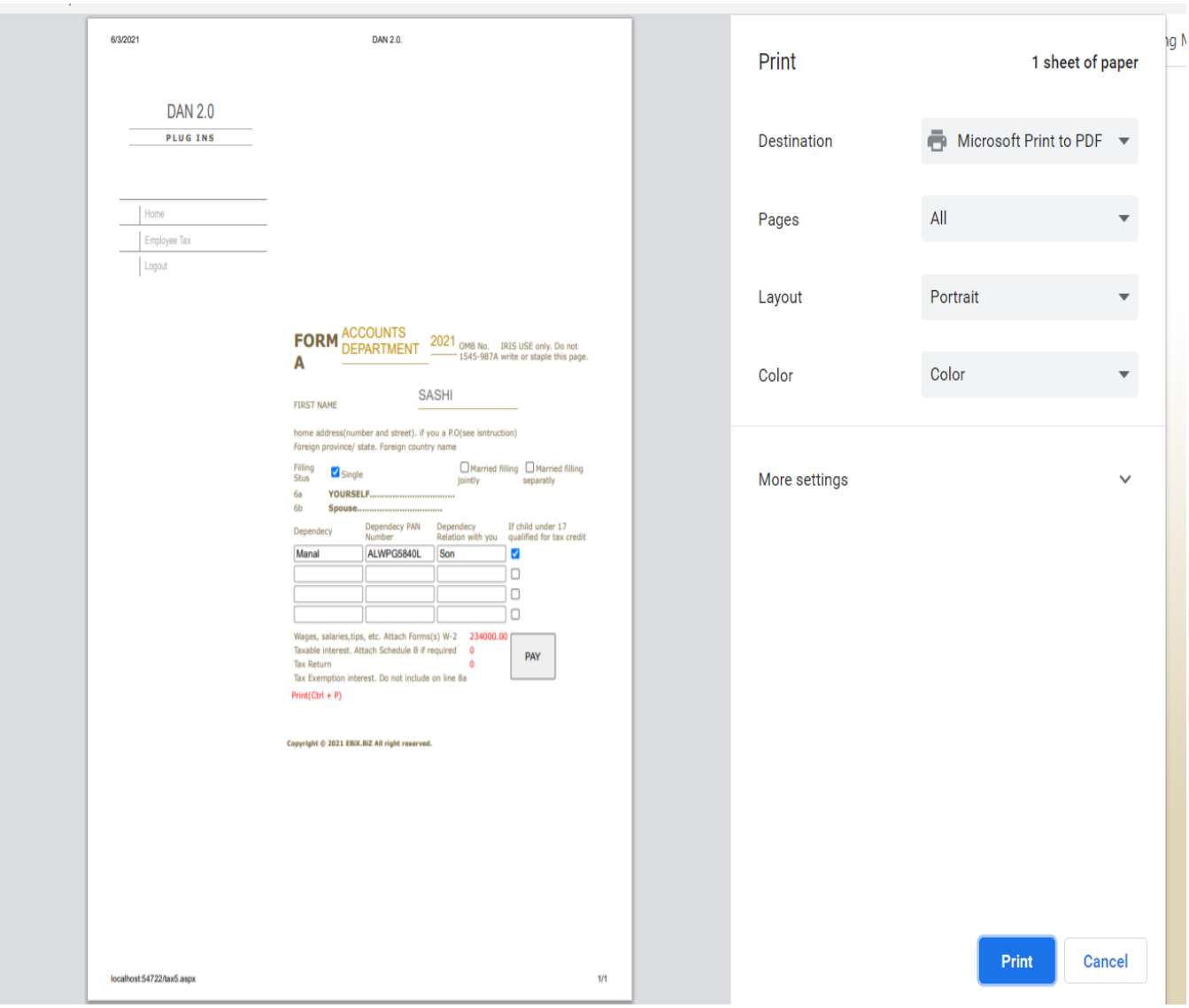
4.2 Reports

Report is a document which contains a summary of all test activities and final test results of a testing project. Test report is an assessment of how well the Testing is performed. Based on the test report, stakeholders can evaluate the quality of the tested product and make a decision on the software release.



The form generated for the selected users.



After the tax payment the users can take print out for the future reference.

TESTING

5.1 Strategies

- **Before testing starts, it's necessary to identify and specify the requirements of the product in a quantifiable manner.**
  Different characteristics quality of the software is there such as maintainability that means the ability to update and modify, the probability that means to find and estimate any risk, and usability that means how it can easily be used by the customers or end-users. All these characteristic qualities should be specified in a particular order to obtain clear test results without any error.

- **Specifying the objectives of testing in a clear and detailed manner.**
  Several objectives of testing are there such as effectiveness that means how effectively the software can achieve the target, any failure that means inability to fulfill the requirements and perform functions, and the cost of defects or errors that mean the cost required to fix the error. All these objectives should be clearly mentioned in the test plan.

- **For the software, identifying the user's category and developing a profile for each user.**
  Use cases describe the interactions and communication among different classes of users and the system to achieve the target. So as to identify the actual requirement of the users and then testing the actual use of the product.

- **Developing a test plan to give value and focus on rapid-cycle testing.**
  Rapid Cycle Testing is a type of test that improves quality by identifying and measuring the any changes that need to be required for improving the process of

software. Therefore, a test plan is an important and effective document that helps the tester to perform rapid cycle testing.

- **Robust software is developed that is designed to test itself.**
  The software should be capable of detecting or identifying different classes of errors. Moreover, software design should allow automated and regression testing which tests the software to find out if there is any adverse or side effect on the features of software due to any change in code or program.

- **Before testing, using effective formal reviews as a filter.**
  Formal technical reviews is technique to identify the errors that are not discovered yet. The effective technical reviews conducted before testing reduces a significant amount of testing efforts and time duration required for testing software so that the overall development time of software is reduced.

- **Conduct formal technical reviews to evaluate the nature, quality or ability of the test strategy and test cases.**
  The formal technical review helps in detecting any unfilled gap in the testing approach. Hence, it is necessary to evaluate the ability and quality of the test strategy and test cases by technical reviewers to improve the quality of software.

- **For the testing process, developing a approach for the continuous development.**
  As a part of a statistical process control approach, a test strategy that is already measured should be used for software testing to measure and control the quality during the development of software.

5.2 Testing Levels

- **Unit Testing**

  In this type of testing, errors are detected individually from every component or unit by individually testing the components or units of software to ensure that if they are fit for use by the developers. It is the smallest testable part of the software.

- **Integration Testing**

  In this testing, two or more modules which are unit tested are integrated to test i.e. technique interacting components and are then verified if these integrated modules work as per the expectation or not and interface errors are also detected.

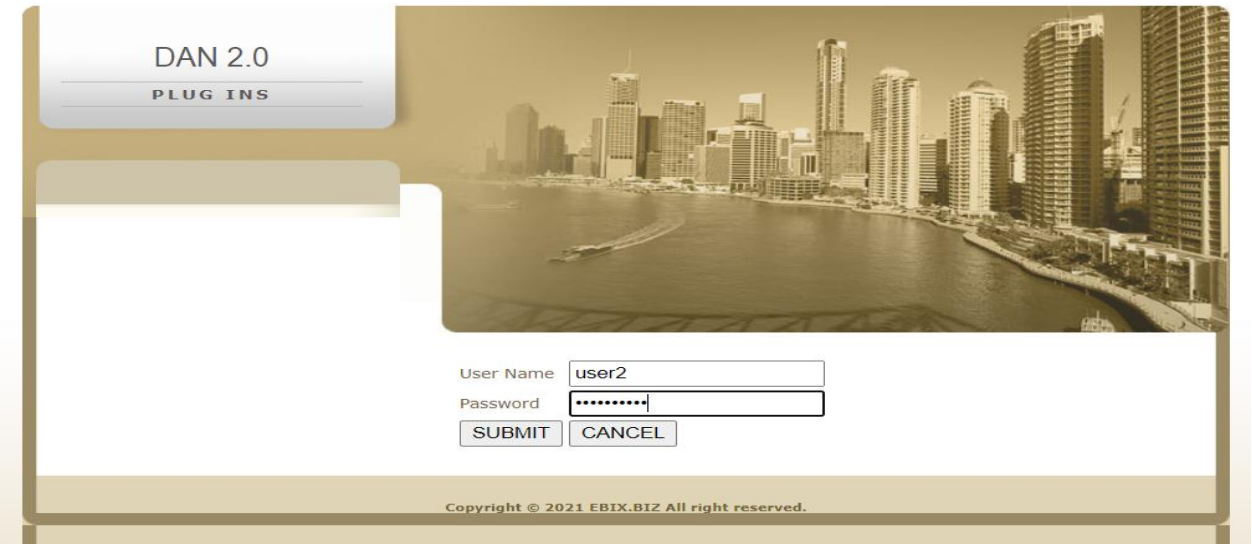
- **System Testing**

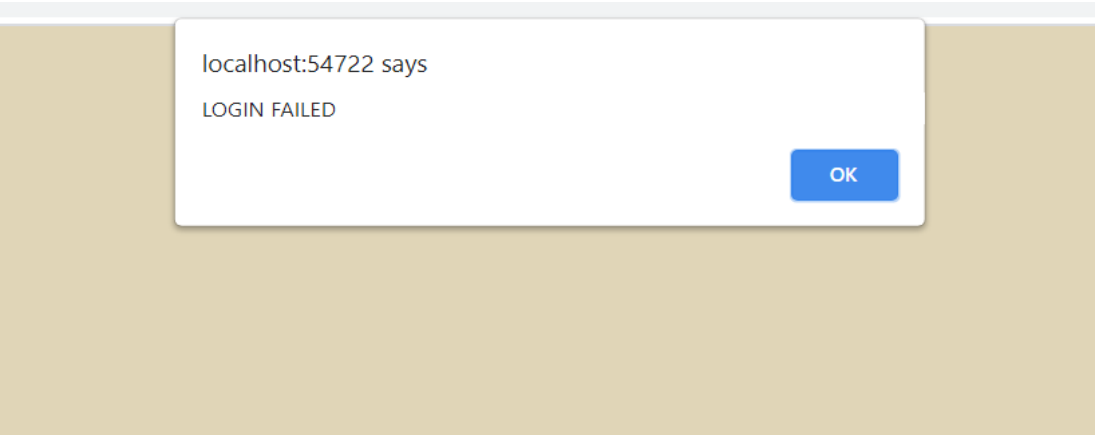
  In system testing, complete and integrated Software are tested i.e. all the system elements forming the system is tested as a whole to meet the requirements of the system.

- **Acceptance Testing**

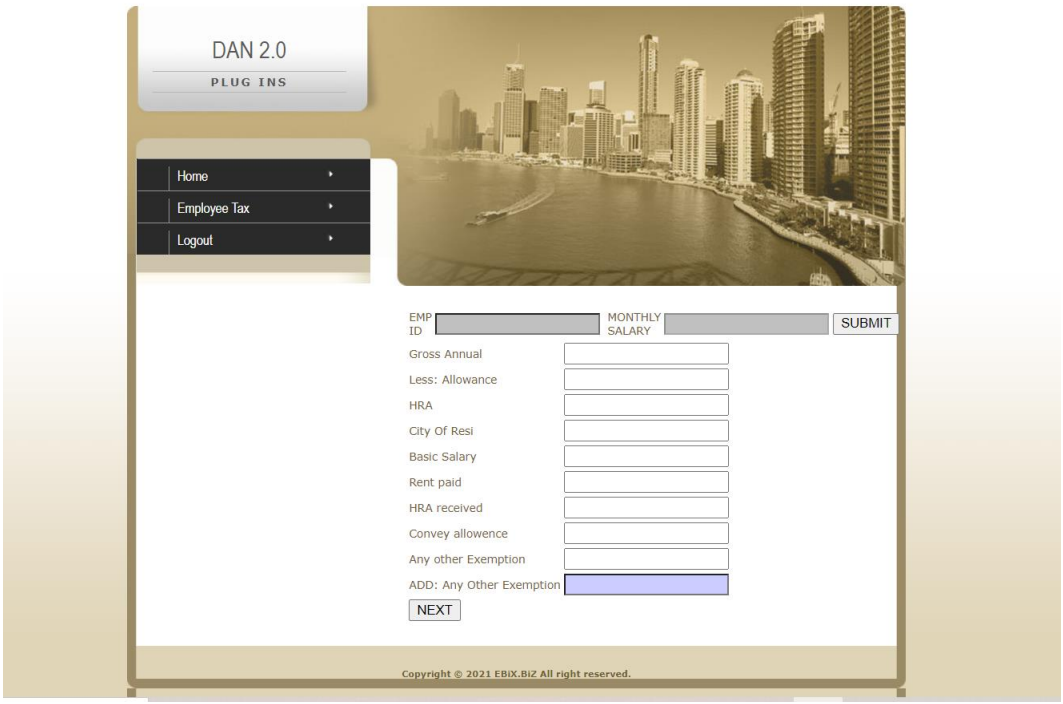
  It is a kind of testing conducted to ensure whether the requirement of the users are fulfilled prior to its delivery and the software works correctly in the user's working environment.

5.3 Test Cases

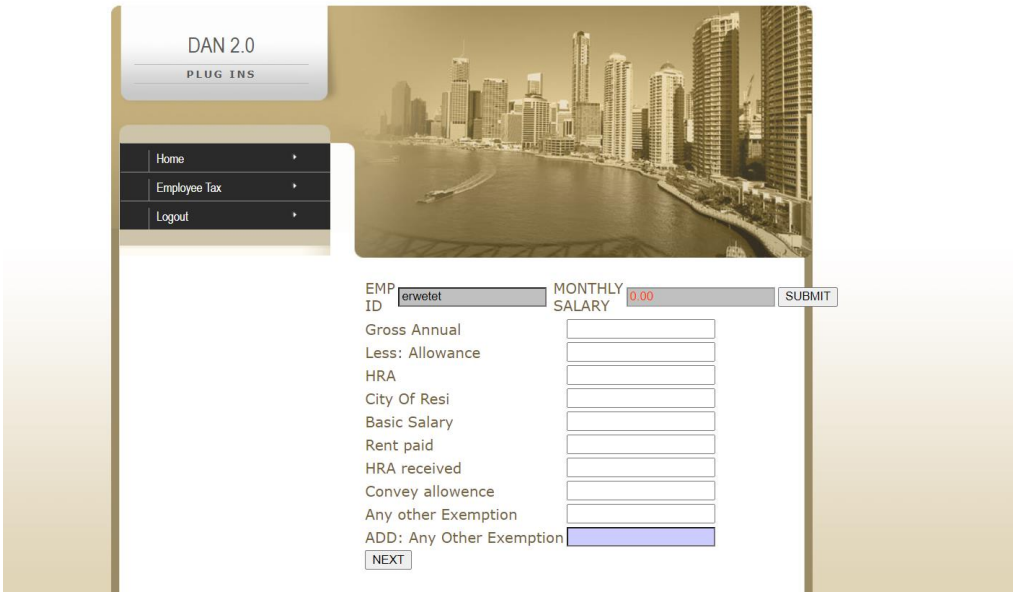




Login Failed



If its empty and clicked on next, it will occur an error



As given register number is at database and it not a character so it accepts.

SUMMARY

6.1 Summary

The technology of the big data management and the searching is now improved for the better searching and concerning over the fetched data. The developers have been using the many techniques for the big data searching and saving of the SQL data in the stack format. The virtual node and the virtual pointer in the stack called for storing the DAN based data and searching. Virtual pointer is by default is pointing in the first stack of the DAN and the developers also can program to points to other stack of the DAN if required too.

6.2 Scope for Enhancements

AI based DAN is the future. In these technologies the application will generate the pointer ID and which is depended on the searching made by the user. That is when the user search over the attribute “type A” the virtual pointer will be given the value 100, all the similar search made by different user over the type Attributed will also be saved within the pointer value 100. This step can help to reduce the limitation of pooling and make the search over the more accurate stack value.

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www.github.com