



## **Construction Company Management System Requirements Specification**

**Version 2.0**

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## **1.1 Project Overview**

It seems that many businesses in our country still uses the old version of keeping information for their workers like using notebooks or excel .In the cases of constructing companies they do not have a specific program that shows that the project they are working in currently or how the work is divided between their workers . The business we are helping to solve this problem is a construction company named “Druri –Shqip shpk” .

This company is using excel to keep the working days for each worker to account their payment based on their working days. As for the project they are currently working with, they do not have a proper database to keep all the project and which worker is currently working on that project. They also use only an accounting program for the economist for the material use but that program do not include which materials was used on that project .

For these reasons we have decided to create a program which will help this construction company ,it will digitalize the information on working days for each worker including on which project they are currently working. The owner will have it easier to have all the information of the project in his computer. It will also help the other users with their work in the company in order to have everything in one place. Admin, team leader, economist, jurist, manager will be the ones that will be able to use this desktop application. The 5 main users will have their account in order to have all the information in one place.

## **1.2 Purpose and Scope of this Specification**

In order for a construction company to get a project well done, it is needed that every employee to coordinate their work with each other. So, the main purpose of our Construction Company Management System is to build a communication bridge between every employee in the business.

Currently, the business owner is gathering and organizing all data manually and he is doing mostly anything on his own. This program will make sure that engineers cover the processes

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of planning and coordinating different projects. This way, the system will bring a digitalization of the work in order to make things work as quick, efficient and effective as possible.

This software will help in organizing the work of the company and since everyone is doing their part, it will be less time-consuming. The tracking of the resources and assets, as well as monitoring of the costs, purchases of the materials, progress and the performance of the workforce will be easier. This way the business can achieve what is called competitive advantage in the existing market.

## ***2. Product/Service Description***

### ***2.1 Product Context***

This software is a desktop application which is going to provide the best solution to the management. The system will help the company with the daily activities also cover the processes of planning, coordinating and controlling different projects that are executed by existing teams in the company. This will cover most of the work done by hand which is time consuming, not efficient and can lead to certain misunderstanding or problems. The application's goal is to also make the process of keeping track of inventory and the purchasing order less time consuming and easier to deal with.

### ***2.2 User Characteristics***

There will be five main users where each user will have their personal window to work. In the login window will be a selection box to choose the logging user who is working

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1. Owner (admin) window
  - a) Create, remove, update employees
  - b) Read days off requests and approve them
  - c) Open the project that they are about to work on
  - d) Approve or decline the project suggested by the team leader
  - e) Add account in order to do the needed changes regarding the account of the application
2. Team Leader window
  - a) Create, remove, update projects
  - b) Assigns workers to projects
  - c) Report the materials used daily and the amount use

**3. Economists**

- a) Mark the employees that show up to work daily
- b) Makes days off requests for the workers
- c) Keep track of the inventory
- d) See for each worker the work days from the day he selects to another day and calculate the payment
- e) See for each project the materials use as well as the price
- f) Fill a project order list for the materials needed as well as the amount

**4. Jurist**

- a) Enters the contract in the system
- b) He can edit or delete them
- c) Enter the tenders that the company applied for
- d) Looks at the ones that are in progress as well

**5. Manager**

- a) Looks at the list of the company's suppliers
- b) Can add, update, delete new suppliers of the materials
- c) When opening the certain supplier he can look at the details of that supplier
- d) After looking at the supplier he can make an order listing the quantity needed
- e) Will have a to do list where he can add new things for the day and also mark things as done after completing them

**2.3 Assumptions**

On this Application:

- It is assumed that every user has access to a computer.

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- It is assumed that the admin will have access and also have the power to add users and also employees to the system(CRUD functionalities)
- It is assumed that the computer devices that will use the application will have Windows or Linux operating system
- It is assumed that admin will have access to everything that other users post.
- It is assumed that the application will be secure and the data will be confidential.
- It is assumed that every user like admin, economist, manager, jurist and team leader will be trained to use this application before starting to use it.

#### ***2.4 Constraints***

The application will conceivably have the following constraints:

- Each employee has to first show to the economist's office
- The users of the application should have basic knowledge of the application
- The users have access of the application only in the computers where it is installed

#### ***2.5 Dependencies***

Dependencies of the application:

- The application needs to run in a computer
- The user cannot log in if the admin didn't open an account for them
- Project cannot start without the acceptance of the admin
- Also days off requests need to be accepted by the admin
- Admin cannot view the projects if they are not fully completed (detailed)

### **3. Requirements**

#### **3.1 Functional Requirements**

Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_01	The system is implemented as a desktop application with five main users	Every operation will be involving these users	1	4/29/20	Kristiana Cukaj Marina Collaku
BR_02	Every user will be able to log in to their accounts with their usernames and the passwords	This is the only way that they can use the application	1	4/29/20	Kristiana Cukaj <b>Marina</b> <b>Collaku</b>
BR_03	A database will be connected in order to keep all the data.	The only way to save the information of the application is by connecting it to a database that will keep all the data	2	4/29/20	Kristiana Cukaj <b>Marina</b> <b>Collaku</b>
BR_04	If the user trying to log in exists in the database, he should be able to open his page	The system checks with the database the information given by the user when logging in	2	4/29/20	Kristiana Cukaj <b>Marina</b> <b>Collaku</b>

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<b>Req#</b>	<b>Requirement</b>	<b>Comments</b>	<b>Priori ty</b>	<b>Date Rvwd</b>	<b>SME Reviewed / Approved</b>
BR_05	The Admin account should have all the privileges and must be able to enter in every users window.	In order to be in full control of what everyone is doing the admin should have access to different windows	1	4/22/20	Kristiana Cukaj Marina Collaku
BR_06	This system should provide the admin the right to add, edit and delete employees	This way if any changes are made in the business it will not be hard for the admin to adjust those changes in the system	1	4/29/20	Kristiana Cukaj Marina Collaku
BR_07	The Admin page is responsible of approving different projects suggested by the team leader.	Before team leader starts working on projects they send a draft of the project and it is up to the admin to approve them.	1	4/22/20	Kristiana Cukaj Marina Collaku
BR_08	The admin can add new employees by providing information such as: Name, Surname, Date of Birth, Position in the company.	This will be one of the main operations of the admin account.	1	4/22/20	Greta Meckaj Marina Collaku

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<b>Req#</b>	<b>Requirement</b>	<b>Comments</b>	<b>Priori ty</b>	<b>Date Rvwd</b>	<b>SME Reviewed / Approved</b>
BR_09	The admin can view employees data in a tabular form where he can search and can make quick edits on data through the table or delete.	Through this option it will be easier to navigate through different employees	2	4/22/20	Greta Meckaj Marina Collaku
BR_10	The admin page is responsible on approving the days off requests for the employees	By doing so it will be easier for the admin to not forget about who wants a day off	2	4/22/20	Erjona Gosturani Pavlina Hysko
BR_11	The admin page is responsible for making the required changes for any of the account as well as the username and password of that account	In this way the admin will be in full control of the application	3	4/22/20	Erjona Gosturani Pavlina Hysko
BR_12	The admin can open a page where he sees all the projects and their activity status.	Through this it will be easier to navigate all the projects	3	4/22/20	Erjona Gosturani Pavlina Hysko

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Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_13	The team leader should specify his username and password and his position in order to open his page	This is an easy way to access the account and also secure	2	4/22/20	Kristiana Cukaj Erjona Gosturani
BR_14	The team leader must give information regarding the daily material usage along with the amount used	In this way it is easier for the team leader to communicate with the economist	2	4/22/20	Kristiana Cukaj Erjona Gosturani
BR_15	The team leader is responsible of creating new project by filling details and assigning workers for that project	By doing so it will be easier for the admin to control all the project	3	4/22/20	Kristiana Cukaj Erjona Gosturani
BR_16	The team leader must fill a form for the project he is creating	This way for every project there will be details which can be viewed easier	2	4/22/20	Pavlina Hysko Greta Meckaj
BR_17	The team can also update or delete a certain project.	Related to certain changes in the company the user should be able to reflect those changes in the system	2	4/29/20	Pavlina Hysko Greta Meckaj

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Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_18	The team leader should send this project as a request to the admin in order to approve them.	It will be easier for the team leader to access all the project from all team leaders	2	4/22/20	Pavlina Hysko Greta Meckaj
BR_19	The team leader can view all the details of the projects he is a team leader of.	As the team leader is the engineer all the project he has done till now can be accessible	3	4/22/20	Pavlina Hysko Greta Meckaj
BR_20	The team leader can edit the details of the project he is currently working on or former projects	so if he also wants to edit work in progress projects	1	4/22/20	Kristiana Cukaj Greta Meckaj
BR_21	The economist account is responsible of showing who is showing up to work every day.	This is an efficient way to have the list of everyday working worker instead of having to write them down	3	4/22/20	Kristiana Cukaj Greta Meckaj
BR_22	The economist is sending days off request to the admin with the request of the specific worker	By doing so it will be easier for the economist to not forget about who wants a day off	2	4/22/20	Erjona Gosturani Marina Collaku

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<b>Req#</b>	<b>Requirement</b>	<b>Comments</b>	<b>Priority</b>	<b>Date Rvwd</b>	<b>SME Reviewed / Approved</b>
BR_23	The economist can view the daily usage of the material for the project as well as the amount used	As to make it easier for the economist to not forget nothing that the team leader buys this can be a help	3	4/22/20	Erjona Gosturani Marina Collaku
BR_24	The economist can view the unit price and the price of the total of the materials used	This is an easy way to look at the costs a specific project has	3	4/29/20	Erjona Gosturani Marina Collaku
BR_25	The economist can calculate the workers payment based on the selected period	Based on the calculation of the days worked * their daily wage	2	4/22/20	Erjona Gosturani Marina Collaku
BR_26	The economist can fill a list of the materials needed and send it to the manager page.	Looking at the inventory it will be easier if the economist send it to manager of supplies in order to make the order	2	4/29/20	Erjona Gosturani Marina Collaku
BR_27	The jurist can view all the contract in a list and when selected a bigger window with the pdf showing will open.	In order to be more organized when the jurist selects the contract he want then the details will show	2	4/29/20	Erjona Gosturani Marina Collaku

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<b>Req#</b>	<b>Requirement</b>	<b>Comments</b>	<b>Priori ty</b>	<b>Date Rvwd</b>	<b>SME Reviewed / Approved</b>
BR_28	The jurist user can new contract, edit or delete.	Jurist can add when a new contract is made and also update it according to the changes	2	4/29/20	Pavlina Hysko Greta Meckaj
BR_29	The jurist can also add notes to a certain contract.	If necessary he will add some notes under the contract	3	4/29/20	Pavlina Hysko Greta Meckaj
BR_30	The jurist can also view the tenders that the company has applied for.	This way he will have everything in one place and look at the status of his work as well	2	4/29/20	Pavlina Hysko Greta Meckaj
BR_31	The jurist can also look at the tenders in progress.	This is a way that he can see where he stands with his work	3	4/29/20	Kristiana Cukaj Pavlina Hysko
BR_32	When selected the jurist can see more details about the tenders.	In order to be more organized when the jurist selects the tender he want then the details will show	2	4/29/20	Kristiana Cukaj Pavlina Hysko

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Req#	Requirement	Comments	Priority	Date Rvwd	SME Reviewed / Approved
BR_33	The jurist can also add, edit and delete tenders.	Changes are made following the changes in the business	2	4/29/20	Kristiana Cukaj Pavlina Hysko
BR_34	The manager when logged in can view the list of suppliers of the company.	Having the suppliers name will be easier to orientate to whom to make the order	1	4/29/20	Marina Collaku Greta Meckaj
BR_35	The manager can open a supplier's detail and make an order for the materials needed.	This way by just opening he will have the details of the supplier where he wants to order and only make the order	2	4/29/20	Marina Collaku Greta Meckaj
BR_36	The manager can add new orders for a certain supplier.	Besides the already made order he can make a new order	2	4/29/20	Marina Collaku Greta Meckaj
BR_37	The manager can also make notes about the order he makes.	This way there is an easier way to explain the special needs an order may have	3	4/29/20	Marina Collaku Greta Meckaj

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<b>Req#</b>	<b>Requirement</b>	<b>Comments</b>	<b>Priori ty</b>	<b>Date Rvwd</b>	<b>SME Reviewed / Approved</b>
BR_38	The manager can make a to-do list about the day.	This is a way to be more organized and keep I mind the works for the day in order to see the progress made.	2	4/29/20	Marina Collaku Greta Meckaj
BR_39	The to-do list will first consist of the materials needed as suggested by the economist.	The first to-do list should consist in the materials needed as suggested by the economist	3	4/29/20	Marina Collaku Greta Meckaj
BR_40	The manager can add things to the list and save them afterwards.	This will give the opportunity to also keep in mind the work needed to be done for the day.	2	4/29/20	Erjona Gosturani Pavlina Hysko
BR_41	The manager can also check them as done after completing.	This is a way to keep track of what is already done and what needs to be done	3	4/29/20	Pavlina Hysko Erjona Gosturani

## ***3.2 Non-Functional Requirements***

### ***3.2.1 Product Requirements***

#### ***3.2.1.1 Usability***

In software engineering, usability is the degree to which a software can be used by consumers to achieve objectives with effectiveness, efficiency, and satisfaction.

The main aim is to produce a software which must be easy and practical to use meaning that it would be very efficient and that each user can accomplish every task easily, quickly and with few or no user errors.

Our app system is very easy to be updated and get adjusted quickly with these new arrangements, providing users a fast and reliable way of performing each operation.

Every operation will be context sensitive and obvious to what it is achieving, in order to make it clearer to the user. It proceeds and manages the errors quickly in such a way that every operation will be context sensitive.

It shall not be intimidating, frustrating and look as though it demands a lot of time and effort to complete a simple task.

Every user will have its own type of interface, with the attributes and actions they can perform there.

The application would be highly responsive in both design and data generator, which will be integrated in the app.

Even if the app is really easy to use ,In order to foster the user learning the system, a PDF manual would be included, providing necessary, step by step information to learn all type of users how to effectively use the system and achieve common tasks.

The software is user-friendly which makes it easy to work with.

Also it is secure.

### **3.2.1.2 Efficiency**

#### **3.2.1.2.1 Performance Requirements**

The application is a desktop software which means that can be installed on a single computer (laptop or a desktop) and used to perform specific tasks. The application is going to be used by 5 main users and doesn't need any internet connection. Users will have a high performance in completing a specific task of the management system.

The key features of desktop applications are the efficiency of the application is high and also these are highly customized as per user's requirements and flexibility.

##### **1. Capacity**

The software will work at the same time for the main users. Every change made will be reflected on the database so automatically reflected to all the other users. The application it will be install by using CD drive, it works on the system's local server and runs only on a PC operating system such us Window and Linux.

##### **2. Availability**

- The application would be available 24/7, therefore you can access it any time.
- The desktop app will be available to the users that have a pc or a laptop device
- The application can be accessed in any geographical area.

##### **3. Latency**

Connection latency will vary depending on the location of the users and the virtual machines. Windows Virtual Desktop services will continuously roll out to new geographies to improve latency.

### **3.2.1.2.2 Space Requirements**

Being a desktop application, it will be stored in the computer server.

The number of simultaneous users will be limited to the number of users registered in the system but as a medium-size organization , it is not expected to be accessed by a very large number of users.

It will have a size of approximately 80-100 MB, whereas the database will probably be much less as it will be simple one. Being said that, the database that is going to be used will not be very complex, but also it will be capable enough to store everything that is needed.

To do all this we will be working on phpMyAdmin platform.

### **3.2.1.3 Dependability**

#### **1. Monitoring**

The application's user interfaces will be simple and easy to be used which will minimize the possibility for any error or crash of the system. Firstly it will need two inputs, a username and a password that will redirect the user by its type to its corresponding page, in the log in page. In the case that inputs are not valid or not matched in the database an Error message will be displayed. During a crash, the system should restart as soon as the problem occurs by re-configuring the server.

The admin will have an access privilege among all other users who is followed by the manage, and so on with all the employees, depending on their specific duties.

## **2. Maintenance**

The system will be very simple to use and the models are separated from each other which means that the transaction will occur separately, databases will load and the activities easy to process. But except of this, we will still make our test in order to define problems before occurring or fix the existing ones.

## **3. Availability**

The application is not available anytime and anywhere as it can be opened only in the computer it is installed.

It can be accessed by the users in the computers /servers it is installed .

The system is language restricted (available only in English).

## **4. Reliability**

The system shall provide to the users a fast and reliable way of completing their respective tasks promptly with no difficulties and errors.

The system shall be created in such a way that it will leave no room for error.

It will be difficult for a simple task to go wrong.

## **5. Monitoring**

The system will be built in such a way that there will be no room for system crashes.

The login interface requires a username and password as inputs. These inputs will be validated to be of the correct form. In case of wrong login information or invalid inputs, an error message will be displayed.

Putting invalid input into a field, for example putting a number in the name field, will result in an error. Leaving necessary fields empty will also lead to an error.

A failure condition is also added when data being added is not compatible with data in the database.

### **3.2.1.4 User Interface Requirements**

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Our desktop application will be divided in 5 big divisions, admin team, leader and economist manager and jurist. The admin will be the owner, he will have access all over the system. The second division (users) will be for the team leader, the third division user will be for the economist, the fourth will be the manager and the fifth one will be the jurist. As for the log in as password management there will be a page for this in the admin account.

We will focus on anticipating what users might need to do and will ensure that the interface has elements that are easy to access, understand, and use to facilitate those actions, while still keeping the application's design fresh and stylish.

Our system will consist of several pages, providing that it will manage an important part of the business .The admin is responsible for adding new users, such as team leaders , economists to the system, managing the existing ones and viewing their details. After registering a new user, he/she will provide them with their login information so that they can access the system. The first page is going to be a login page, where the username and the password of the user will be required. Users must provide their personal username and password.

The admin also adds new workers that are not users of the application but are managed by the team leaders and economists. To accept and decline the project made by the team leaders is the admin who makes decisions and also for days off. The admin will also view all the projects.

The team leader page is the engineer page , he is responsible of creating new project and including details about it this details also include which of the workers will work on that project. He is also responsible for adding the materials bought each day , which every time they click the button approve this information will go to the economists.

The economist is responsible of clock in for every worker and also to calculate their payment. He can also see the inventor created by the team leaders.

The jurist is responsible of providing the contract and the tender information. The manager is accountable for making the orders to the supplies.

### **3.2.2 Organizational Requirements**

#### **3.2.2.1 Environmental Requirements**

The software will be able to run only in the PC operating system such as Window and Linux. It doesn't need any internet connection, it works on the system's local server.

#### **3.2.2.2 Operational Requirements**

In the beginning every user: Owner (Admin), Team Leader, Economists, Manager and Lawyer will face each a login interface where they must provide their personal username and password. After completing this step each user will be sent to his personal appropriate window.

The main operations required by the users are:

- The users will be able to log in, and access their information anytime.
- The information provided in the system must be secured.
- The information will be accessible only by the specific users.
- Each user can Add, Delete and Update data.
- Each user should create specifics reports.
- And in the end each user can log out easily.

#### **3.2.2.3 Development Requirements**

Client-side programming (Front-end)

For the client-side programming we are going to use Java Swing GUI. Swing actually is a GUI widget toolkit for Java and was developed to provide a more sophisticated set of GUI components. That is the reason why we choose this technology for our project. Swing has a range of objects which can be used as containers for other objects like buttons and textboxes

and so on. The containers that we are using for our project are JFrame and JPanel. JPanel is a container that can store a group of components including other panels. But, it does not have a title bar. That why we are also using JFrame which is a top level window with a title and a border.

### Server-side programming (Back-end)

For the server-side programming we are using MySQL database. This is because it is the most trusted and widely used open source database platform today. We are using also JDBC to access and modify data stored in MySQL database through Java code. JDBC (Java database connectivity) is a set of Java APIs which enables to connect and perform CRUD ( create, read, update and delete) operations through Java on MySQL database.

## **3.2.3 External Requirements**

### **3.2.3.1 Regulatory Requirements**

#### Regulatory Requirements

##### - Privacy policy

The software users are reassured that we are committed to the rigorous implementation of the obligations deriving from the Law “On the protection of personal data” and the by-laws issued for its implementation.

##### -Copyrighted content

All content and images and documents that are used on this application are owned or licensed by the company for use on this application only. Unauthorized use is prohibited

### **3.2.3.2 Ethical Requirements**

- Users of this software are not allowed to use unappropriated language.

- The software should respect the confidentiality and privacy of the employees and everyone else that is included in the process.
- The system is based on every rule and laws regarding the use of software.

### **3.2.3.3 Legislative Requirements**

#### **3.2.3.3.1 Accounting Requirements**

As far as our system is concerned there are no accounting requirements being put into effect until now.

However if there is any change in the future these requirements will be updated.

#### **3.2.3.2.2 Security Requirements**

- The main platform that it will be used in MySQL for database.
  - MySQL stores data in files in your hard disk. It stores the files in a specific directory that has the system variable "datadir".
  - Another platform we considered using is Oracle for database as it is more powerful than MySQL.
  - Oracle offers inline views, role based security, advanced replication which MySQL does not.

### **3.3 Domain Requirements**

The system manages everything related to our construction company, more specifically to organize better the work of Druri Shqip SH.P.K. That means the digitalization of basic work related activities of its owner and employees. To enter the system every employee should log in to verify the time he/she starts and ends the shift, also to send requests for day off to the owner. External users that are not part of the company's staff cannot enter the system.

## **4 Software Design**

### **4.1 User Scenarios**

1. User successfully logs in

- User can enter the username and password
- User can select between option for his position in the company
- After checking with the database the user logs in

#### ***Admin***

2. Admin adds new employee

- Admin can view the table with the list of the employees
- Admin should be able to add new employees
- Admin should give the necessary required information for each employee
- Admin can save the changes
- The information should be updated in Employee's table

3. Admin removes employees

- Admin can view the table with the list of the employees
- If any changes in the business, admin can delete an employee from the list
- Employee should be removed from the table

4. Admin can make changes in the accounts

- Admin can go to accounts page
- Admin can make the required changes

5. Admin adds new account

## ***Construction Company Management System Requirements Specification***

- At the Accounts page, admin should be able to add a new account
- Admin fills the form with the first name, last name, position, username and password of the new user
- Admin saves the changes made

### 6. Admin looks at requests

- Admin can view all requests for days off
- Admin approves or declines the requests

### 7. Admin opens project page

- Admin opens project page
- Admin can see all the different projects and their activity status
- Admin can open the projects and look at the details
- Admin approves or declines the projects sent as a request

## ***Team Leader***

### 8. Team Leader adds new project

- Team Leader should be able to add new projects
- Team Leader should fill a form entering the information
- He can give details needed
- He should also assign workers for the project

### 9. Team leader reports materials

- Team Leader should be able to enter the date
- He can report what materials are used
- He can enter the amount of materials used

## ***Economist***

10. Economist does the clock in

- Economist clocks in the employees each day
- Economist can also mark the date of the work

11. Economist send the requests

- Economist can view at the list of employees
- Economist should be to have a column for the days off requests
- Economist can make a request for day off

12. Economist sees the material report

- Economist should see what materials are used for a specific period of time by choosing start and end date.
- He should be able to select for what project he want the report
- He should be able to view the materials used

13. Economist opens the calculate payment

- Economist can select a period of time he requires
- Economist can select between the list of the employees
- He should be able to put the daily wage
- He can calculate the payment for the given period

14. Economist suggests the purchase order

- Economist looks what materials have been used the most
- Economist writes a list of materials needed
- Economist writes the amount of materials needed
- Economist sends request to manager

***Manager***

15. Manager makes an order

- Manager can view all the suppliers
- Manager can select a supplier
- He should be able to look at the supplier's information
- Manager enters the materials needed
- Manager makes notes if needed
- Manager send the order

16. Manager makes changes to task in the to do list

- Manager looks at the to do list
- Manager can add new to do tasks
- Manager can edit a to do task
- Manager can delete a to do task
- Manager should mark them as checked when done

***Jurist***

17. Jurist enters the contracts in the system

- Jurist should be able to add new contracts in the system
- Jurist can fill the information and uploads needed files
- Jurist must save the information
- The contracts are shown in Contracts table

18. Jurist edits or delete the contracts

- Jurist should be able to edit and update a contract when needed
- Jurist should be able to delete a contract

19. Jurist enters the tenders in the system

- Jurist should be able to add a new tender in the system
- Jurist can enter the certain information about the tenders
- Jurist must save the information
- The tenders are shown in Tenders table

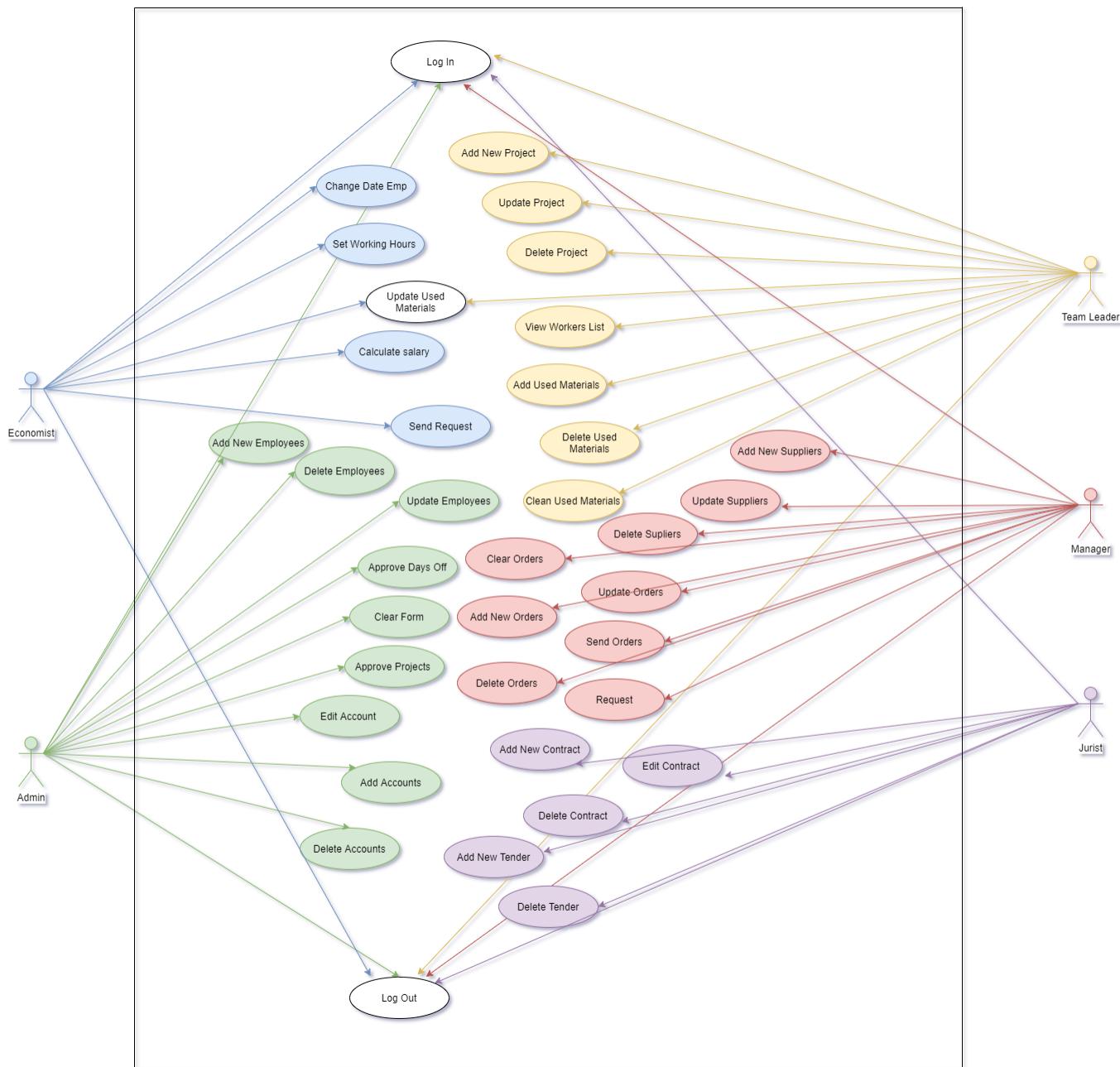
20. Jurist edits or delete the tenders

- Jurist should be able to edit a tender
- Jurist should make the changes for the tender
- Changes are saved in Tenders table
- Jurist should be able to delete a tender
- Jurist confirms the deletion
- Tender is removed from Tenders table

## **4.2 Use Cases**

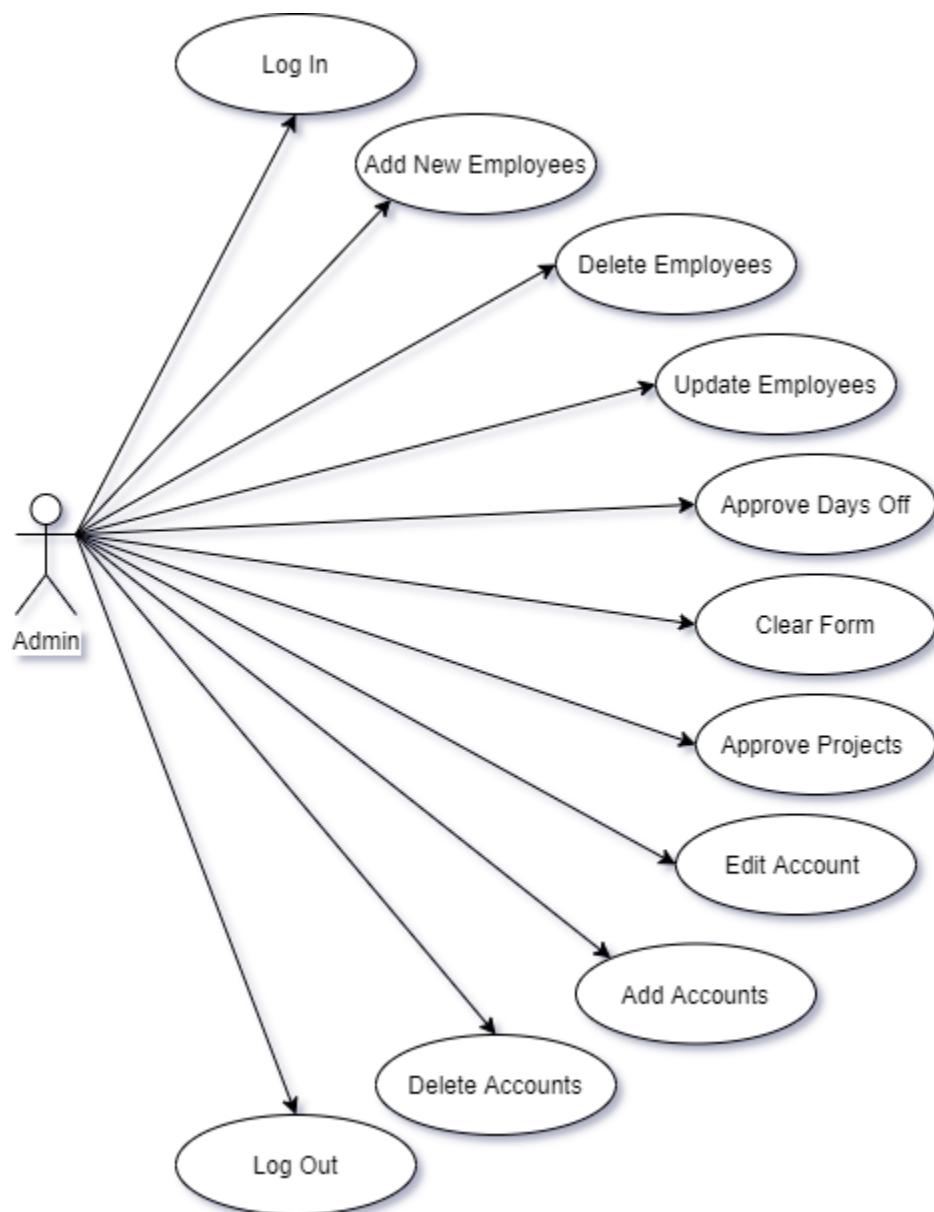
Use Case 0: General Use Case

## Construction Company Management System Requirements Specification

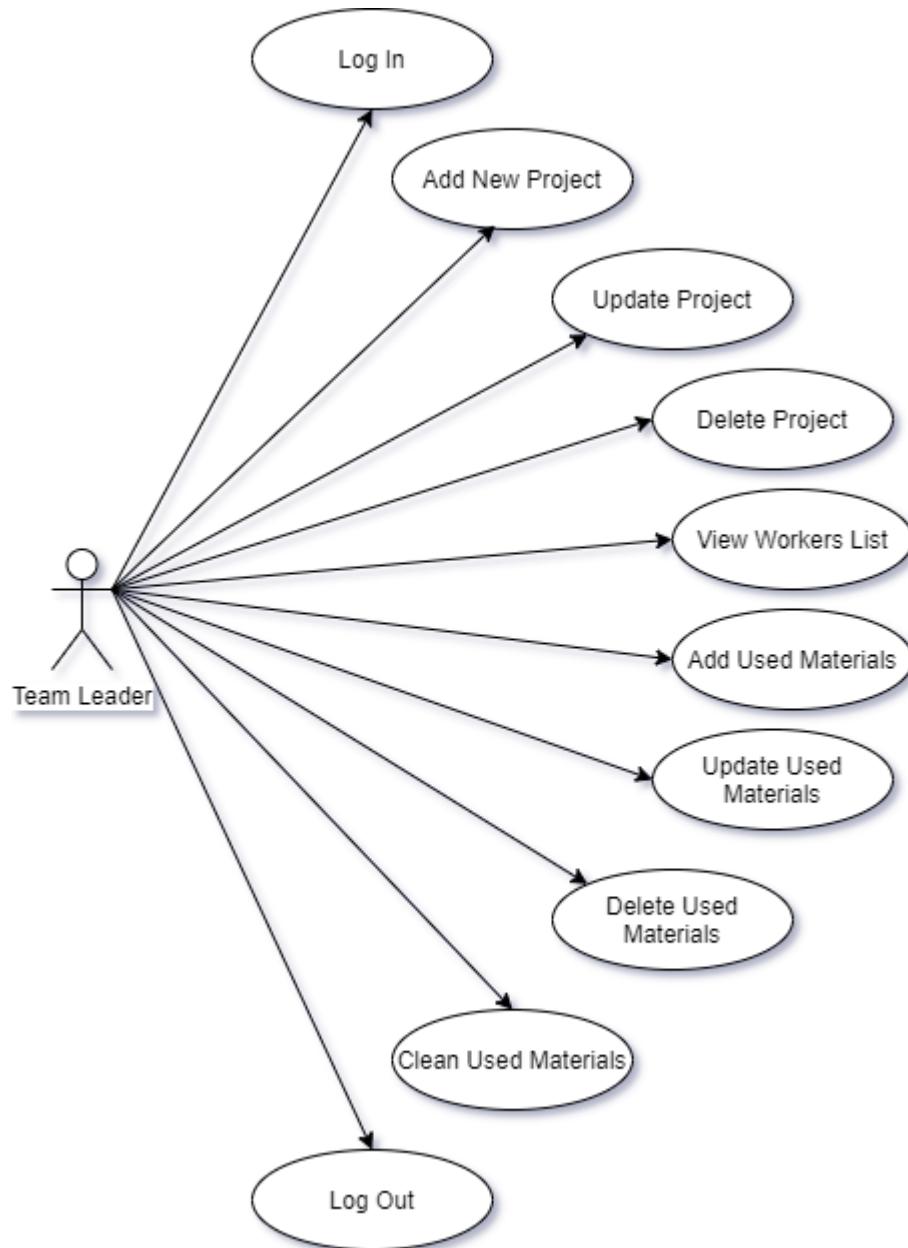


## **Construction Company Management System Requirements Specification**

Use Case 01 : Admin

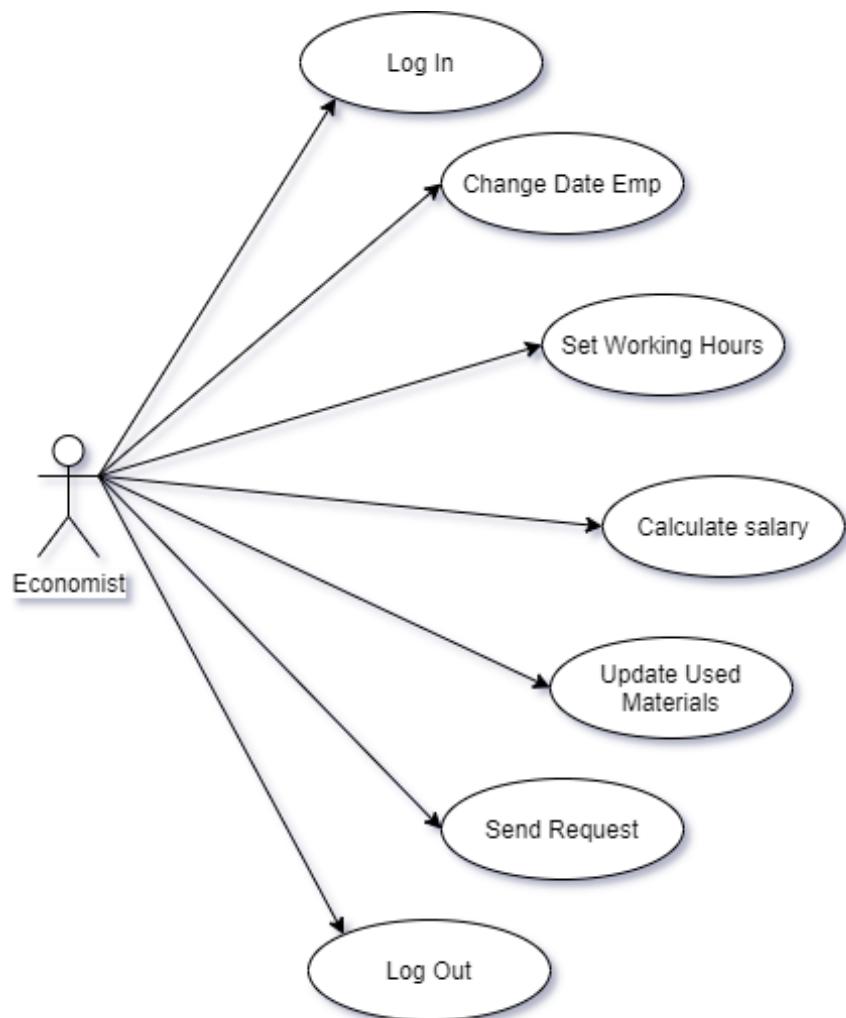


Use Case 02 : Team Leader



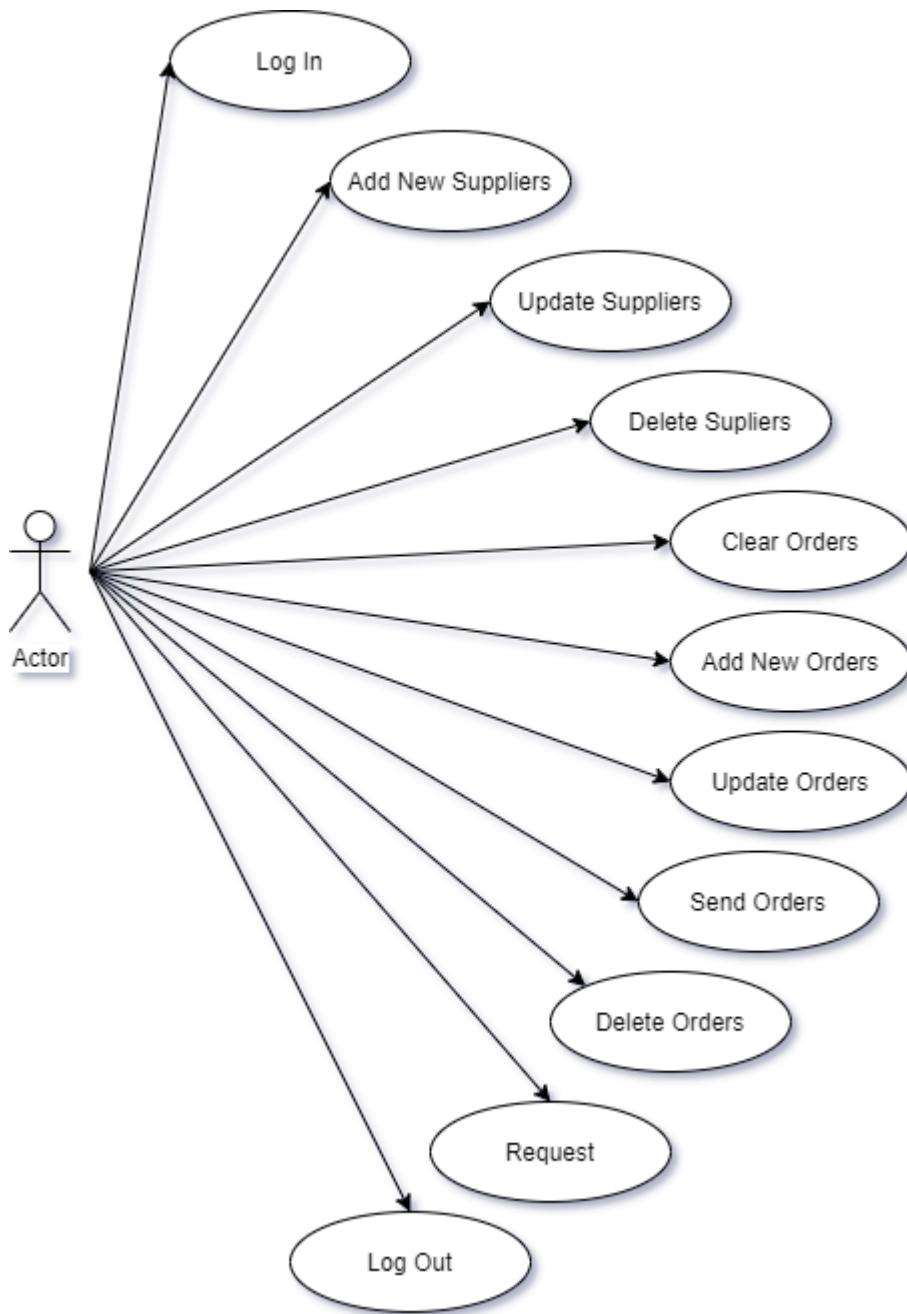
Use Case 3: Economist

## **Construction Company Management System Requirements Specification**

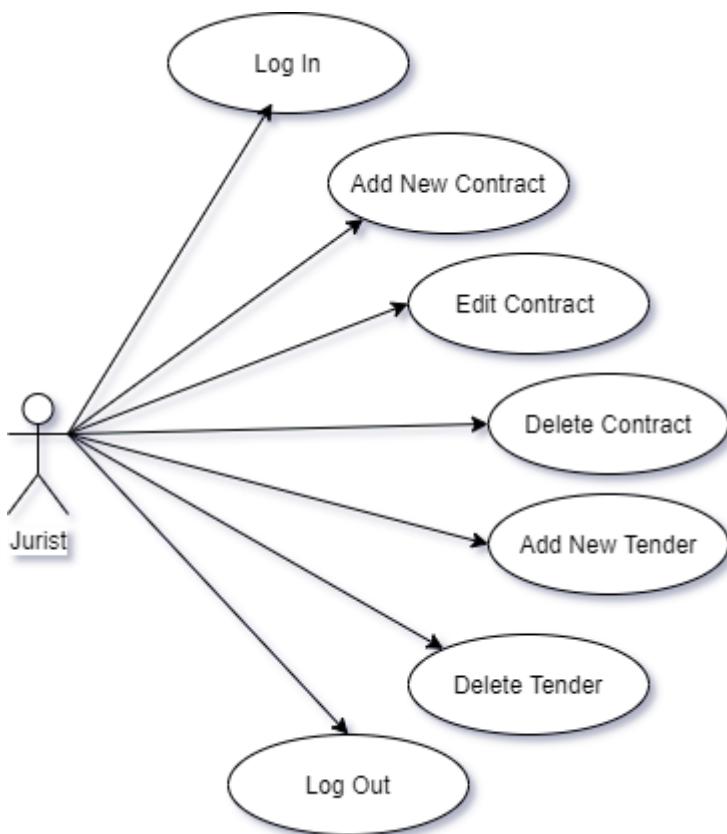


Use Case 4 :Manager

## **Construction Company Management System Requirements Specification**



Use Case 05: Jurist



#### 4.3 Use Cases Extended

UC\_00

Name	User successfully logs in
Summary	User logs in the account after entering the username and password
Actor	Admin, Team Leader, Economist, Manager, Jurist
Description	After entering the required data the user is able to log in into his/her account. All the data should be correct and match the database in order to have a successful log in.
Precondition	Every user should exist in the database
Alternatives	User doesn't log in the account successfully because of wrong username or wrong password but he can try again.
Postcondition	User logs in the accounts

***Construction Company Management System Requirements Specification***

UC\_01\_01

Name	Admin adds new employee
Summary	Admin can create a new user to the list
Actor	Admin
Description	By clicking to a button and adding the necessary information admin saves the information and adds it to the list
Precondition	Admin must be logged in the account. Admin should have all the required information for the new user.
Alternatives	After the data is entered for the new user the admin can click 'Add new Employee'. If the data entered for the new user is valid from the system the account is created otherwise the admin is allowed to make the needed changes.
Postcondition	The new employee is added to the list

UC\_01\_02

Name	Admin removes employees
Summary	Admin removes an employee from the list
Actor	Admin
Description	Admin has the option to delete an employee after he selects the employee he can click the "Delete Employee" button
Precondition	Admin has to be logged in and the employee has to be selected
Alternatives	He can choose between "Confirm" or "Cancel" in order to confirm or not the deletion of the employee
Postcondition	Admin successfully deletes the employee and it is cleared from the list.

UC\_01\_03

Name	Admin makes changes in the accounts
Summary	Admin can make the changes and save them
Actor	Admin
Description	Admin can look at all the details of the account and edit the information

***Construction Company Management System Requirements Specification***

	as needed
Precondition	Admin needs to be logged in and open the account window
Alternatives	He can make the changes and ha can save them or exit. If exit the changes will not be saved and if saved the changes will be applied to the selected account
Postcondition	Admin clicks "Save" and saves the changes in the account

UC\_01\_04

Name	Admin adds new account
Summary	Admin can add a new account for the new users of the program
Actor	Admin
Description	Admin goes to the account page and can add new accounts with the necessary information
Precondition	Admin needs to be logged in and needs to open the account window
Alternatives	After entering the information for the new account user he can either click 'Add' and save the data or exit and the data will not be saved
Postcondition	The new account is added to the system and the user can log in the account.

UC\_01\_05

Name	Admin looks at requests
Summary	Admin can view at the requests for days off
Actor	Admin
Description	Admin can look at the requests for days off and the employees requesting the days off and also the dates that they are requesting off and he can approve or not the requests
Precondition	Admin needs to be logged in
Alternatives	He can approve or not the requests for day off.
Postcondition	The day is approved for the specific employee or not

UC\_01\_06

Name	Admin opens project page
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## ***Construction Company Management System Requirements Specification***

Summary	Admin can open the projects page to look at different projects.
Actor	Admin
Description	He can open and look at the projects suggested by the admin and after viewing their status if approved or not he can approve them
Precondition	Admin needs to be logged in as admin user and he needs to open the "Projects" window
Alternatives	He can decide to approve in order to start the work or he can disapprove.
Postcondition	The projects approved show at the team leaders page so he can start and divide the work.

### UC\_02\_01

Name	Team Leader adds new project
Summary	Team leader can add new projects to the list with the information needed
Actor	Team Leader
Description	Team Leader can add a new project to the list of the projects and enter the necessary information for the project. He can assign workers to that project.
Precondition	Team Leader needs to be logged in his account and he needs to open the add new project page
Alternatives	Team Leader can save the information of the project he is about to create by pressing 'Add' or he can erase by pressing 'Cancel'
Postcondition	The new project is added to the list and also sent as a request to the 'Project' to the admin user

### UC\_02\_02

Name	Team leader reports materials
Summary	Team leader writes down the materials used and the amount used daily
Actor	Team Leader
Description	Team Leader can select the project he is currently working, he can add

**Construction Company Management System Requirements Specification**

	the date, he can list all the materials used by also adding the amount of the materials used for that day.
Precondition	Admin needs to be logged in and he needs to select a project and that project needs to be approved
Alternatives	Team leader can update the list with the new information or he can clear the form
Postcondition	The materials are reported and sent to the economist page.

UC\_03\_01

Name	Economist does the clock in
Summary	Economist can mark who showed up at work for the given day
Actor	Economist
Description	Economist writes the date of work and also marks down who showed up to work that day.
Precondition	Economist needs to be logged in and enter the date
Alternatives	He can mark or not if they showed up
Postcondition	Working day of the employee is entered in the system and saved

UC\_03\_02

Name	Economist send the requests
Summary	Economist can send requests for the day of the admin window
Actor	Economist
Description	The user can select the employee for the list and he can select the date he would like to have day off and he sends the request which goes directly to the admin page
Precondition	Economist needs to be logged in his account and he needs to select the employee. This cannot be done for multiple employees at a time
Alternatives	He can send the request for the day provided or can deselect the employee.
Postcondition	The request for day off is sent directly to the admin page.

***Construction Company Management System Requirements Specification***

**UC\_03\_03**

Name	Economist sees the material report
Summary	Economist can view the materials used for the days provided
Actor	Economist
Description	Economist can get from the team leader the list of the materials used for a specific project for the date given and he can update that information
Precondition	Economist needs to be logged in and he needs to have a reporting material
Alternatives	The economist can edit this report or he can also just use this information
Postcondition	The update in the meeting report is applied

**UC\_03\_04**

Name	Economist opens the calculate payment
Summary	Economist can calculate the payment for a given employee for the given period
Actor	Economist
Description	Economist can enter the start date and the end date of the period and he can calculate the payment based on the days worked and the daily wage
Precondition	Economist needs to be logged in. Employee needs to be on the list and he needs to have worked at least once.
Alternatives	Economist can enter the start date but not the end and it will calculate until the last day of work or he can do it for a period. The user cannot enter only the end date for a period to calculate the payment
Postcondition	Economist can view the payment for the given period

**UC\_03\_05**

Name	Economist suggests the purchase order
Summary	Economist makes a list of the materials needed to purchase

***Construction Company Management System Requirements Specification***

Actor	Economist
Description	Economist can write down the materials needed along with the amount they need by looking at what different projects that they have and the materials they need
Precondition	Economist needs to be logged in. He can send only one item at a time.
Alternatives	Economist can either send the suggestions for the material purchase or he can just cancel it
Postcondition	The suggestion for the purchase of the materials is sent to the administrator

UC\_04\_01

Name	Manager makes an order
Summary	Admin selects a supplier and enters the materials needed along with the amount needed.
Actor	Manager
Description	Manager can view the list of the suppliers of the company and he can select between them and when selecting he can add the materials that he wishes to purchase as well as the amount
Precondition	Manager needs to be logged in and he needs to have a list of the suppliers. He also needs to have the contact information for these suppliers
Alternatives	Manager can change the information of the suppliers and can send the purchase order or he can make a new order besides the ones that he has already made
Postcondition	Manager sends the order to the supplier

UC\_04\_02

Name	Manager adds to the to do list
Summary	Manager makes a to do list for the day
Actor	Manager, Economist
Description	Manager has a to-do list for the day with the description needed where

**Construction Company Management System Requirements Specification**

	he can add new tasks or mark them as done. Economist can also add to this list by sending a list of materials needed
Precondition	Manager needs to be logged in the account and he needs to click add in order to make the changes that he requires.
Alternatives	Manager can add new tasks or he can mark them as done. After writing the tasks he can either save them or it will not show in the list
Postcondition	Ne tasks are listed in the to do list.

**UC\_05\_01**

Name	Jurist enters the contracts in the system
Summary	Jurist adds a new contract to the list of the contracts that he already has.
Actor	Jurist
Description	Jurist can upload a file of the contract in the system and also add the information for it to the in the list
Precondition	Jurist needs to log in the account he needs to click the “add” in order to add contract information and he needs save it in the end
Alternatives	If the Jurist is done with entering the information then he can save the new contract and part of the information will show in a list among other contracts.
Postcondition	The new contract and the contract information is added to the list

**UC\_05\_02**

Name	Jurist edits or delete the contracts
Summary	Jurist makes the necessary changes to the list of the contract
Actor	Jurist
Description	The user can press “Edit ” and after making the changes he can save those changes or delete the contract information permanently if there no longer exists a contract
Precondition	The Jurist needs to be logged in the account. There should be an existing contract and it should show in the list

***Construction Company Management System Requirements Specification***

Alternatives	The user can make changes and he can confirm those changes so they can be applied in the existing contract or just cancel them. He can also just delete and confirm or cancel the whole thing if not sure.
Postcondition	The changes are made in the existing contract

#### UC\_05\_03

Name	Jurist enters the tenders in the system
Summary	Jurist adds a new tender to the list that he already has.
Actor	Jurist
Description	Jurist can upload different files in the system and also add the information for the tender to the in the list
Precondition	Jurist needs to log in the account he needs to click the “add” in order to add the information for the tender and he needs save it in the end
Alternatives	If the Jurist is done with entering the information then he can save the new tender that he applied and part of the information will show in a list among other tenders.
Postcondition	The new tender and the files and the information are added to the list

#### UC\_05\_04

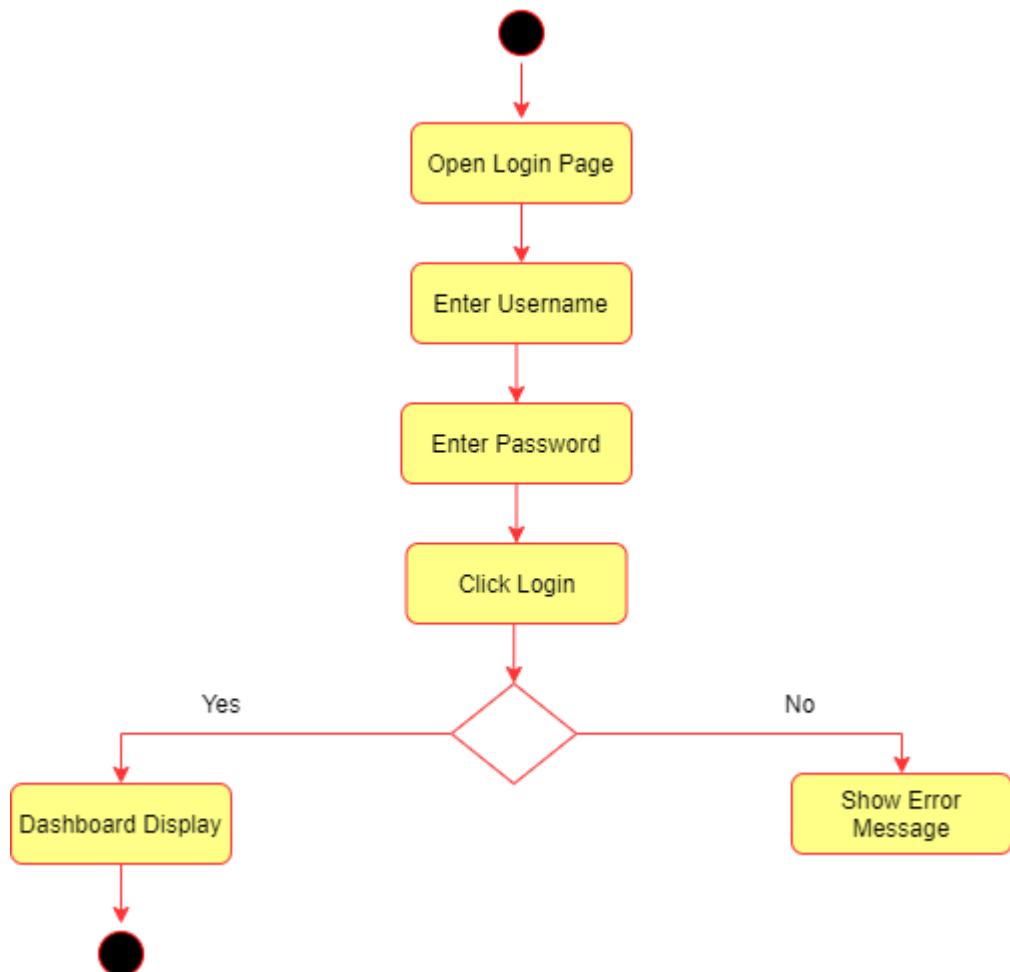
Name	Jurist edits or delete the tenders
Summary	Jurist makes the necessary changes to the list of the tenders
Actor	Jurist
Description	The user can press “Edit” and after making the changes he can save those changes or delete the tender information permanently if there no longer exists a tender
Precondition	The Jurist needs to be logged in the account. There should be an existing tender and it should show in the list
Alternatives	The user can make changes and he can confirm those changes so they can be applied in the existing tender or just cancel them. He can also just delete and confirm or cancel the whole thing if not sure.

***Construction Company Management System Requirements Specification***

Postcondition	The changes are made in the existing tender
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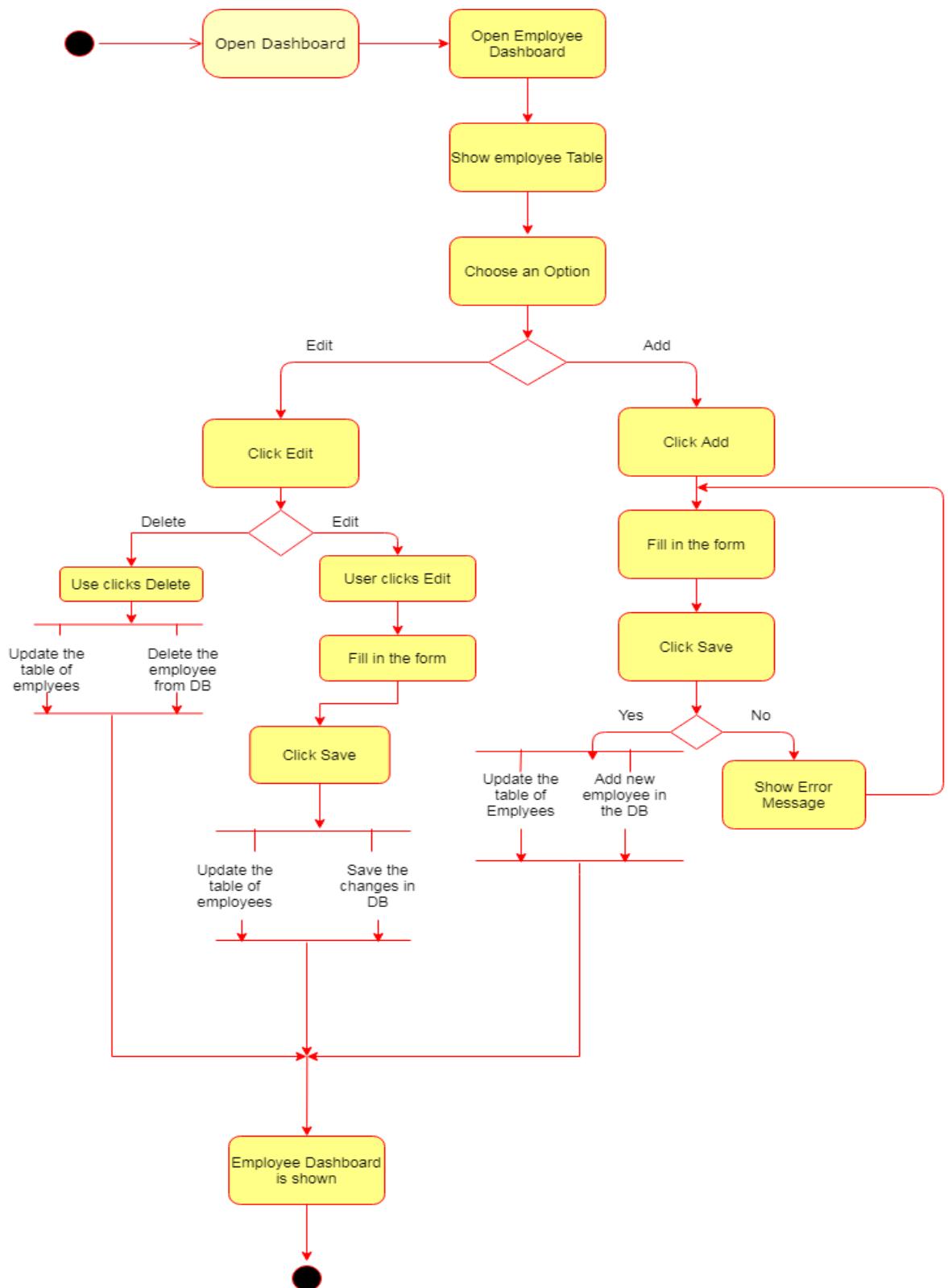
#### **4.4 Activity Diagrams**

#### **Activity Diagram 1: Log in AC\_00 Login**



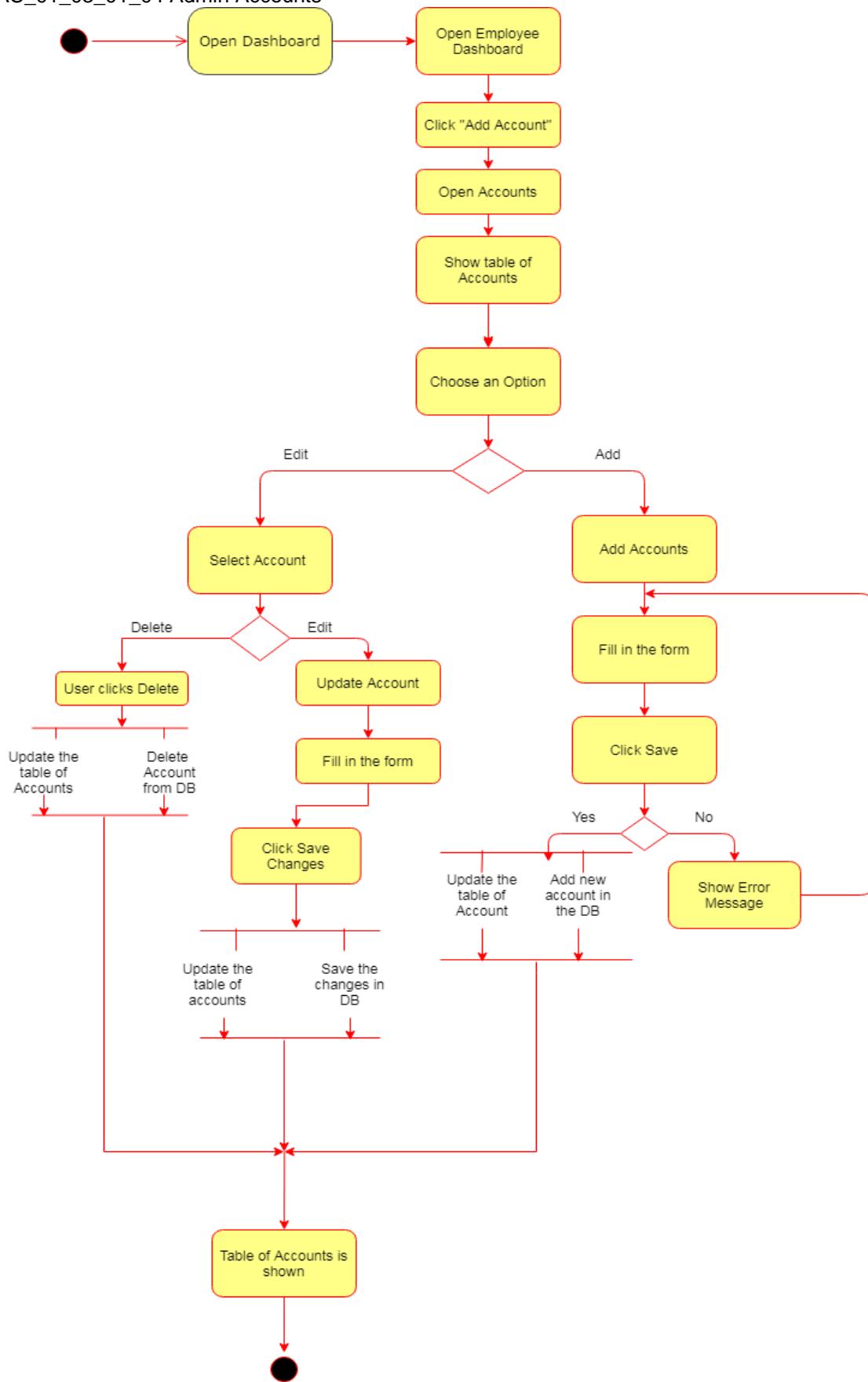
## Construction Company Management System Requirements Specification

AC\_01\_01\_01\_2 Admin Employee

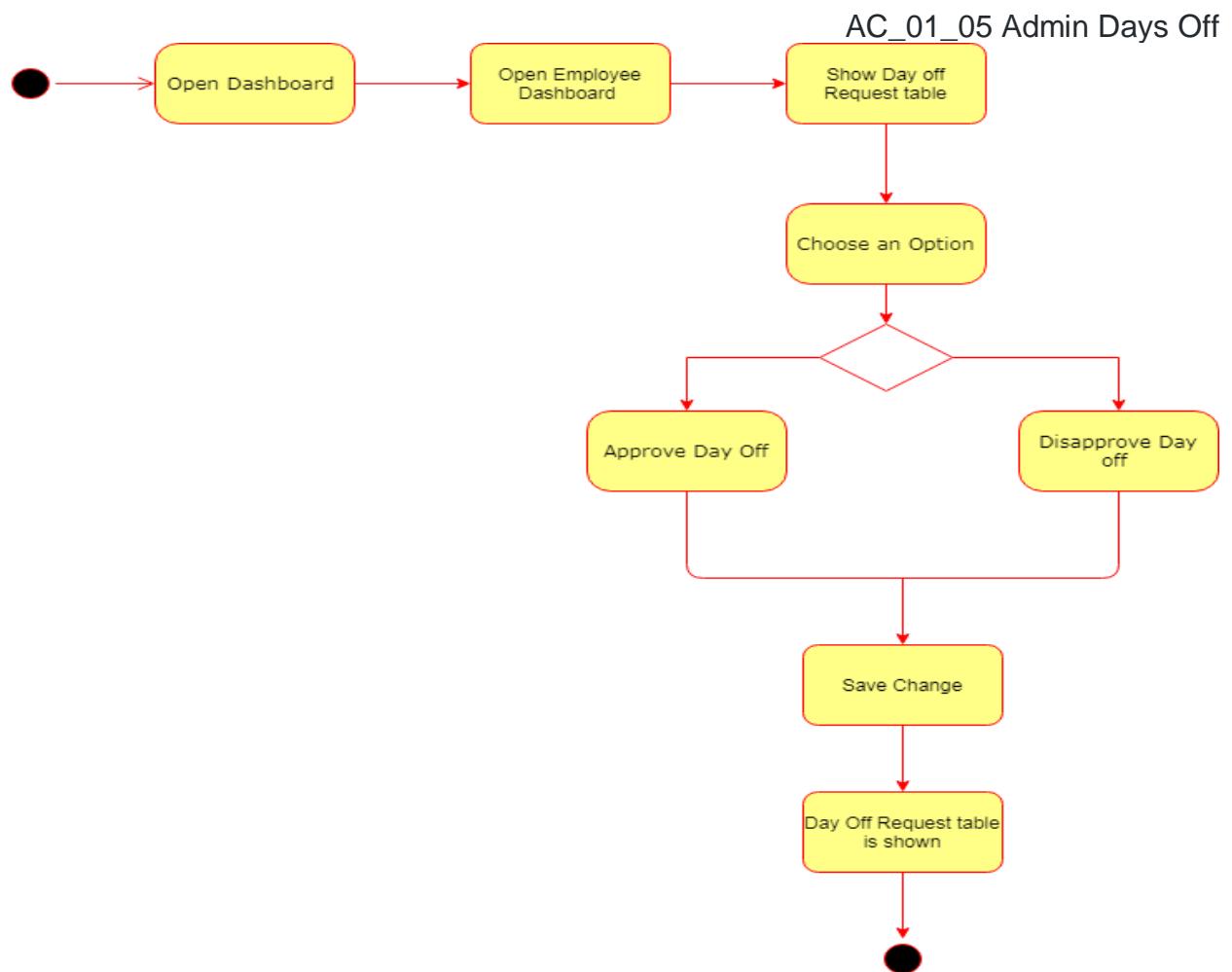


## Construction Company Management System Requirements Specification

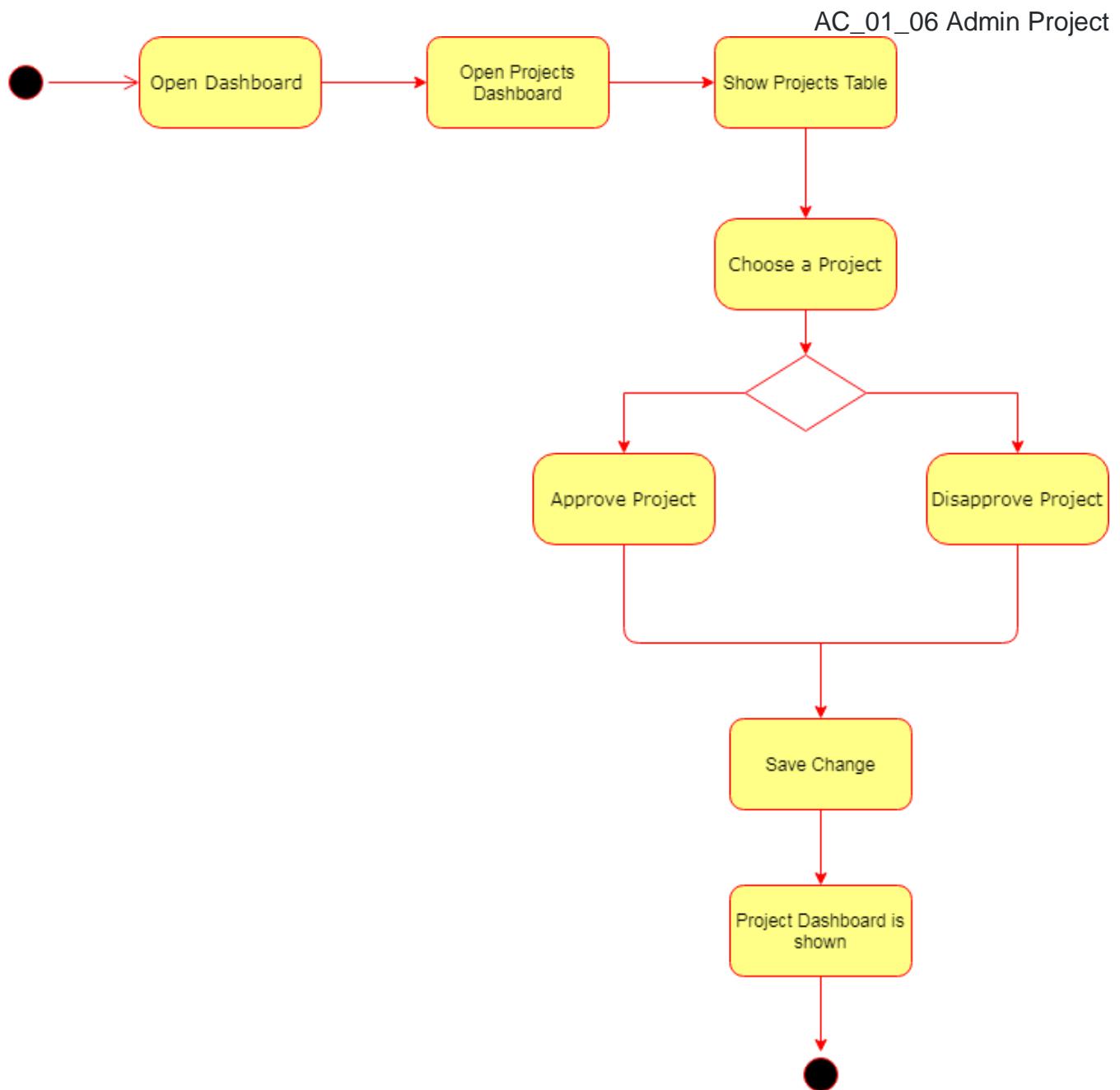
AC\_01\_03\_01\_04 Admin Accounts



## **Construction Company Management System Requirements Specification**

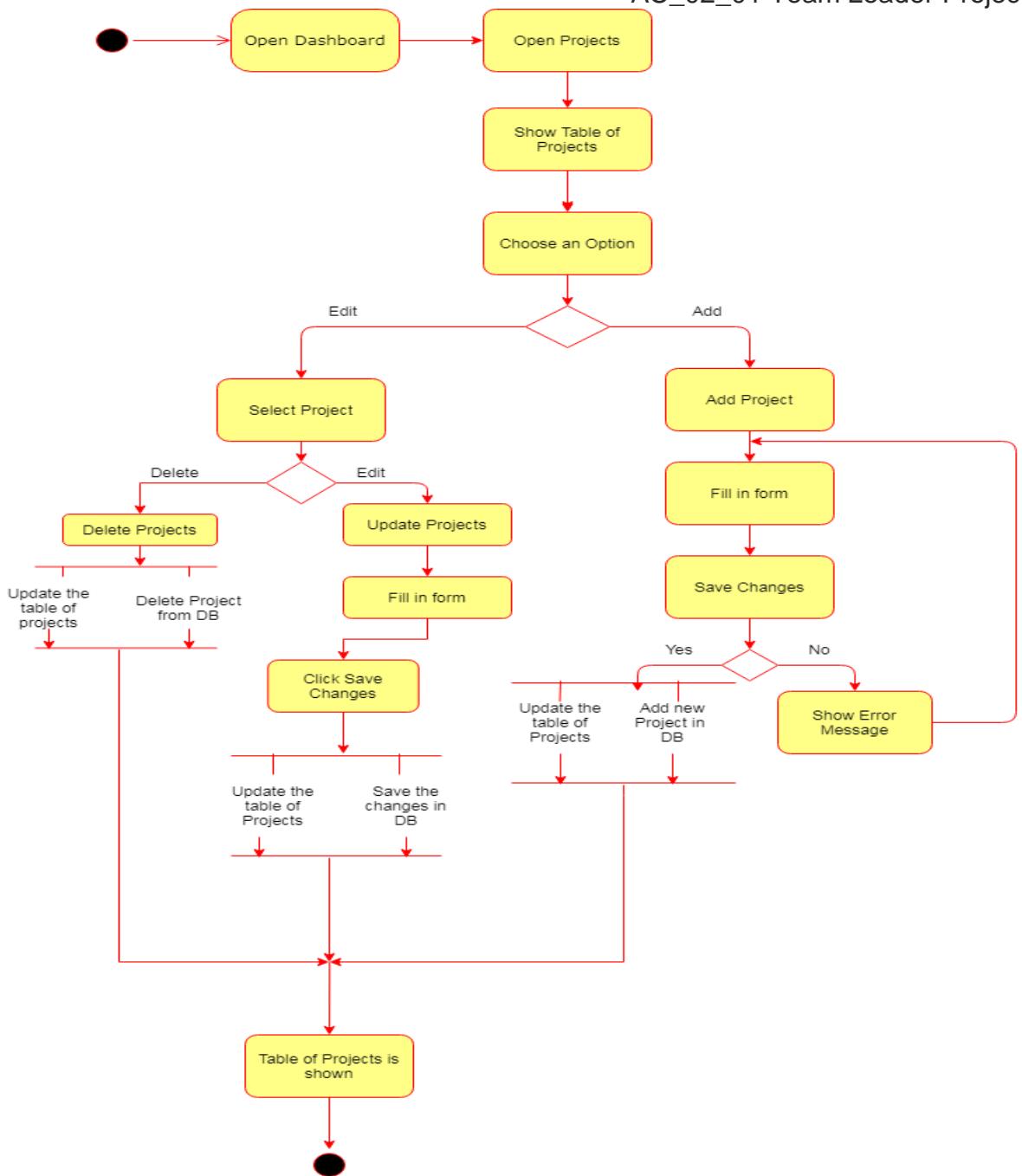


## ***Construction Company Management System Requirements Specification***

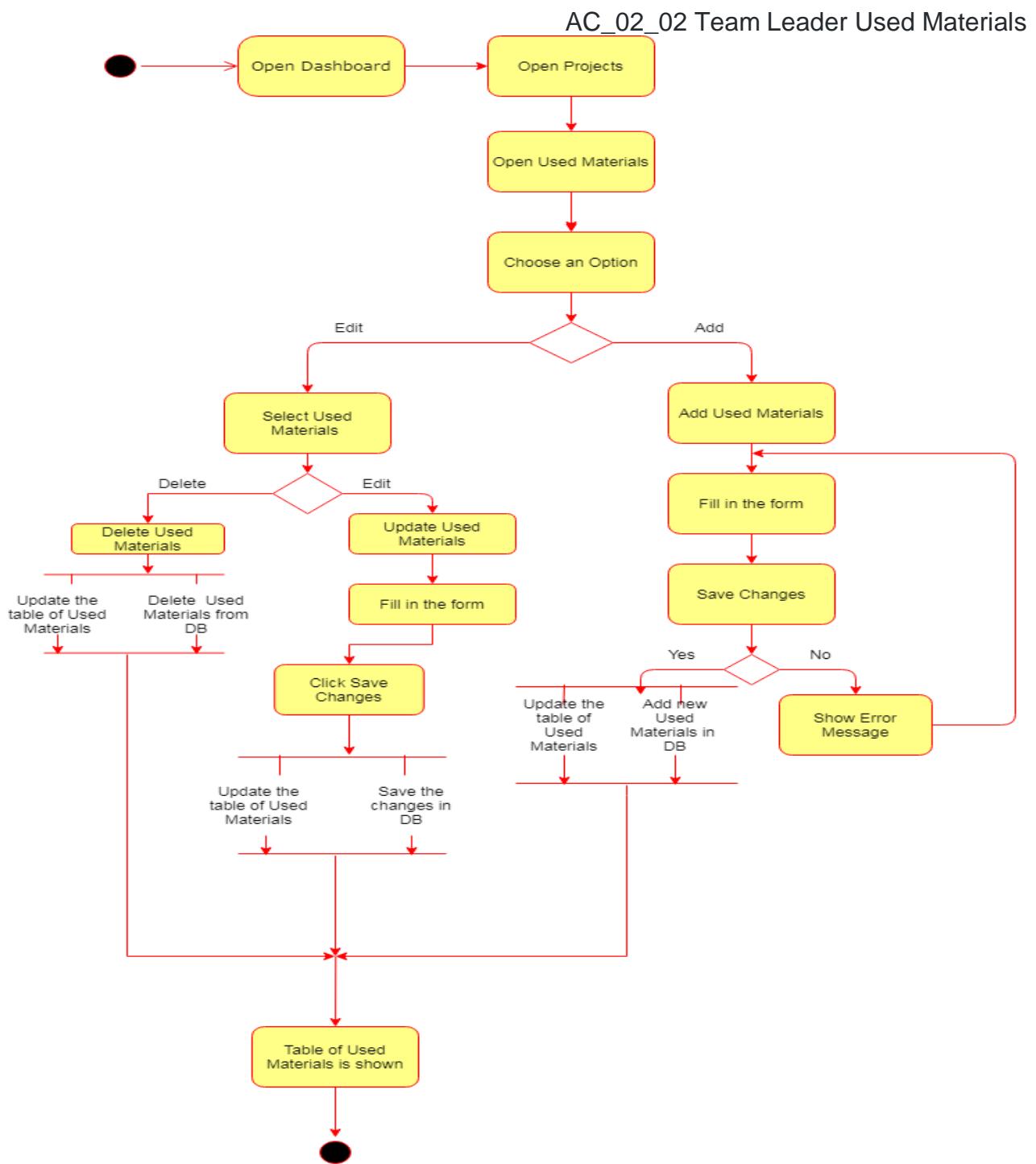


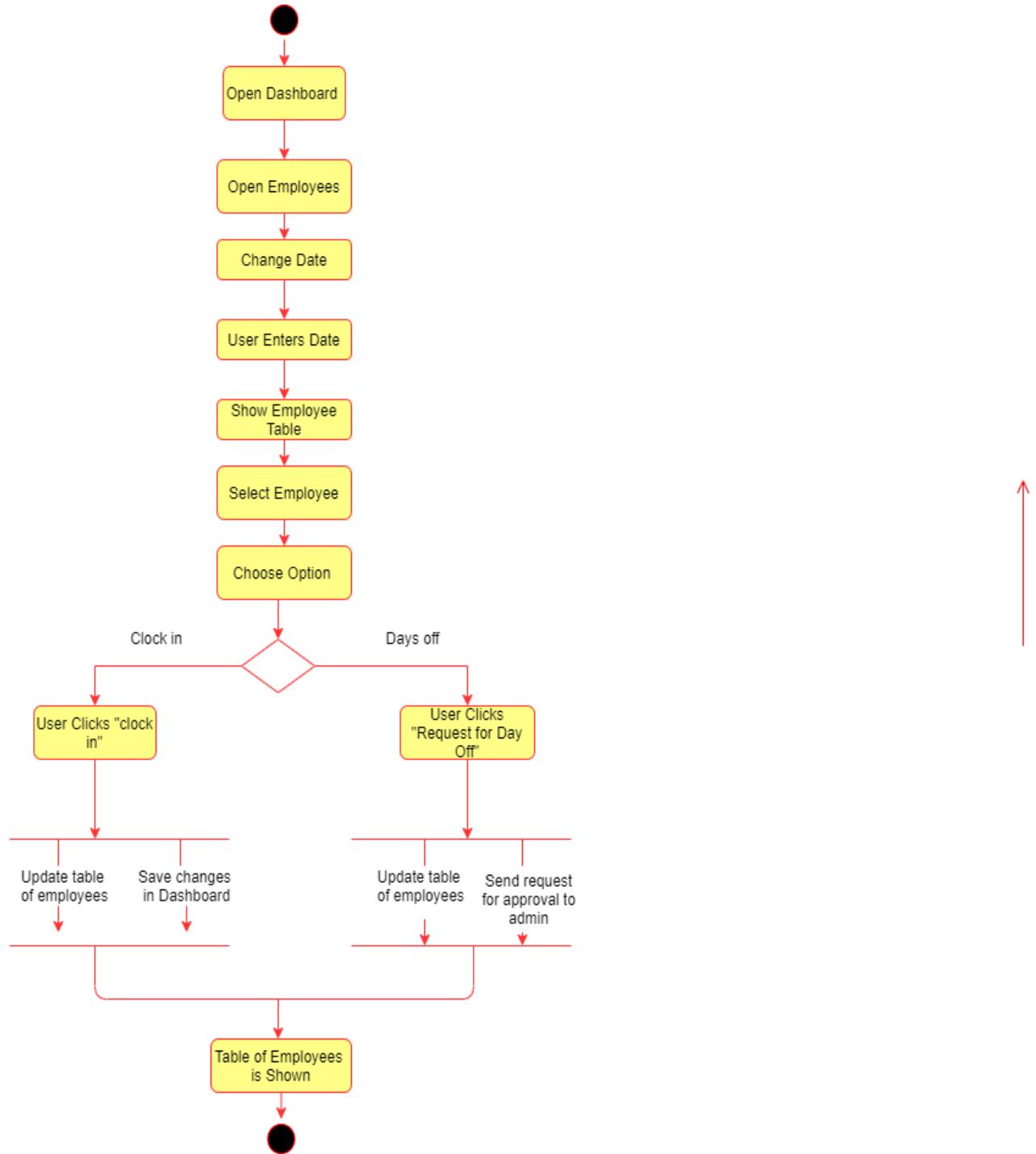
## Construction Company Management System Requirements Specification

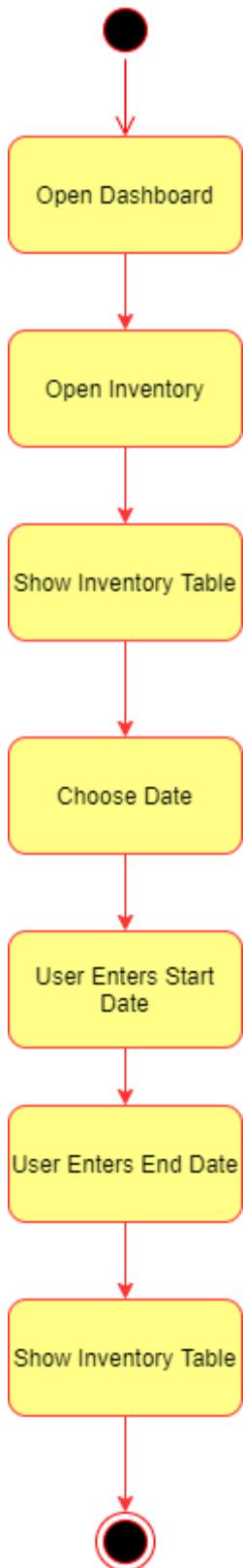
AC\_02\_01 Team Leader Project

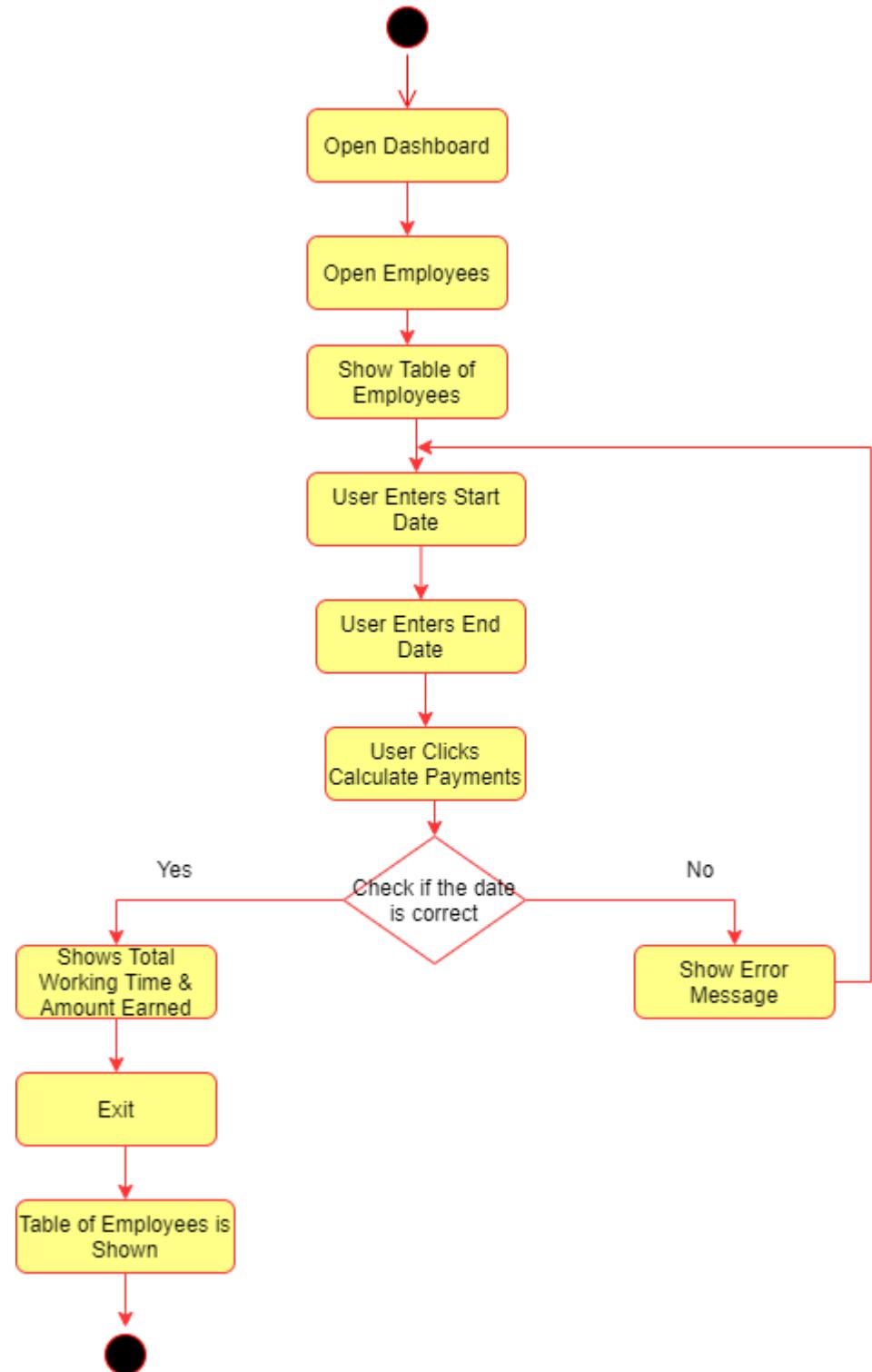


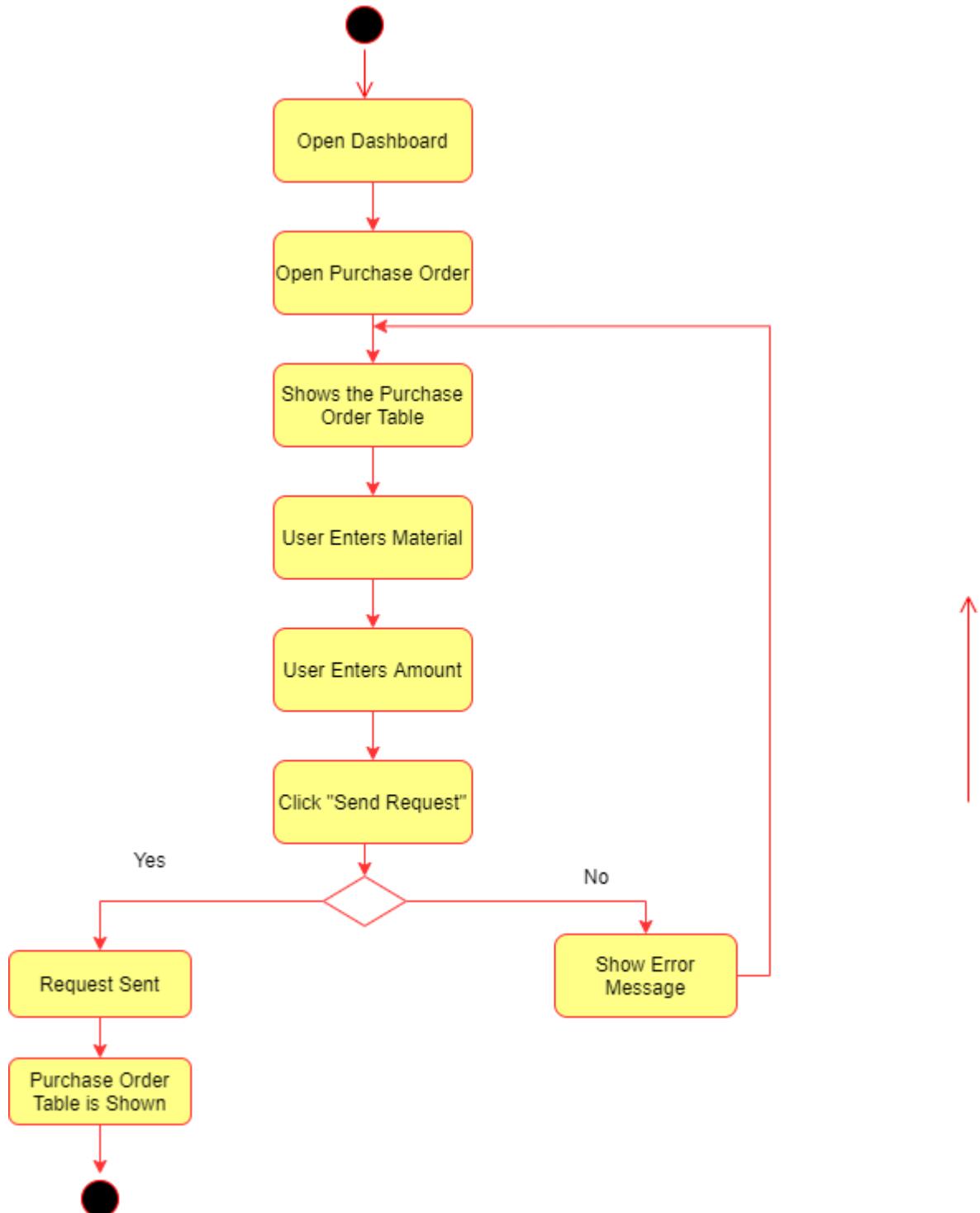
## Construction Company Management System Requirements Specification





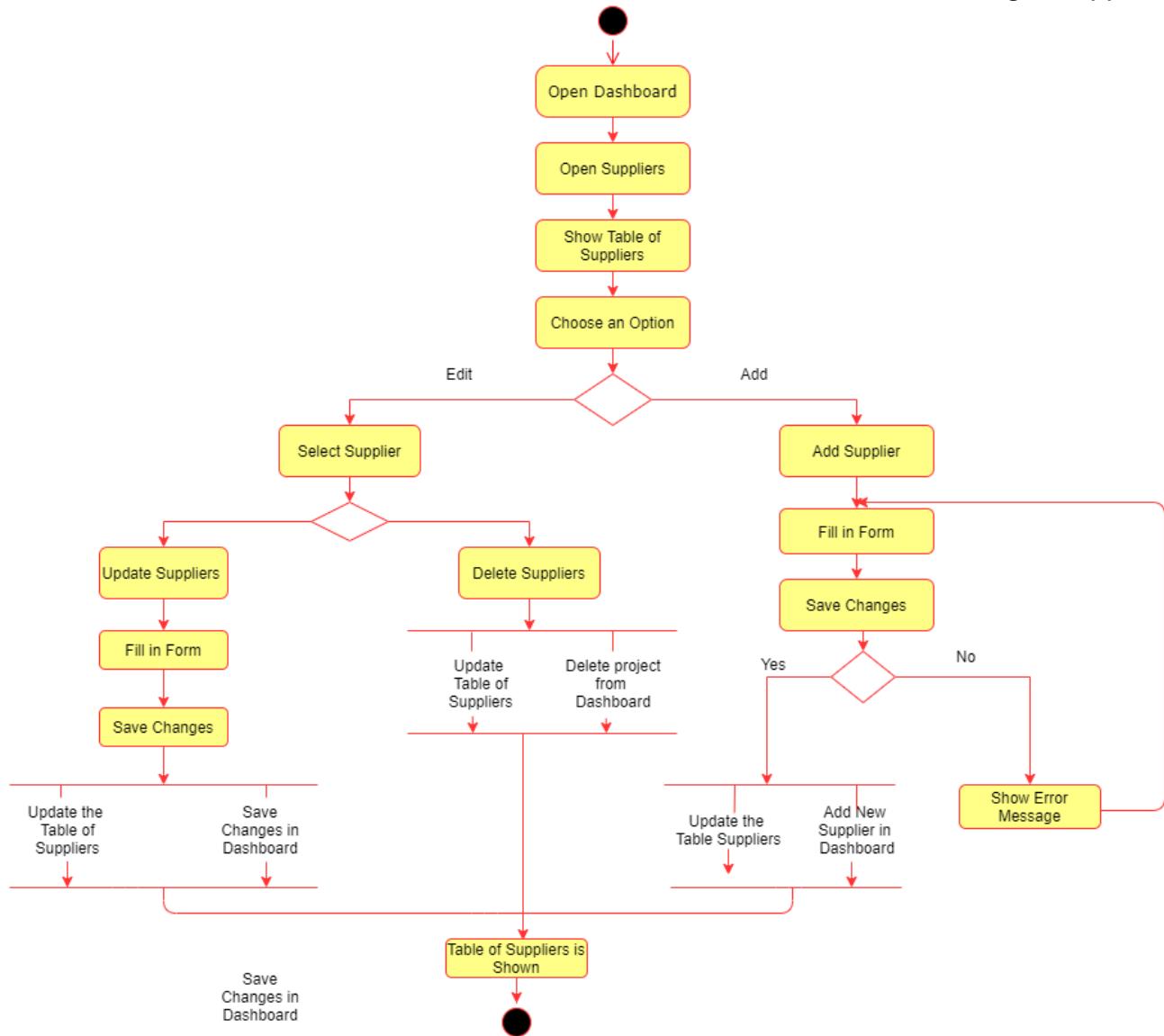


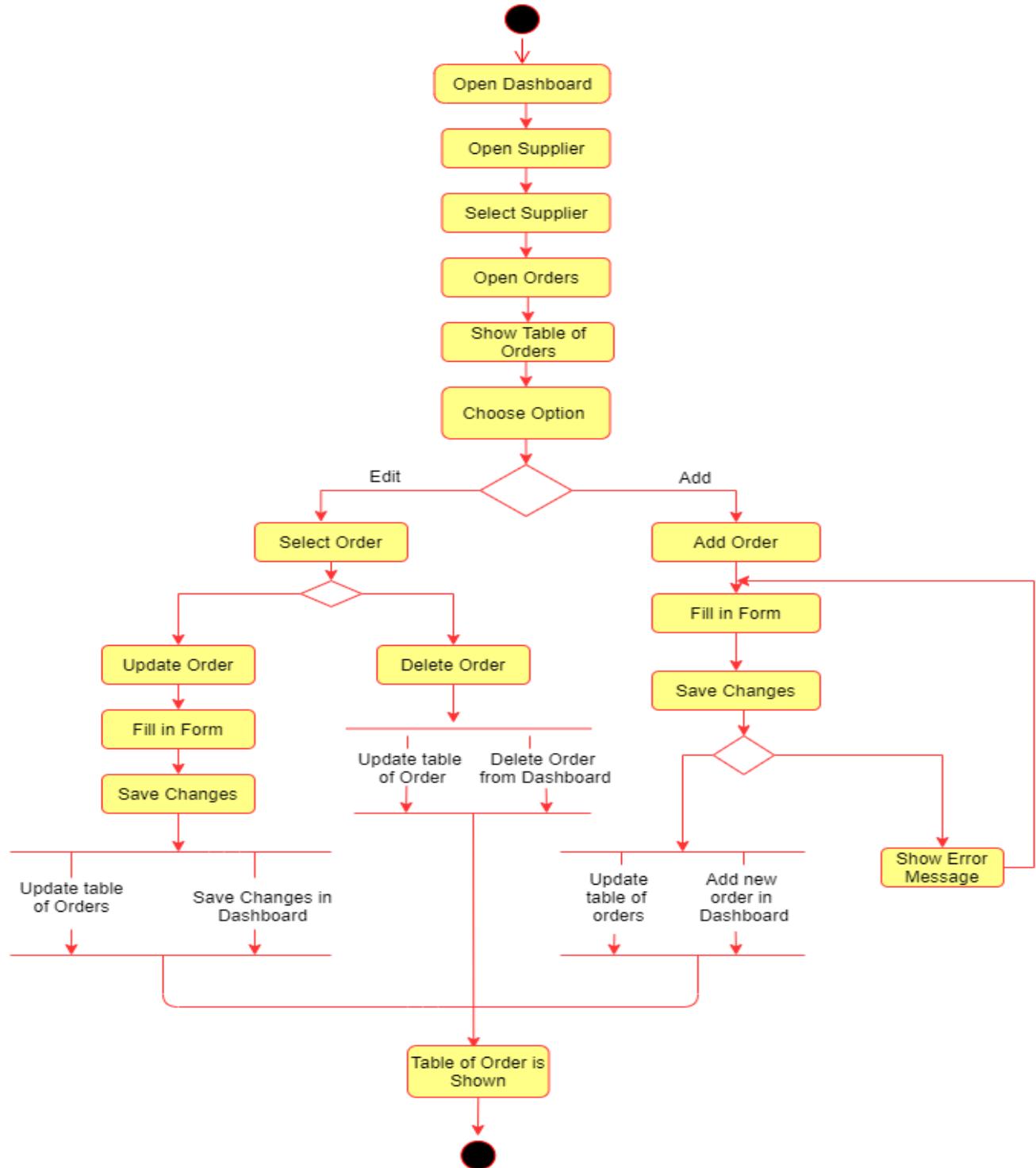




## Construction Company Management System Requirements Specification

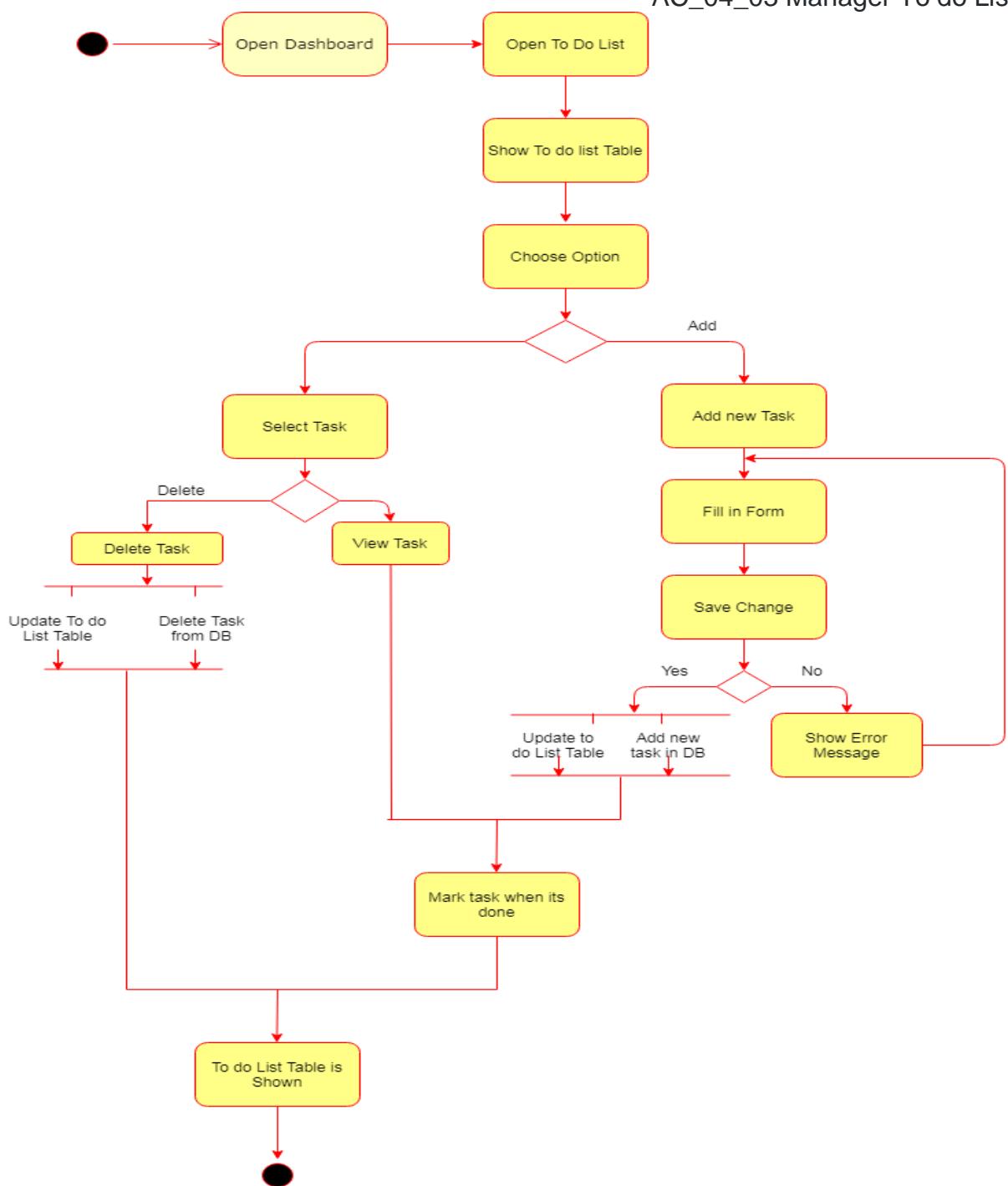
AC\_04\_01 Manager Suppliers





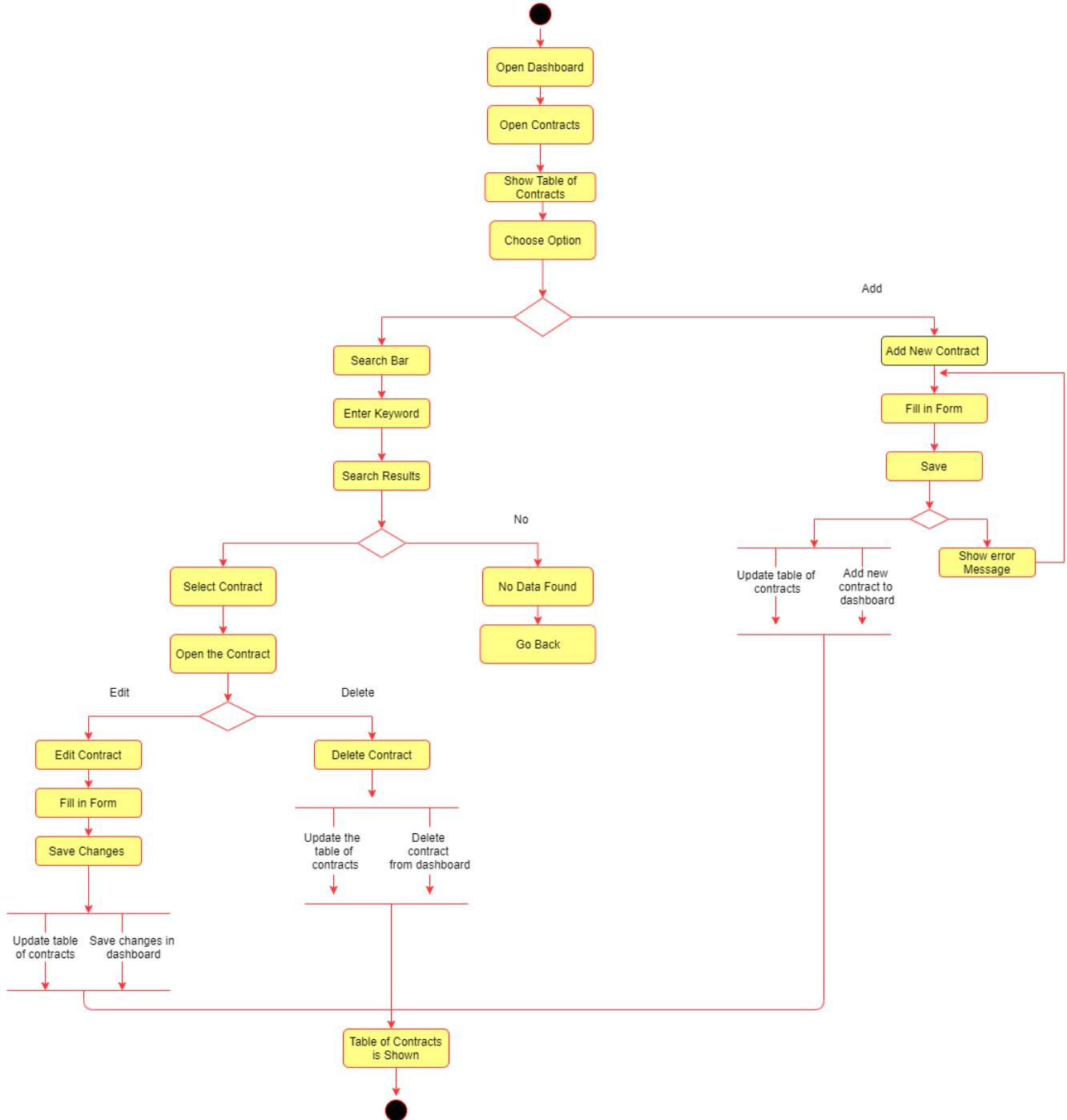
## Construction Company Management System Requirements Specification

AC\_04\_03 Manager To do List



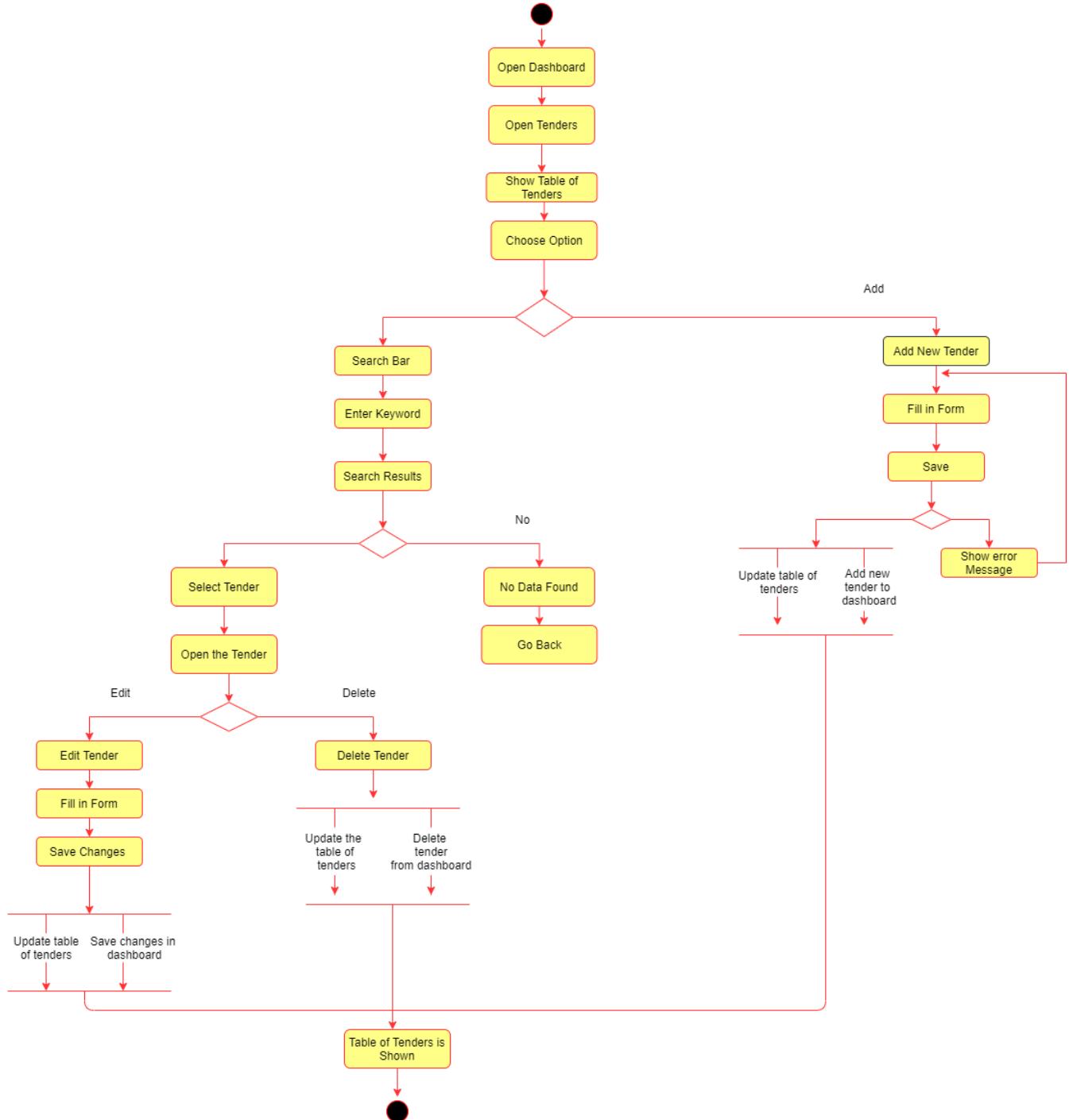
## Construction Company Management System Requirements Specification

AC\_05\_01\_05\_02 Jurist Contract



# Construction Company Management System Requirements Specification

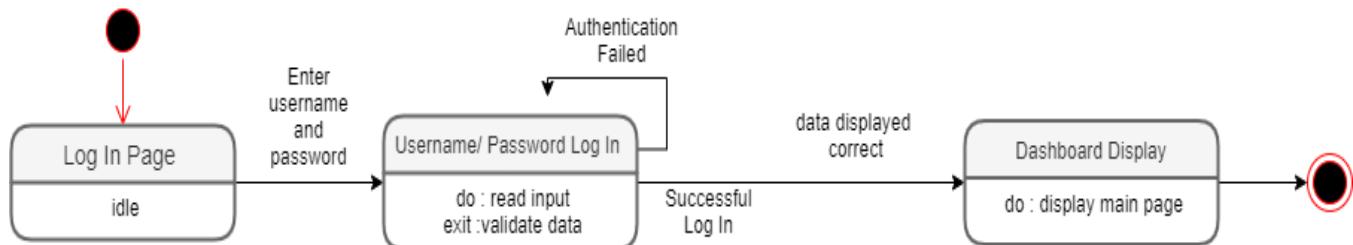
AC\_05\_03\_05\_04 Jurist Tender



#### **4.5 State Chart Diagrams**

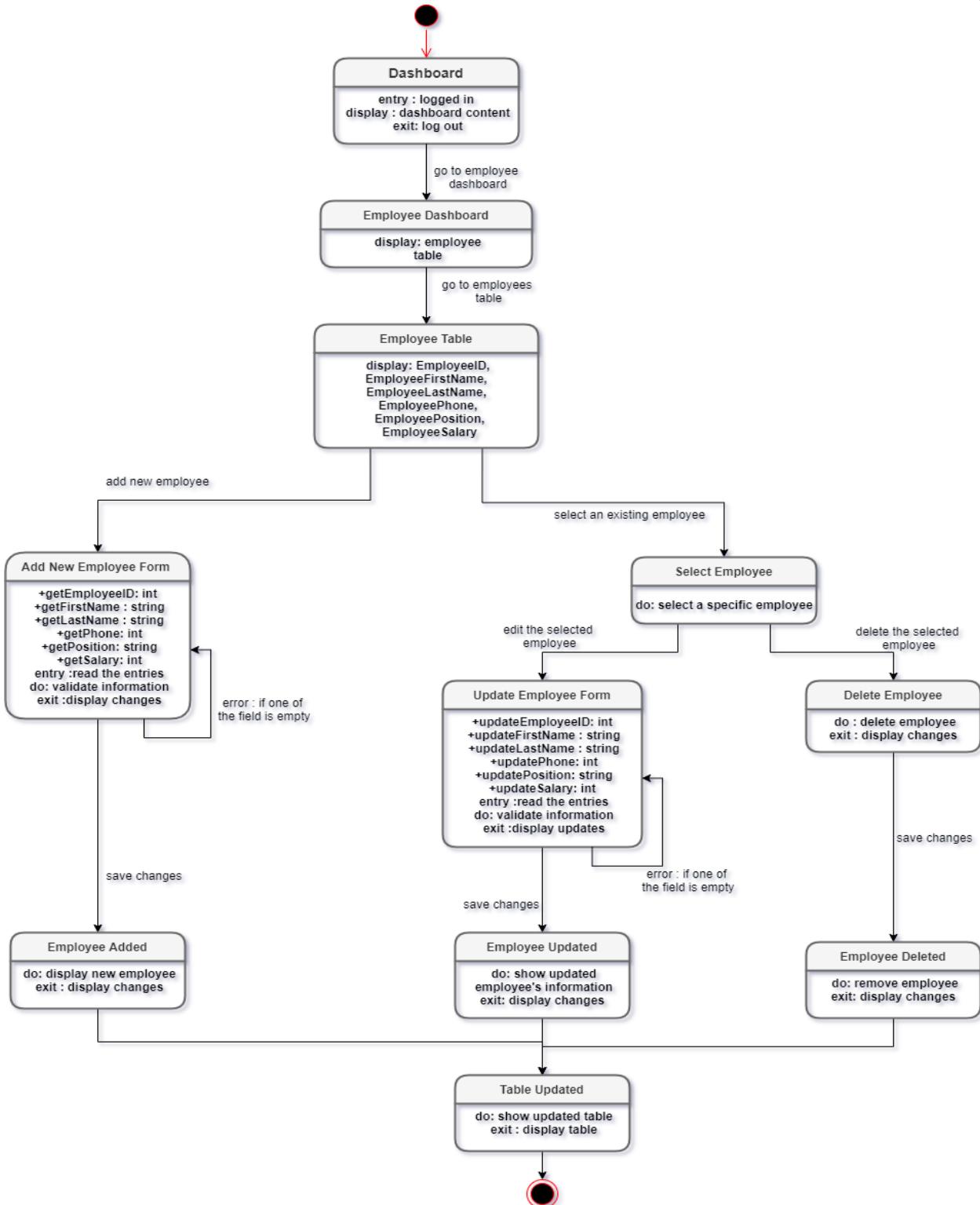
## **Construction Company Management System Requirements Specification**

SC\_00 Login



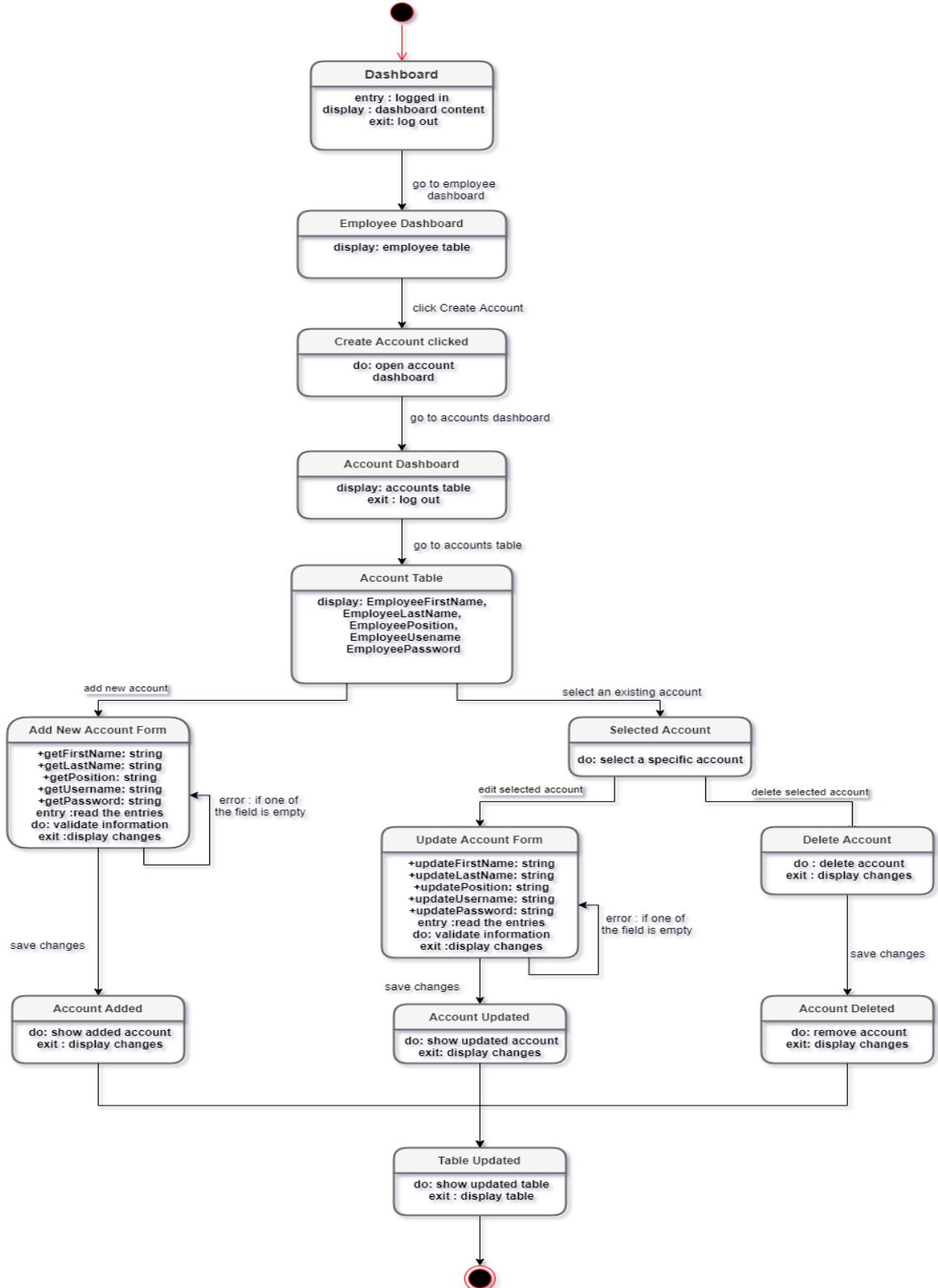
## Construction Company Management System Requirements Specification

SC\_01\_01\_01\_02 Admin Emp



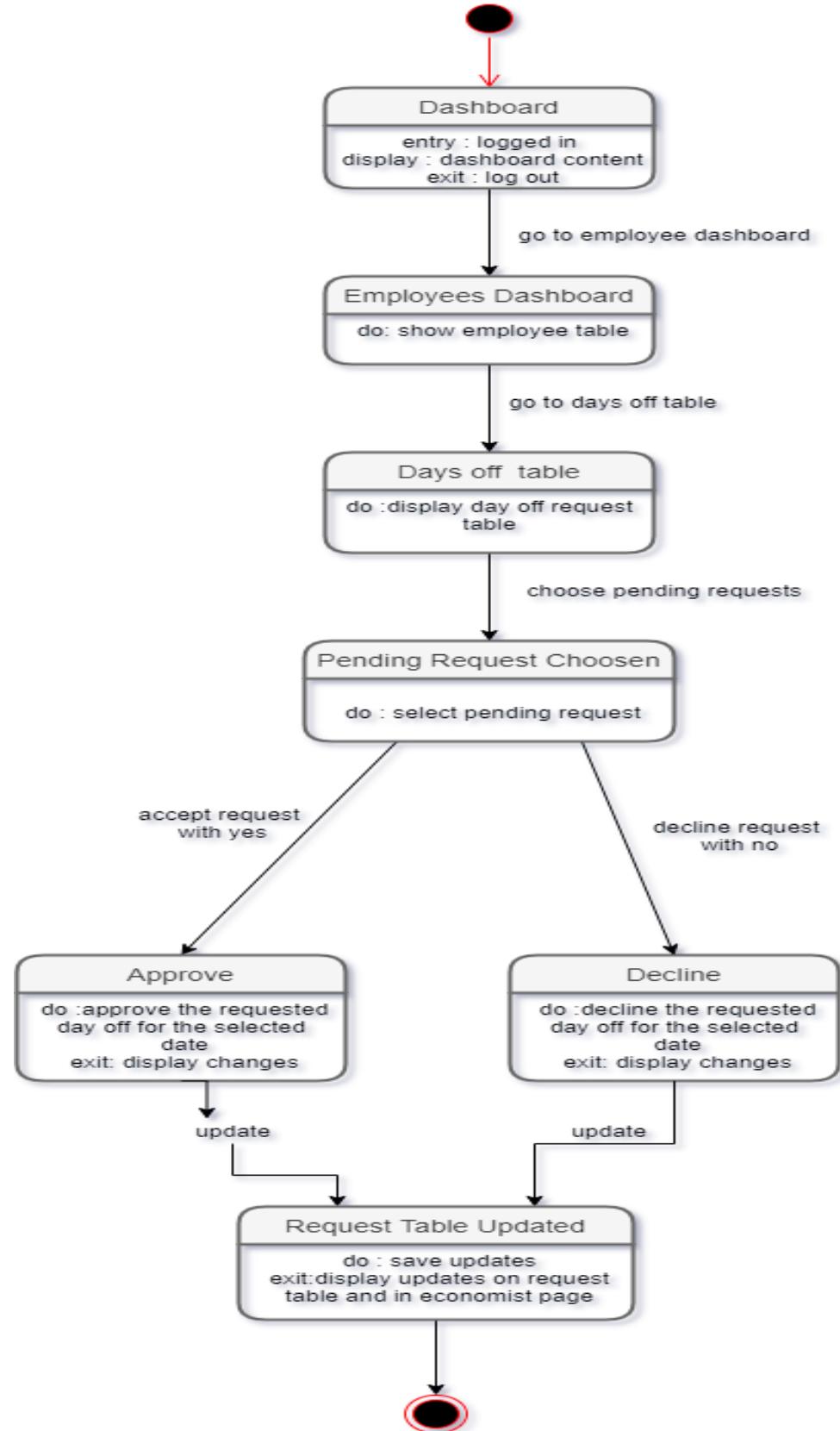
# Construction Company Management System Requirements Specification

SC\_01\_03\_01\_04 Admin Accounts



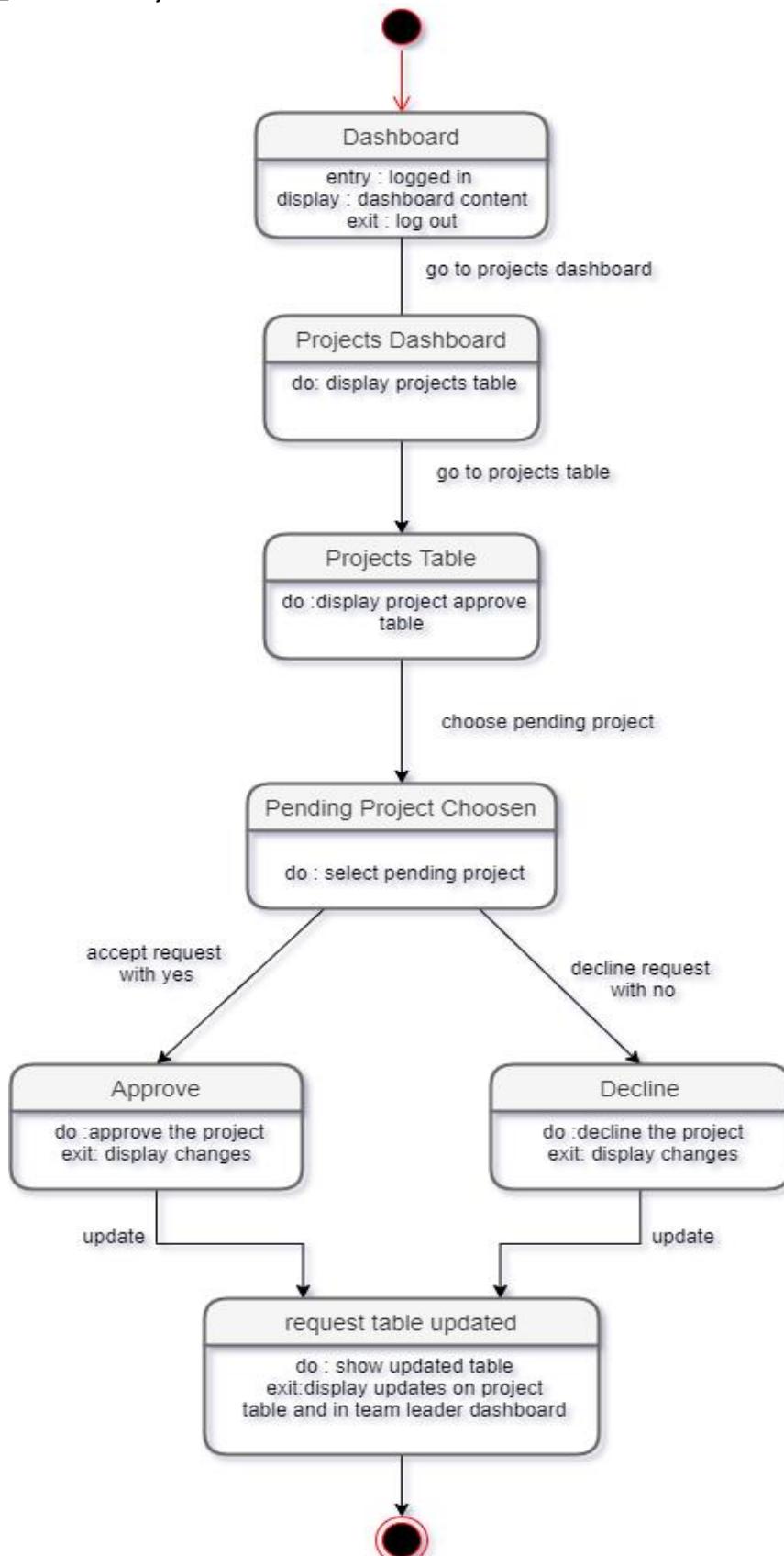
## Construction Company Management System Requirements Specification

SC\_01\_05 Admin Days Off

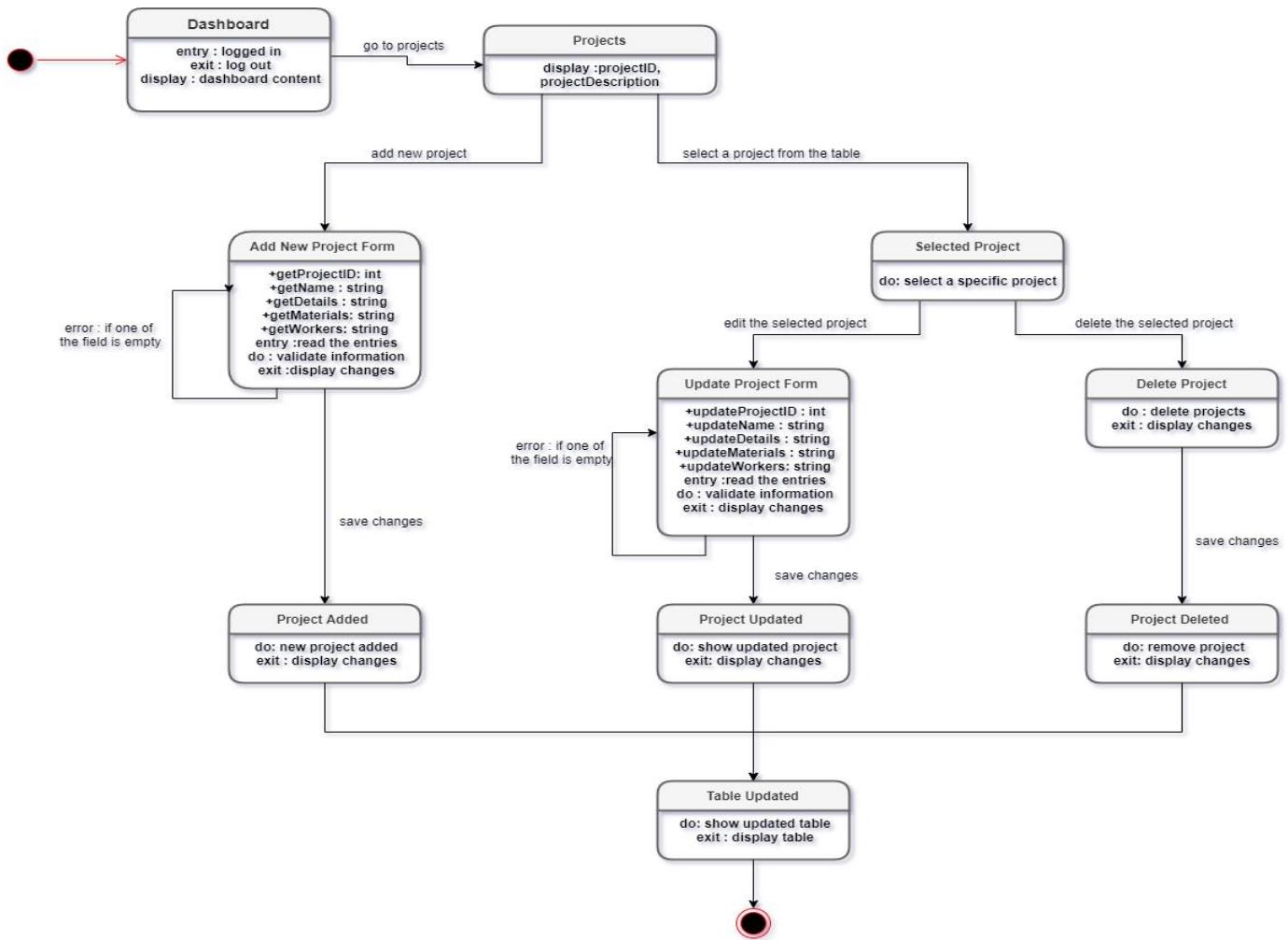


## Construction Company Management System Requirements Specification

SC\_01\_06 Admin Project

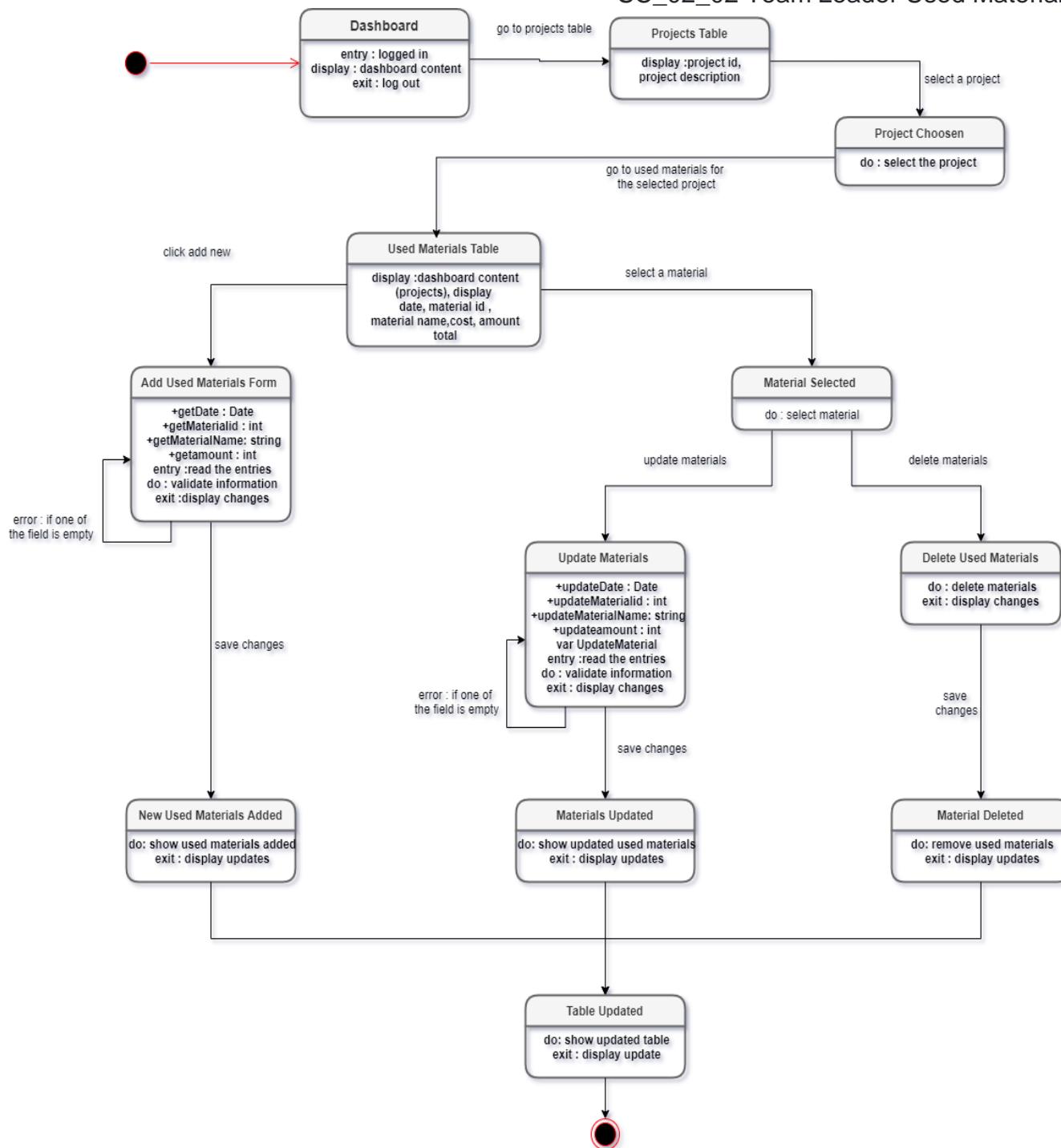


**SC\_02\_01 Team Leader Project**

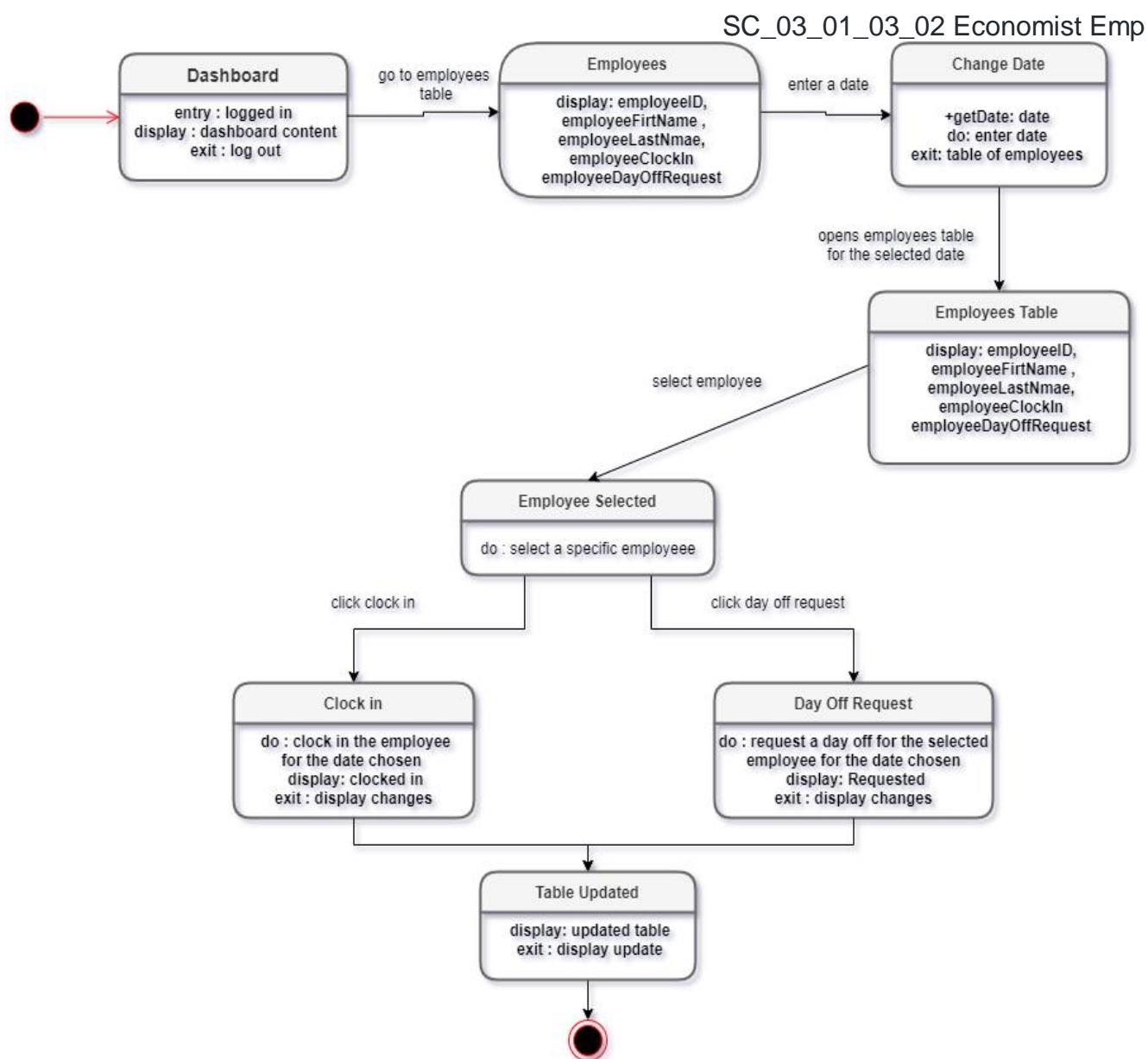


## Construction Company Management System Requirements Specification

### SC\_02\_02 Team Leader Used Materials

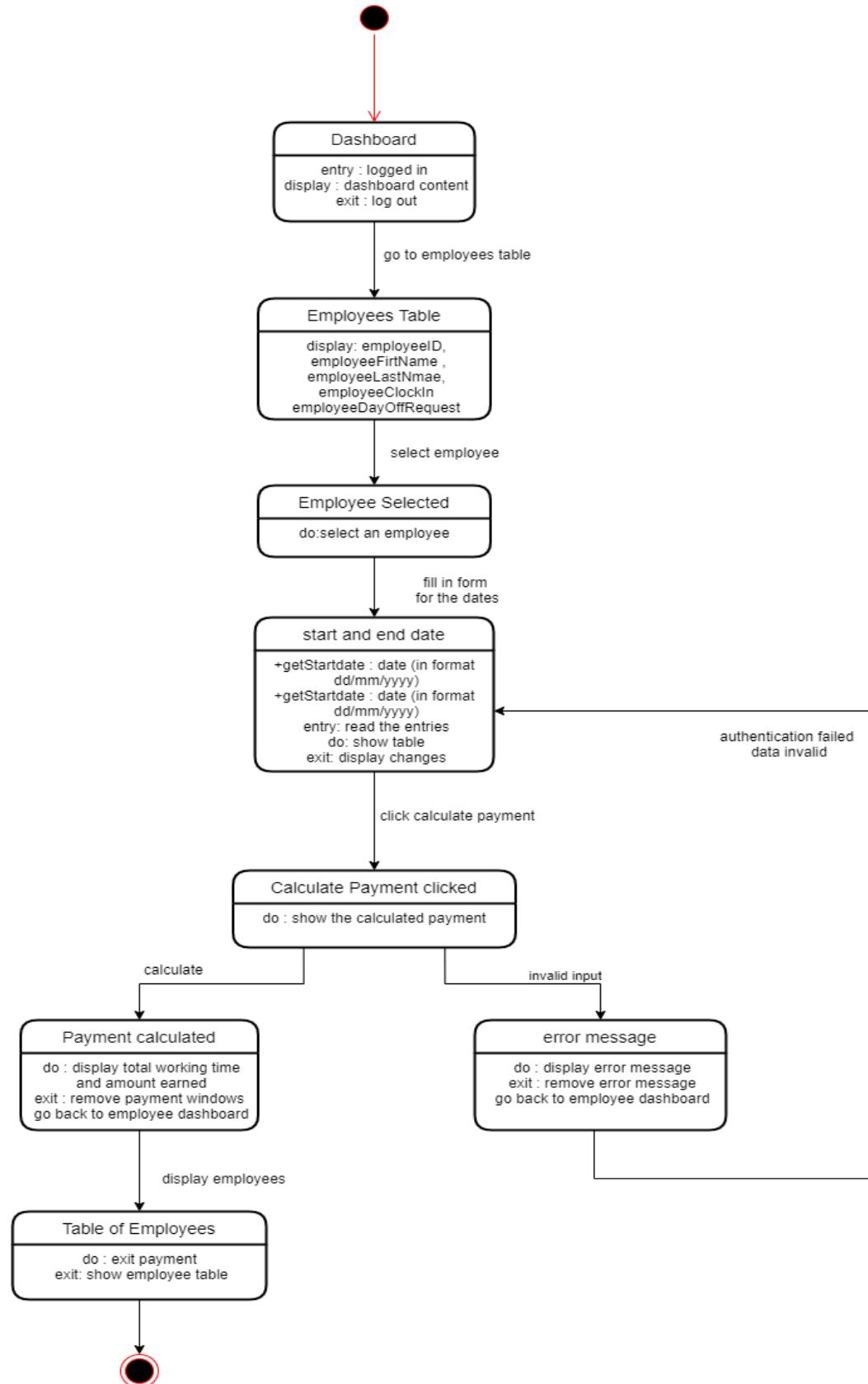


## Construction Company Management System Requirements Specification

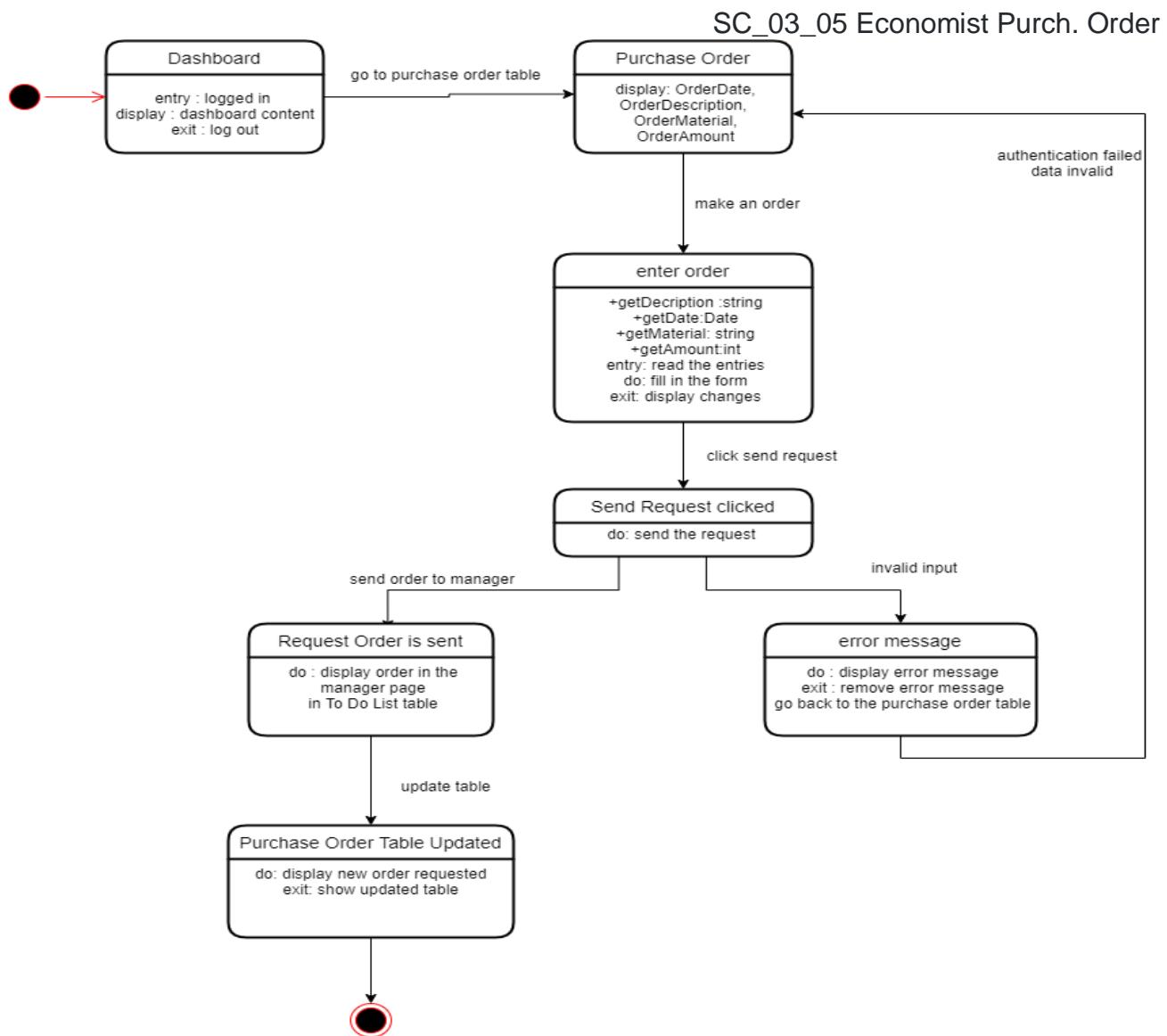


## Construction Company Management System Requirements Specification

SC\_03\_04 Economist Calc. Pay

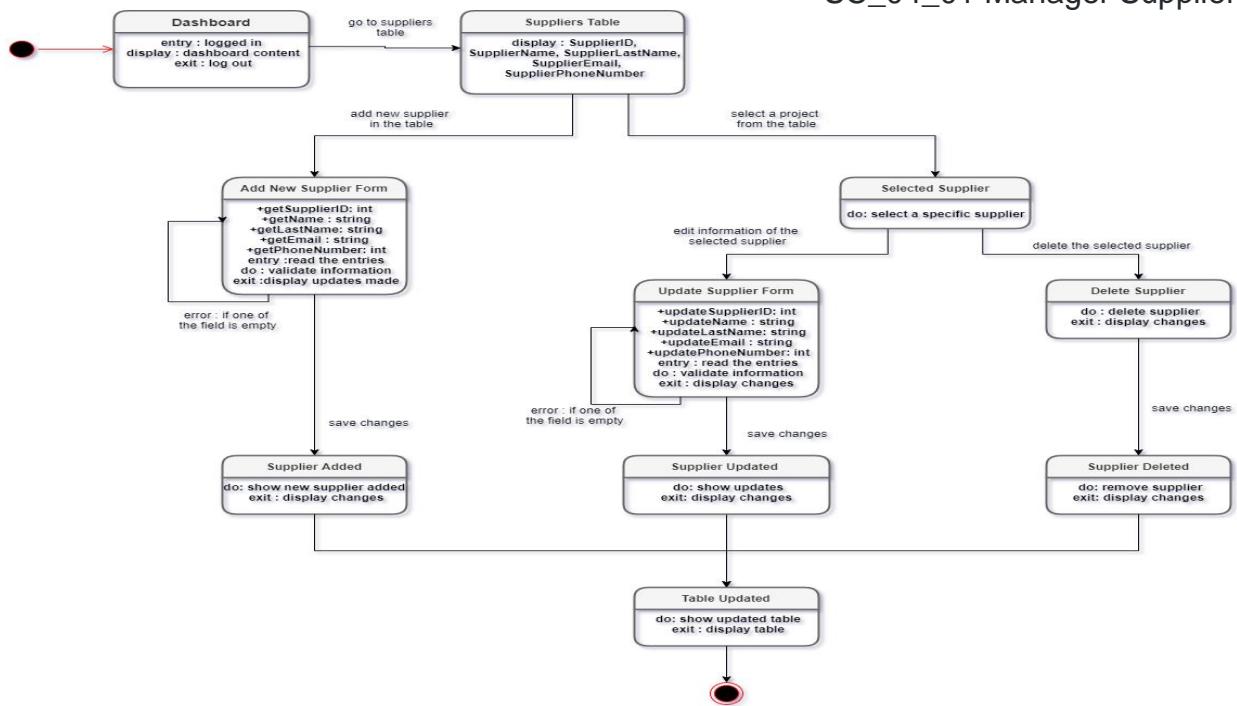


## Construction Company Management System Requirements Specification

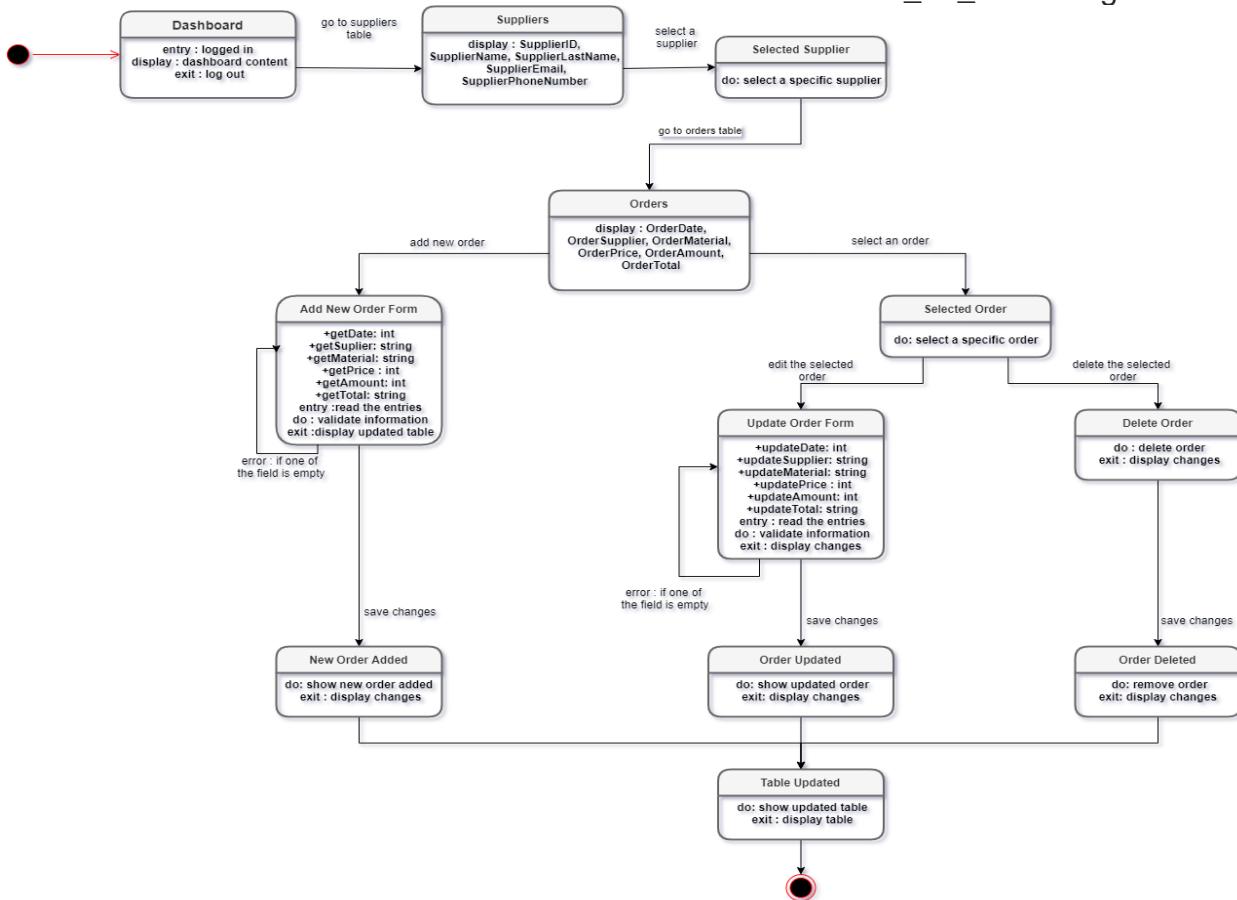


## Construction Company Management System Requirements Specification

### SC\_04\_01 Manager Suppliers

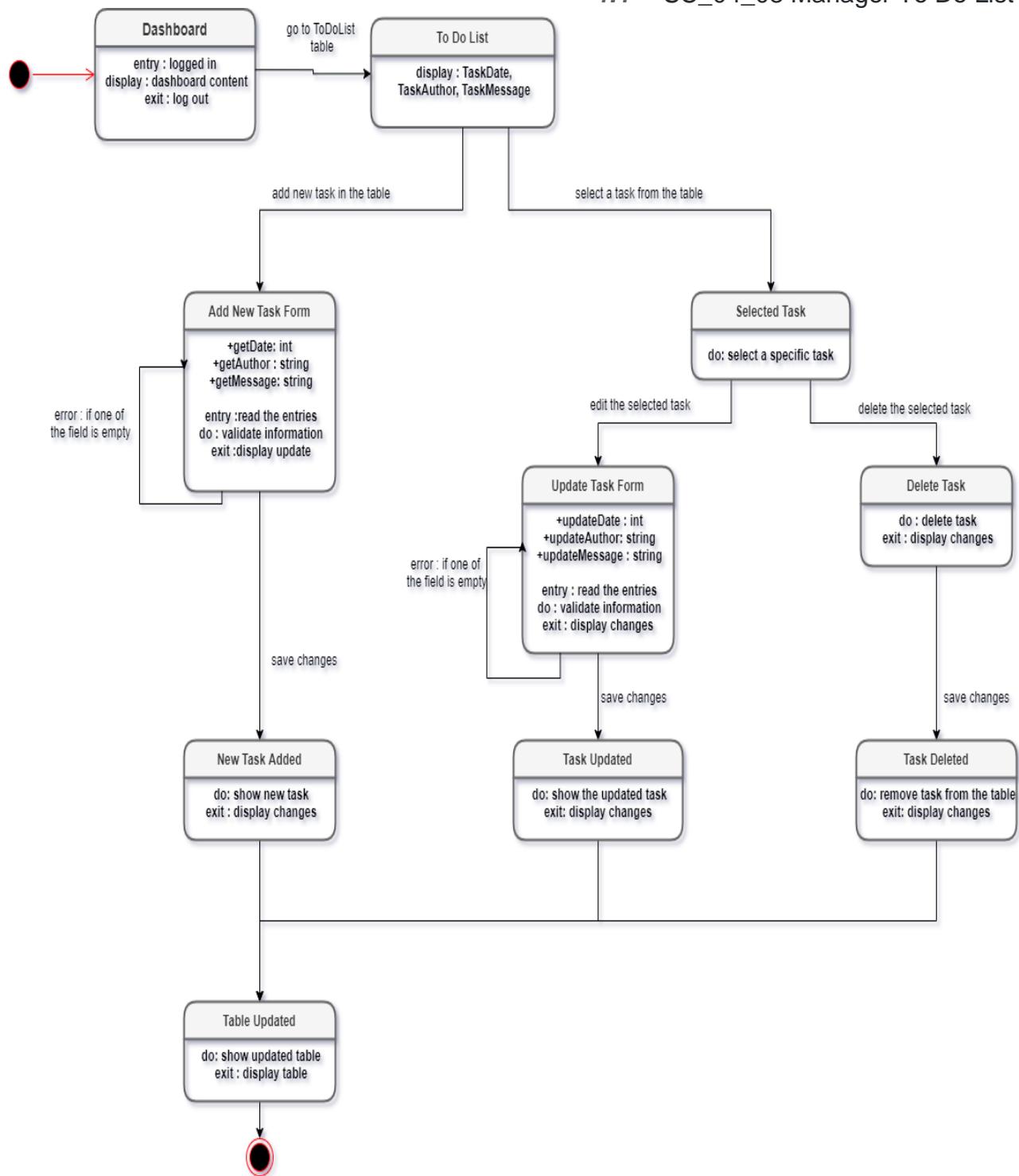


### SC\_04\_02 Manager Orders



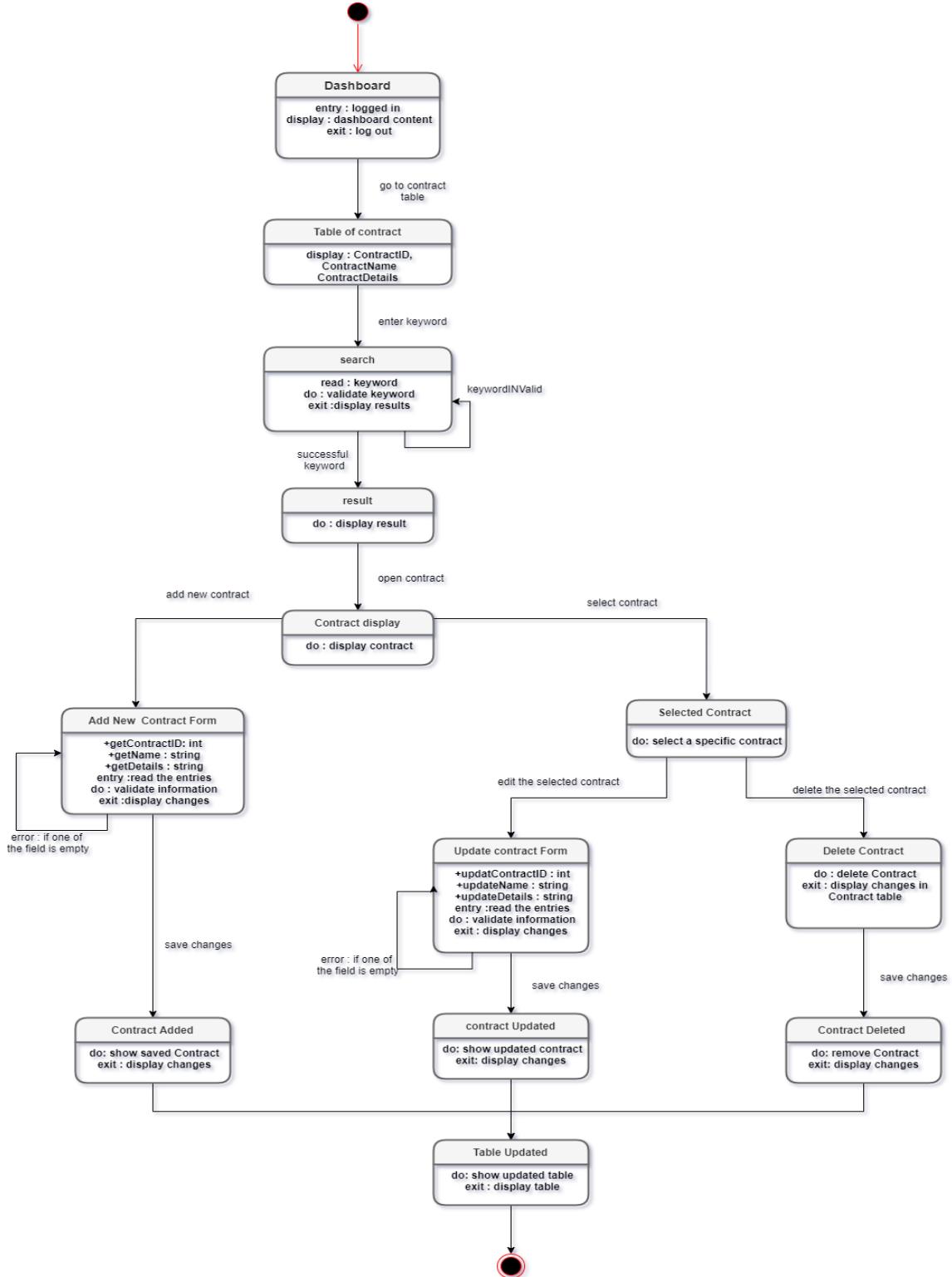
## Construction Company Management System Requirements Specification

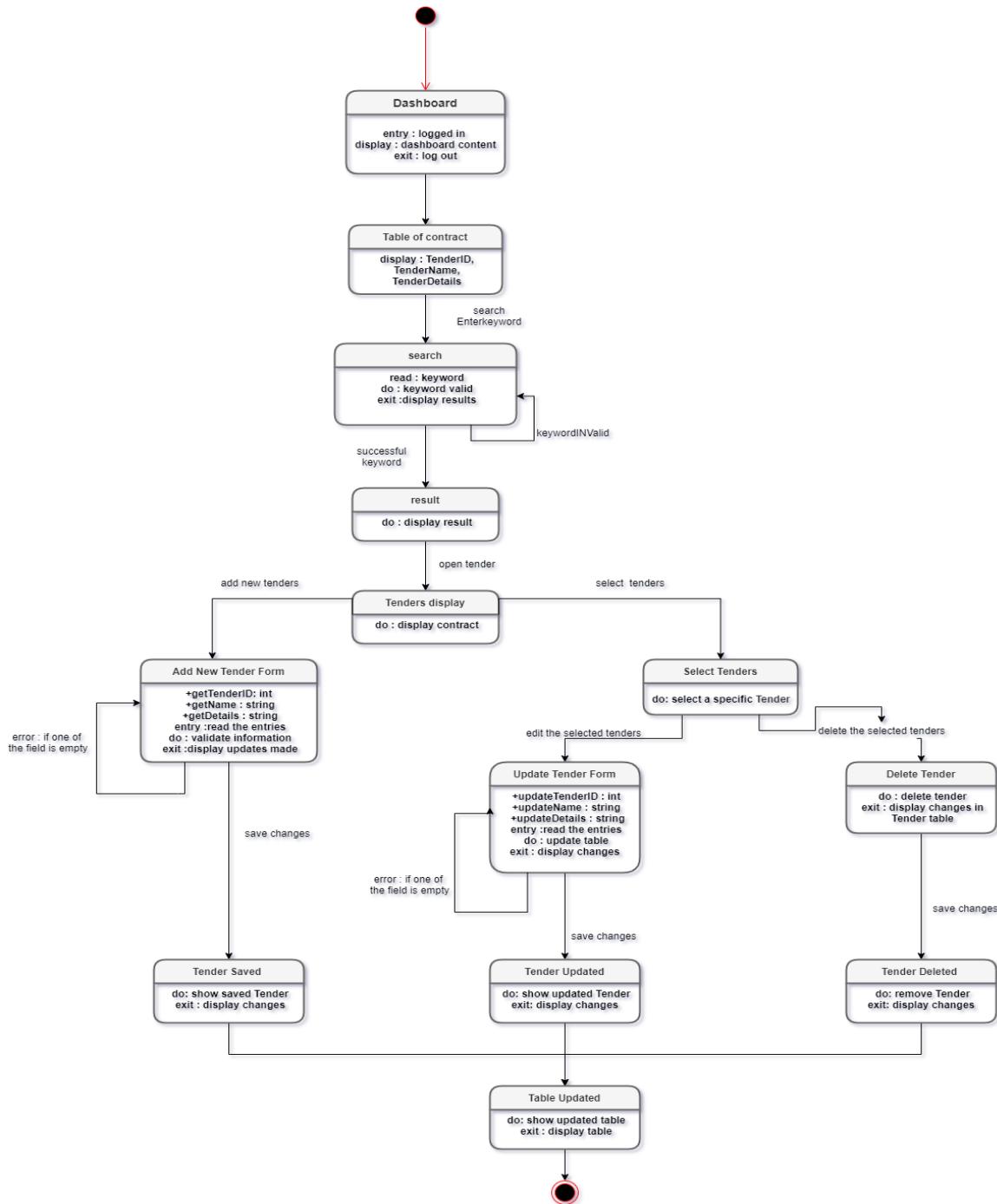
### 1.1 SC\_04\_03 Manager To Do List



# Construction Company Management System Requirements Specification

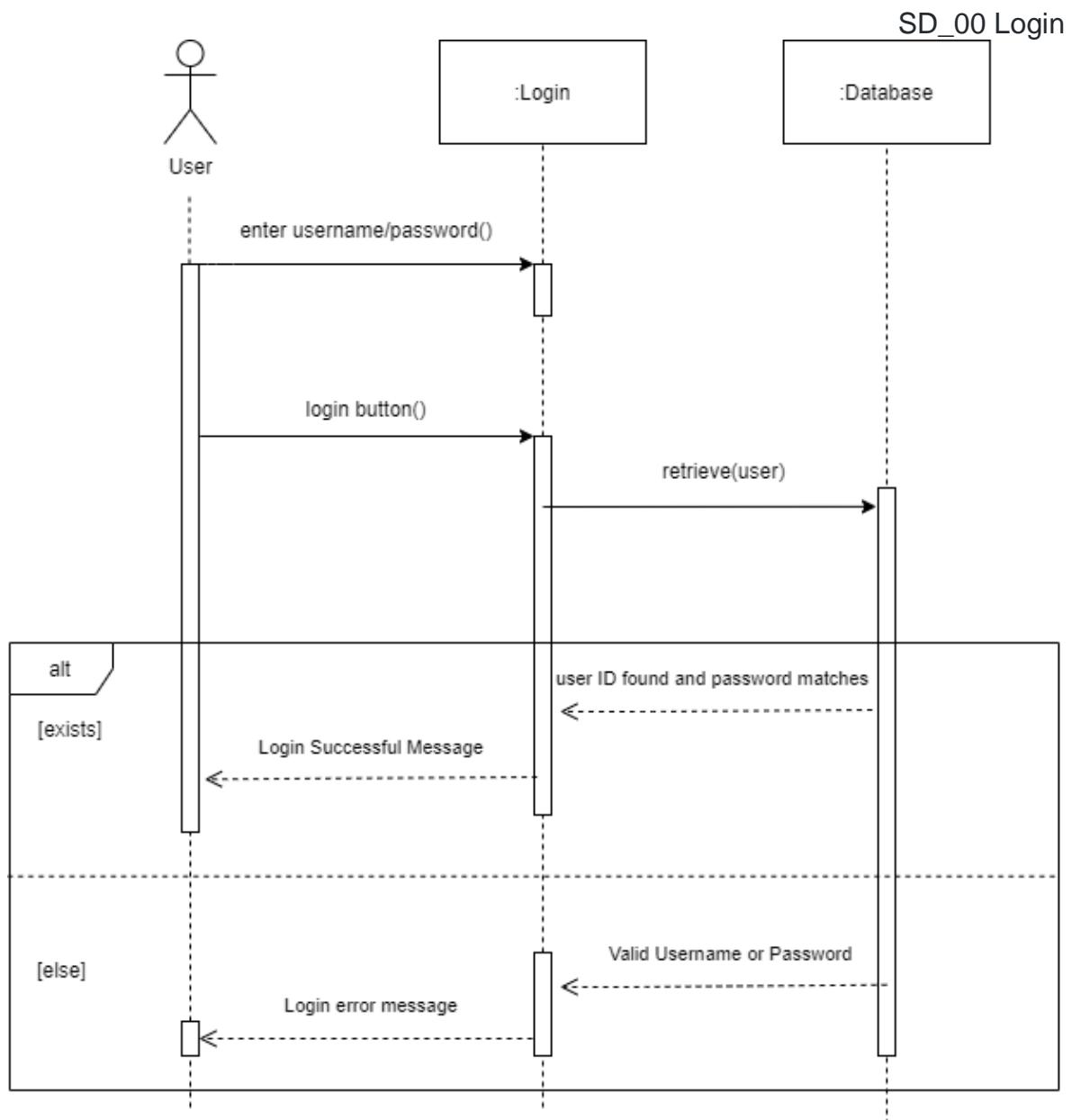
SC\_05\_01\_05\_02 Jurist Contract



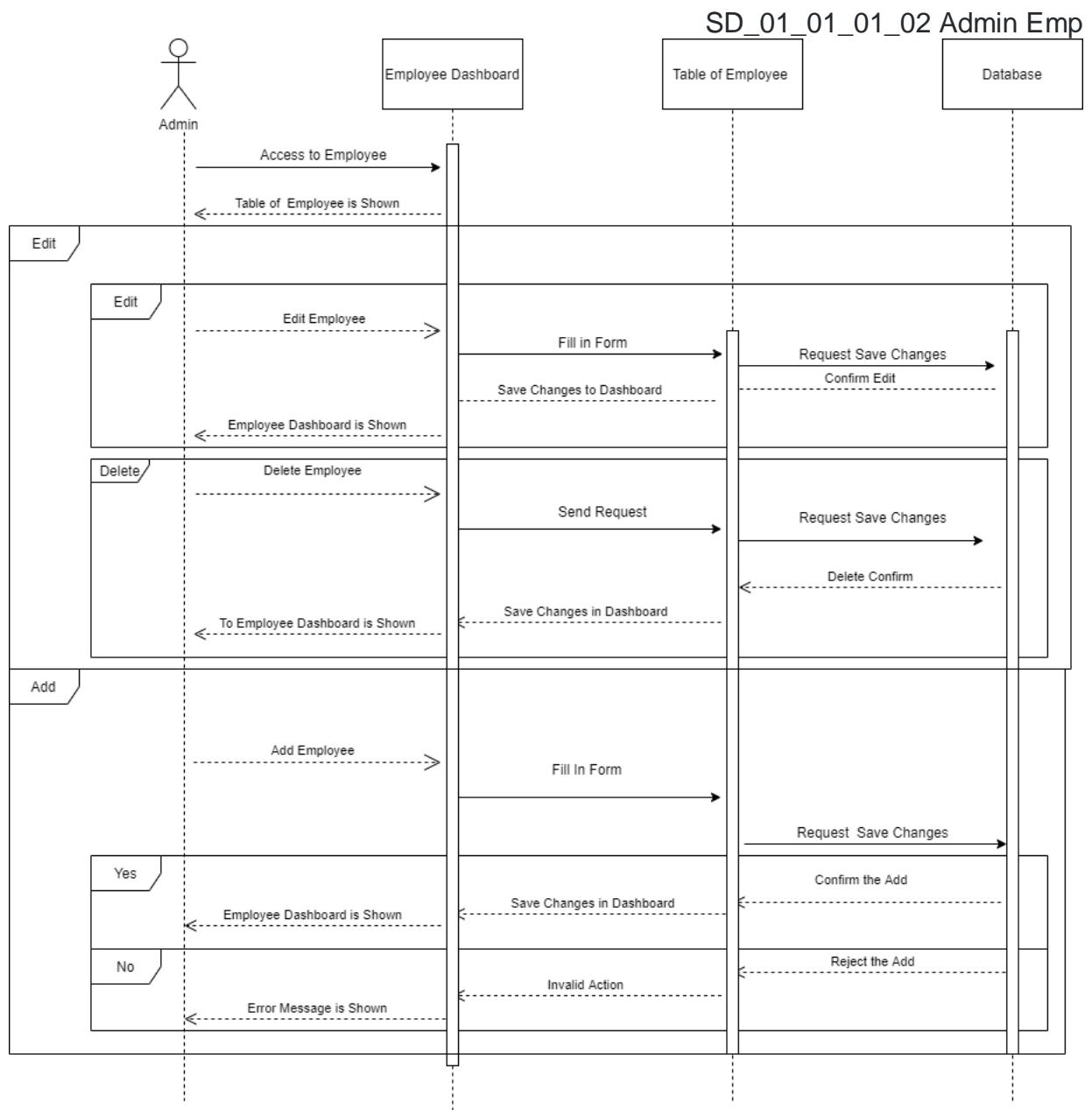


#### 4.6 Sequence Diagrams

**Construction Company Management System Requirements Specification**

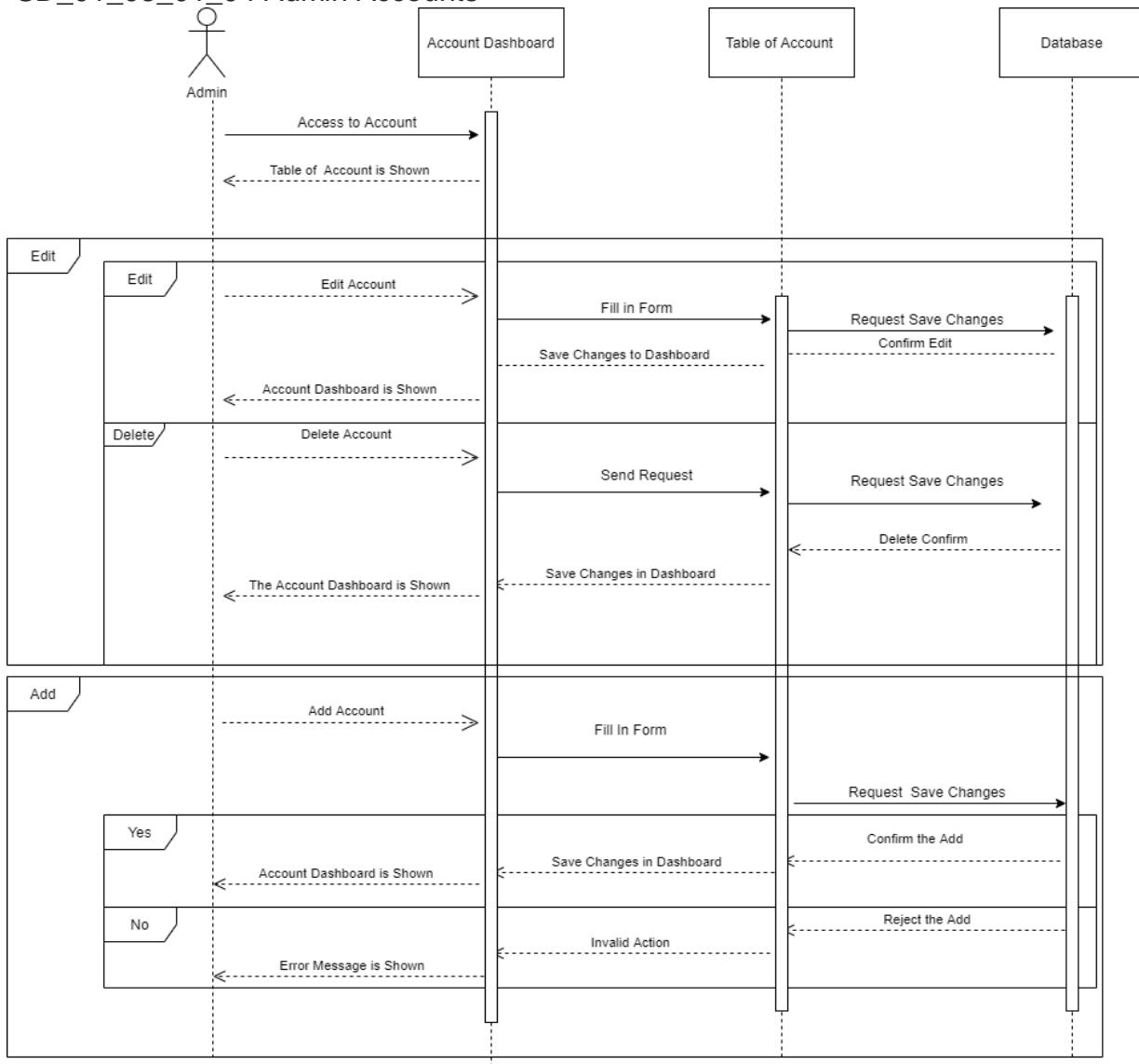


## Construction Company Management System Requirements Specification



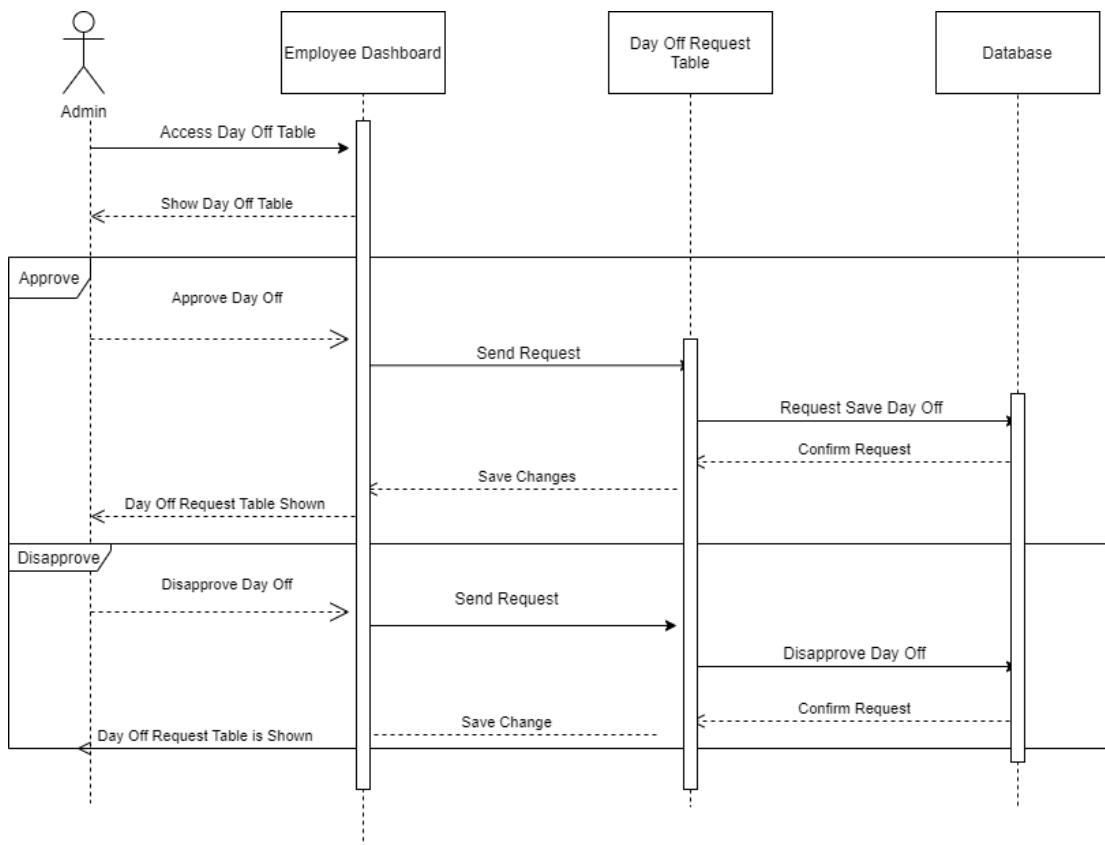
## Construction Company Management System Requirements Specification

### SD\_01\_03\_01\_04 Admin Accounts

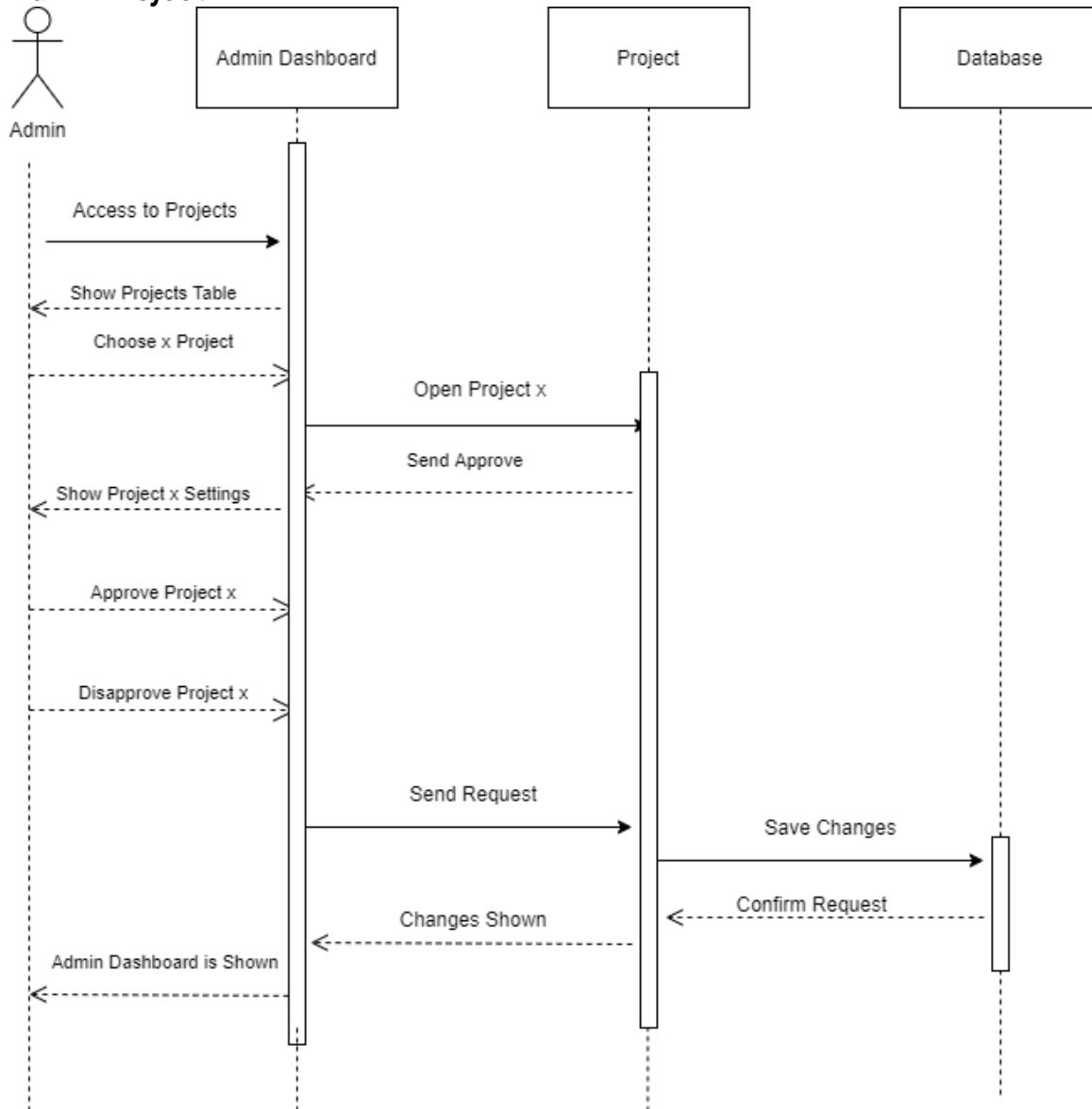


## **Construction Company Management System Requirements Specification**

### **SD\_01\_05 Admin Days off**



**SD\_01\_06**  
**AdminProject**

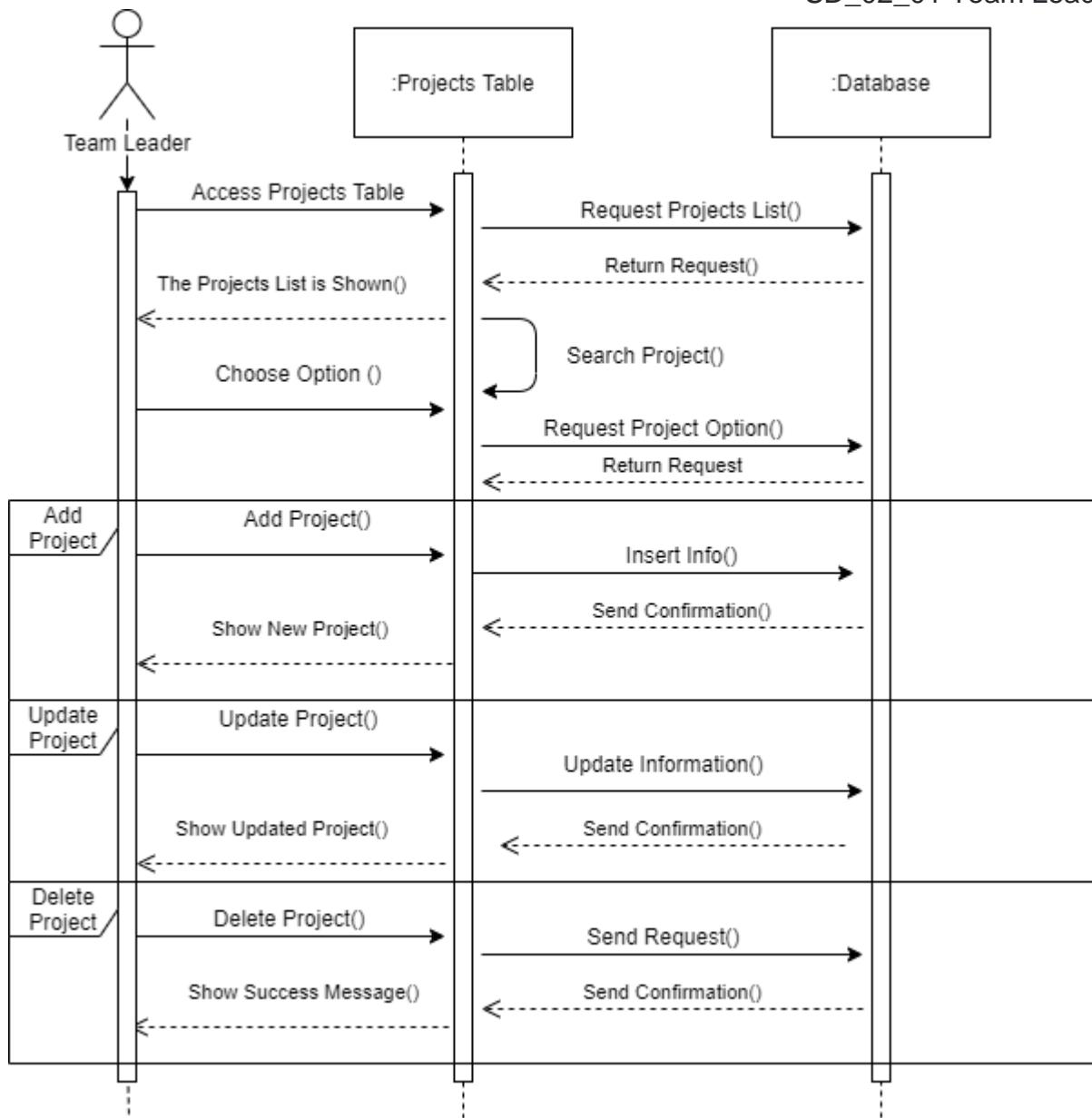


return

return

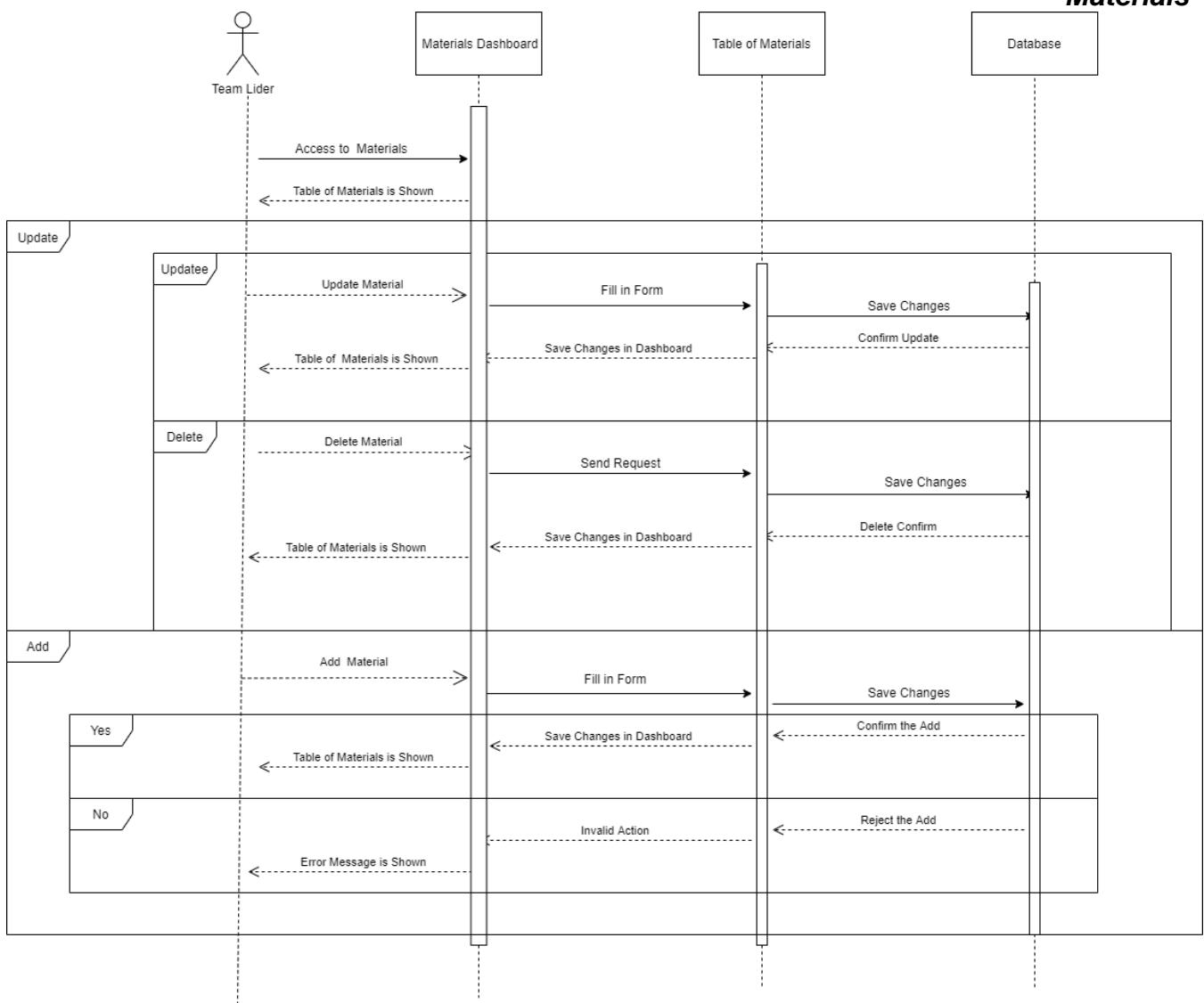
## Construction Company Management System Requirements Specification

SD\_02\_01 Team Leader Project



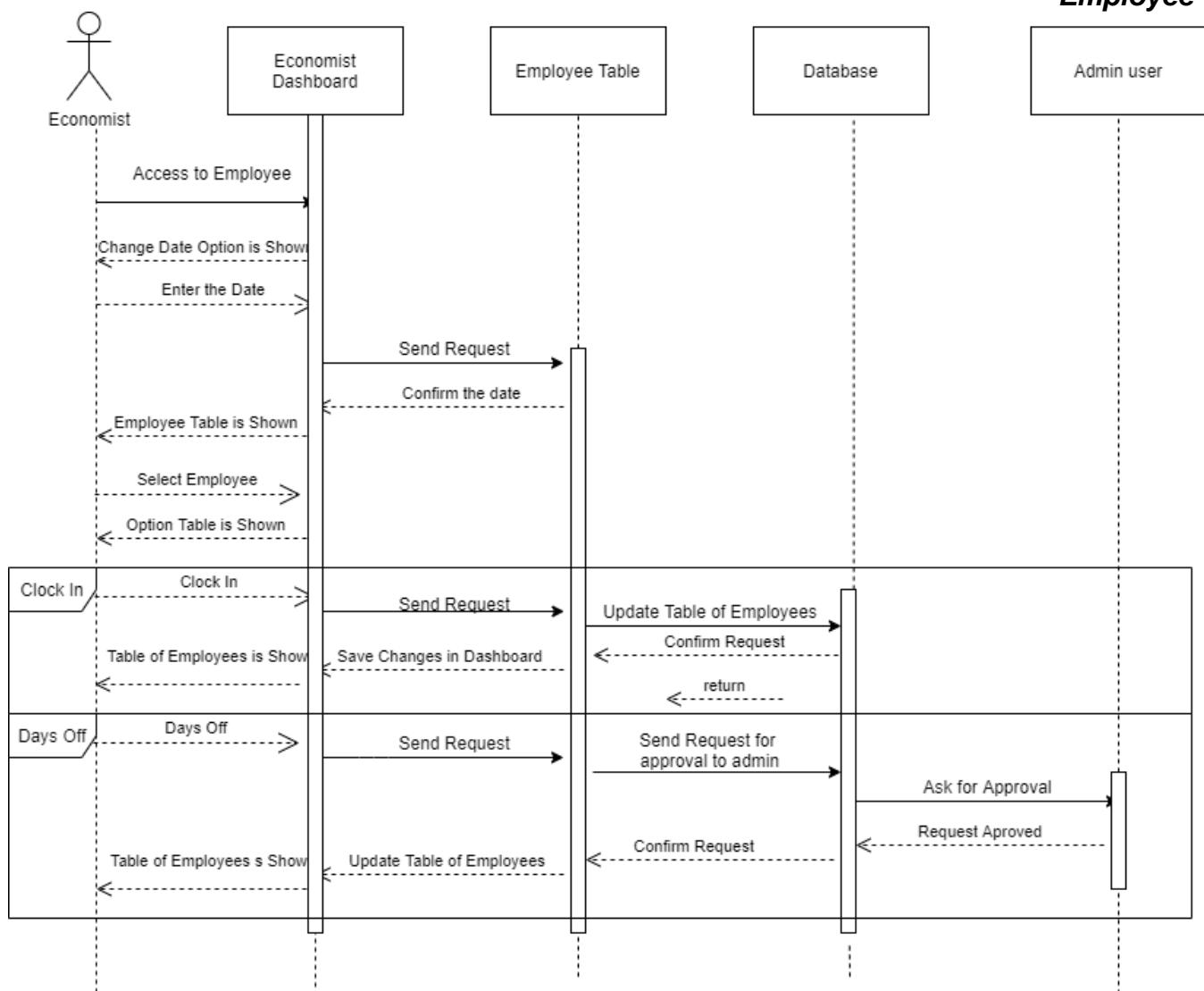
# Construction Company Management System Requirements Specification

## SD\_02\_02 Team Leader Used Materials

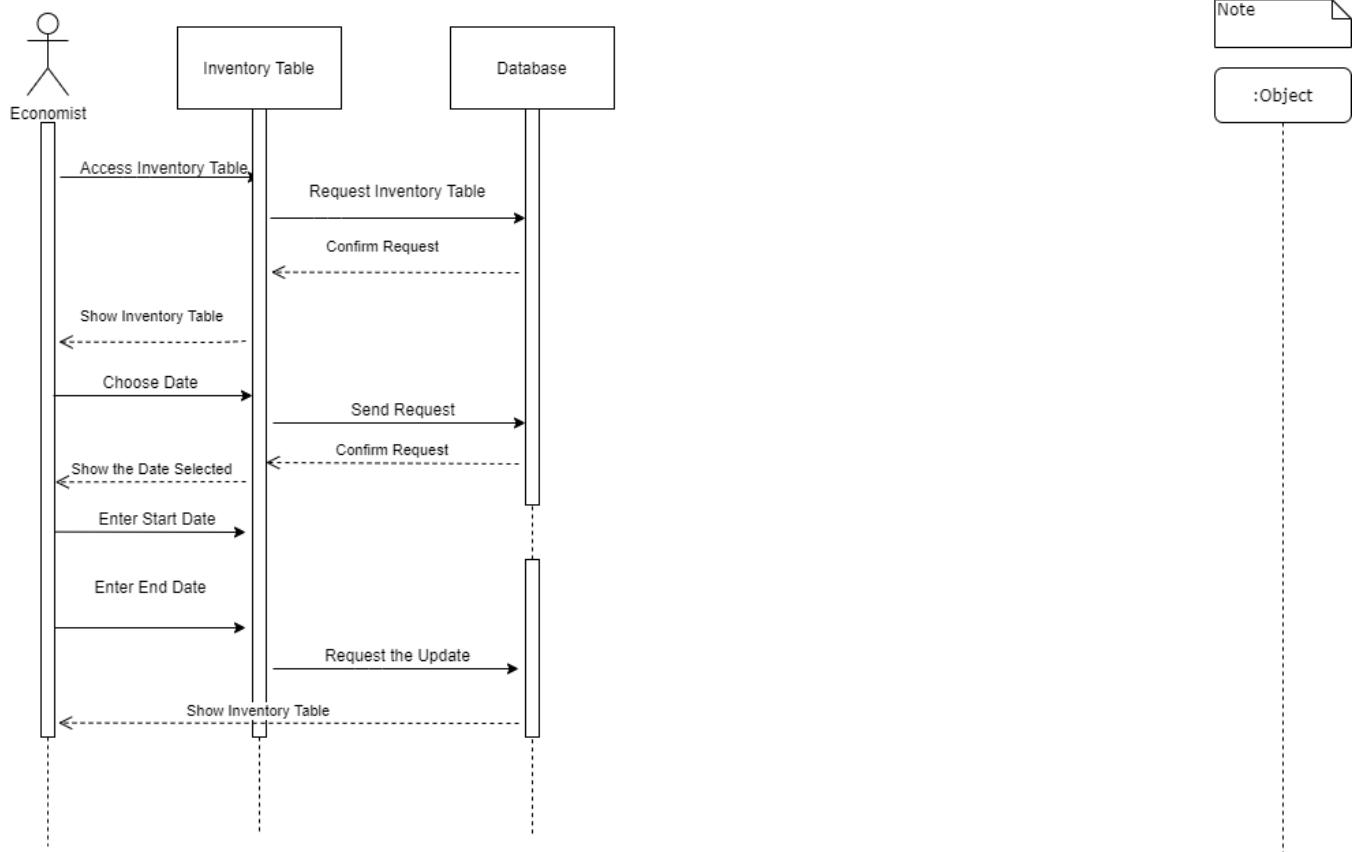


# Construction Company Management System Requirements Specification

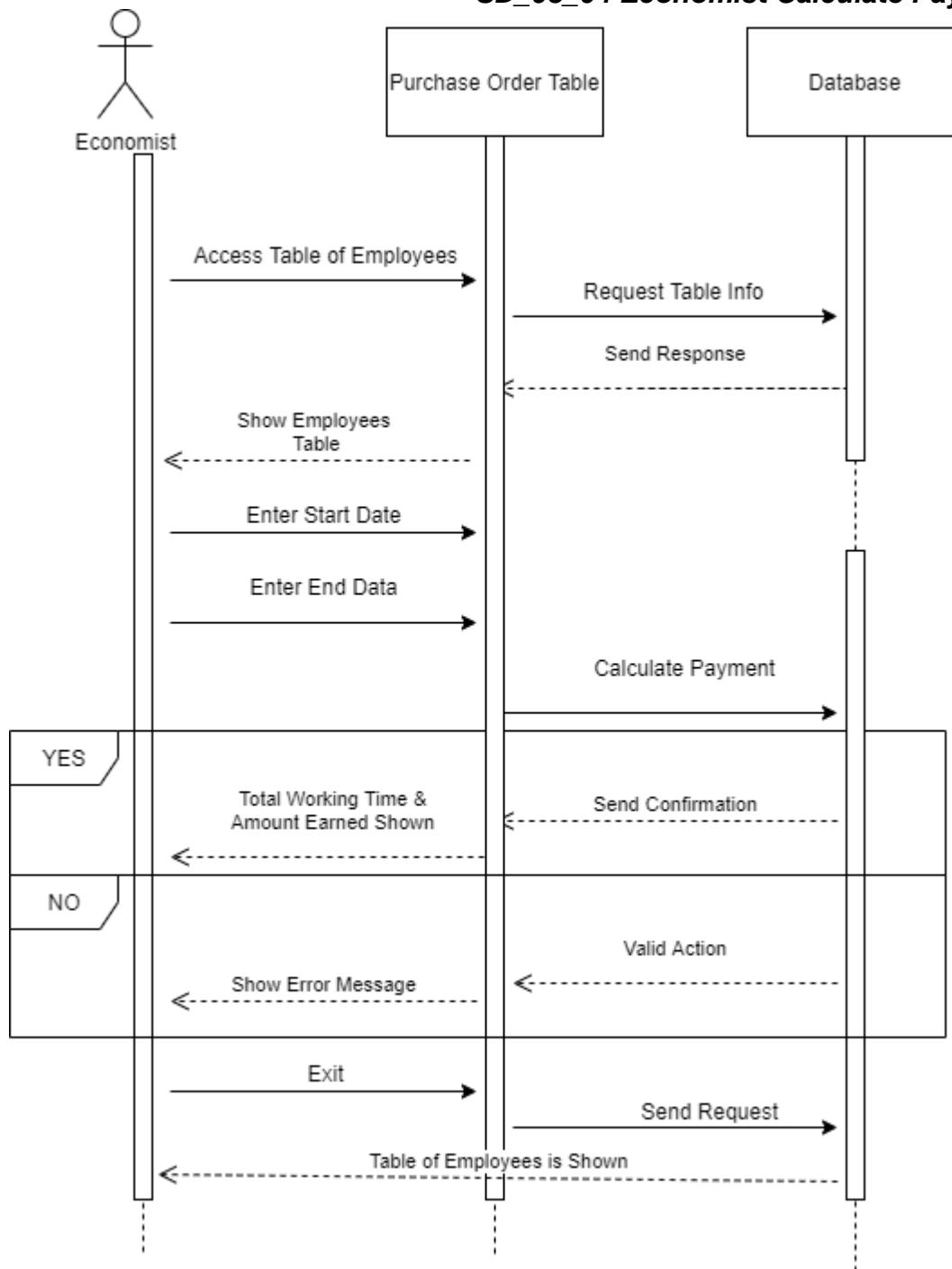
## SD\_03\_01\_03\_02 Economist Employee



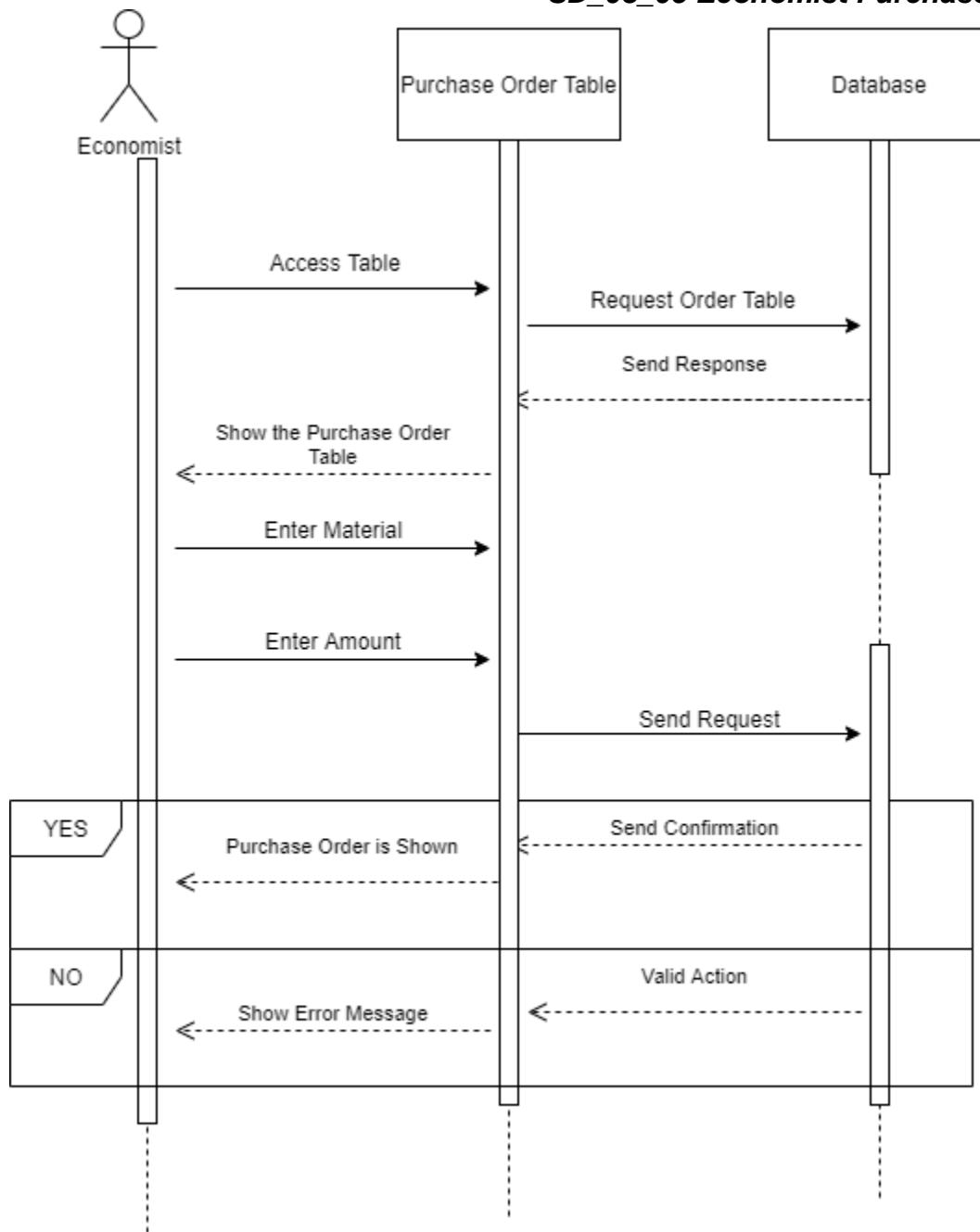
**SD\_03\_03 Economist  
Inventory**



**SD\_03\_04 Economist Calculate Payment**

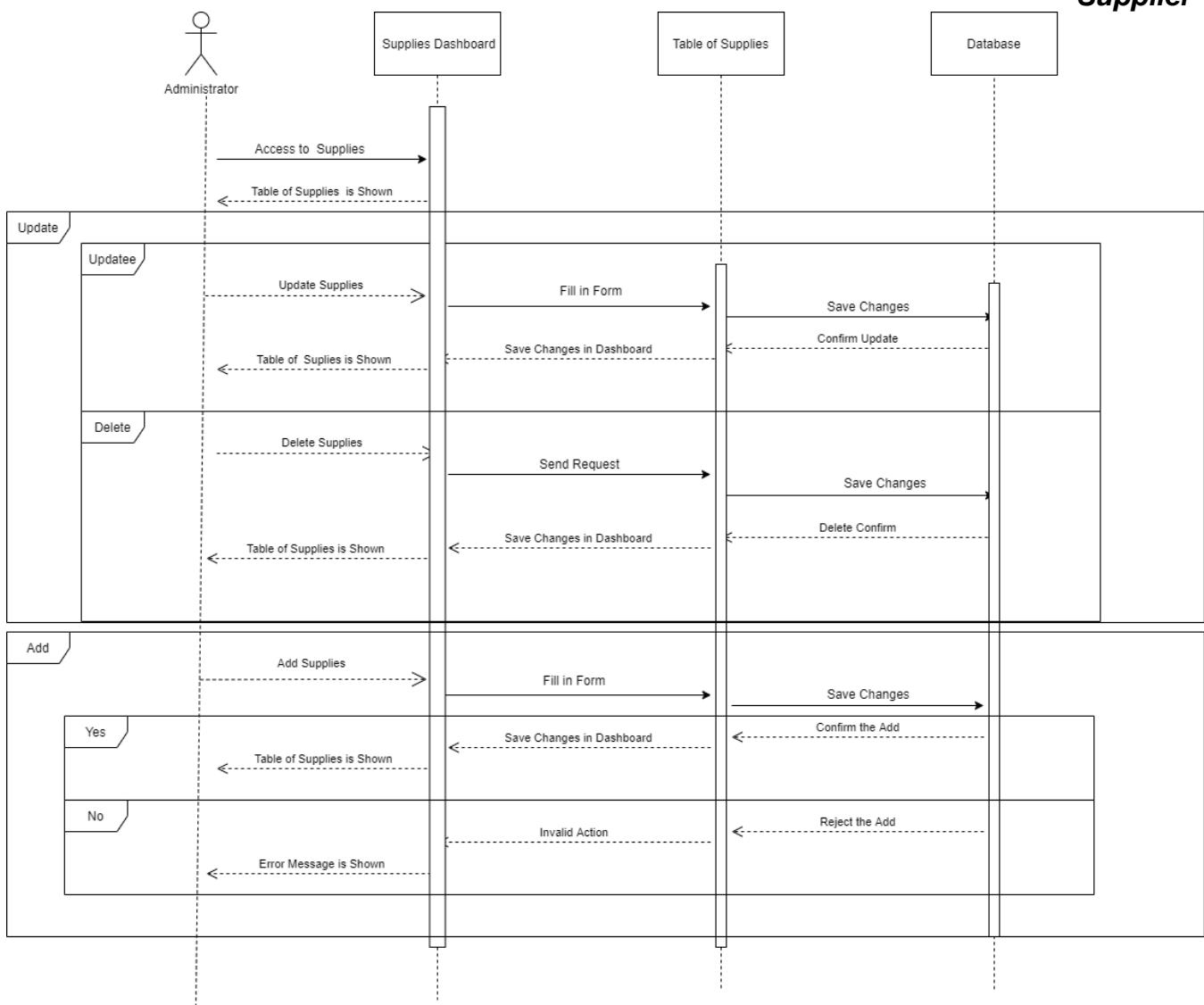


**SD\_03\_05 Economist Purchase Order**



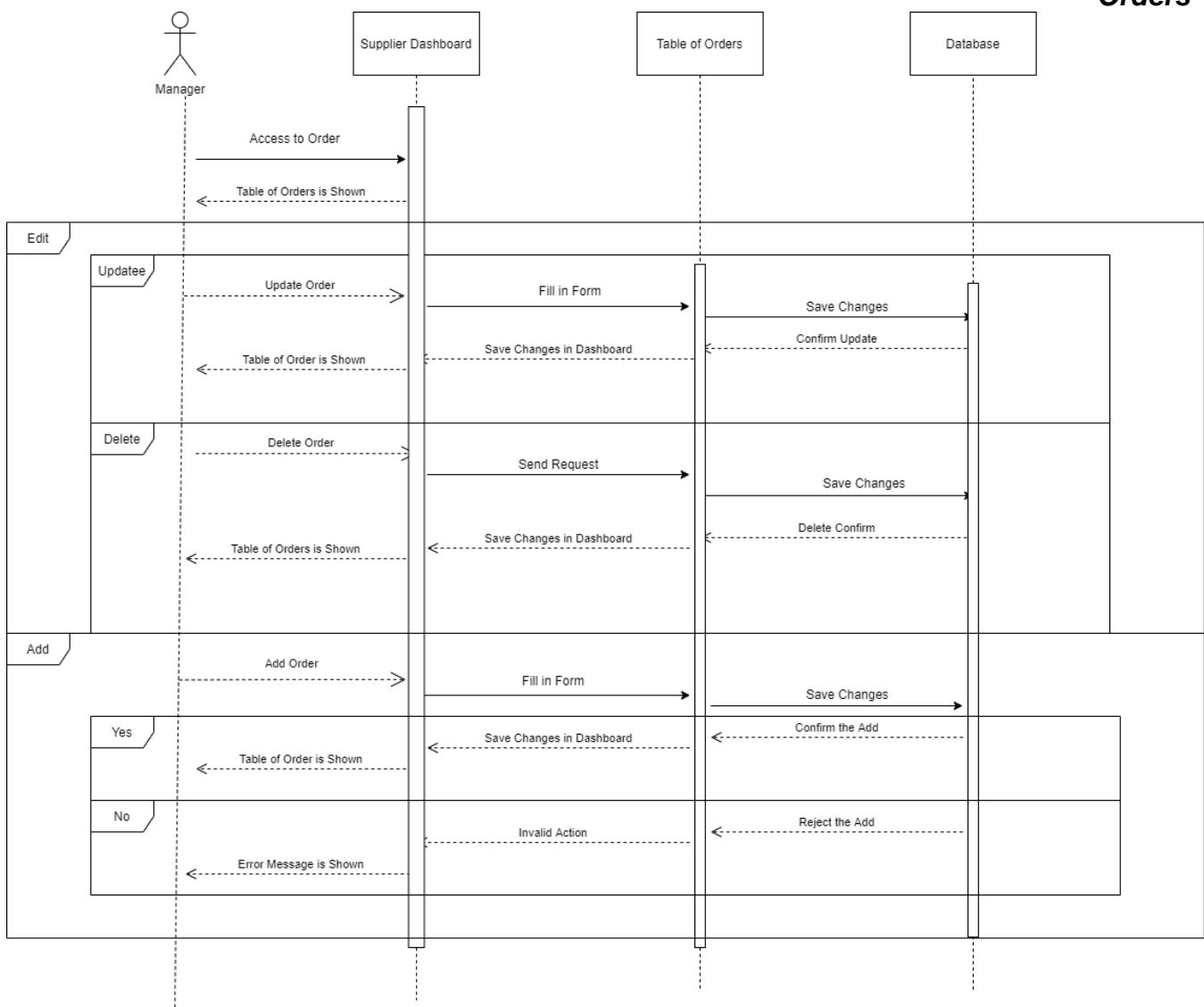
# Construction Company Management System Requirements Specification

## SD\_04\_01 Manager Supplier

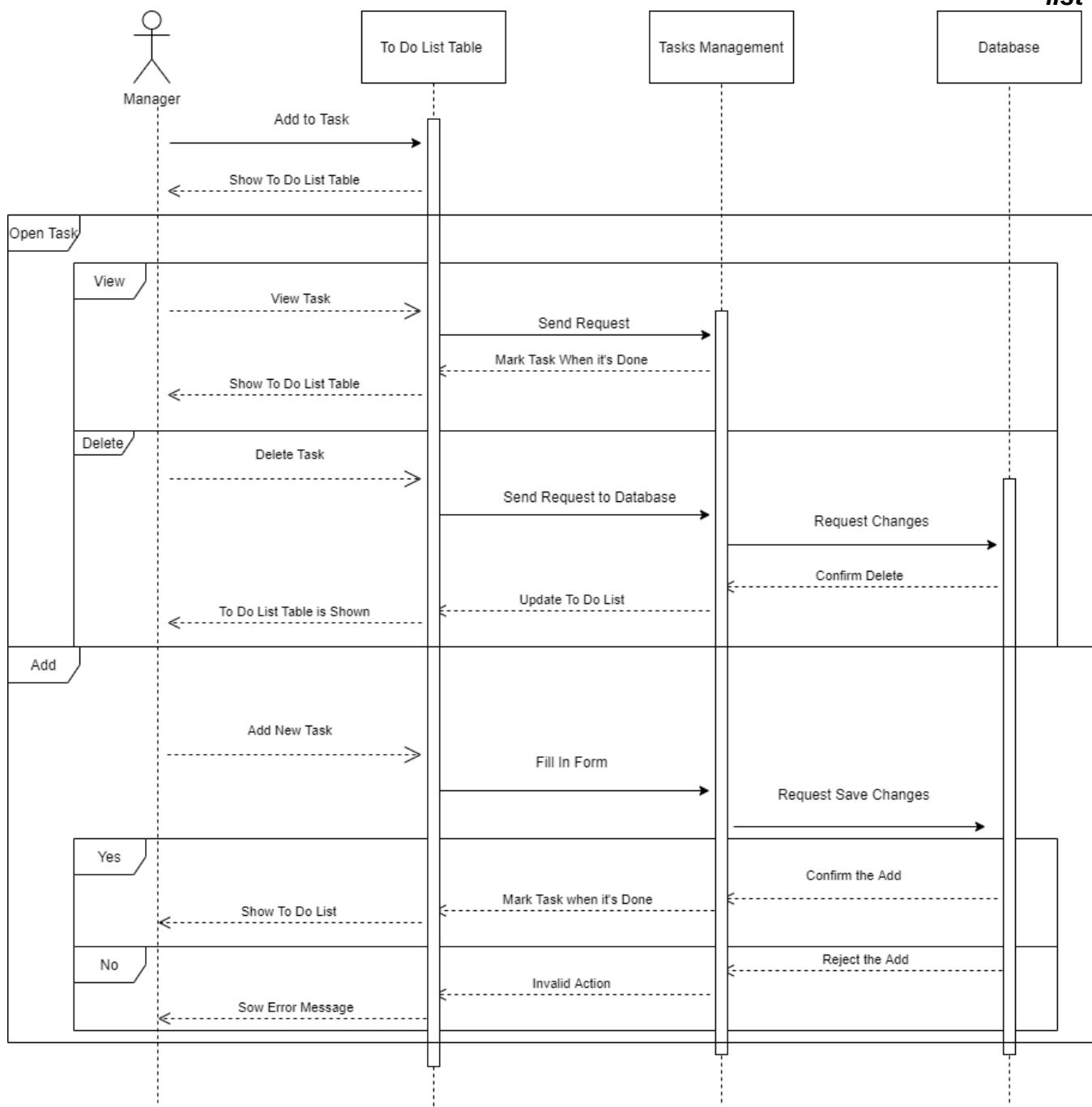


# Construction Company Management System Requirements Specification

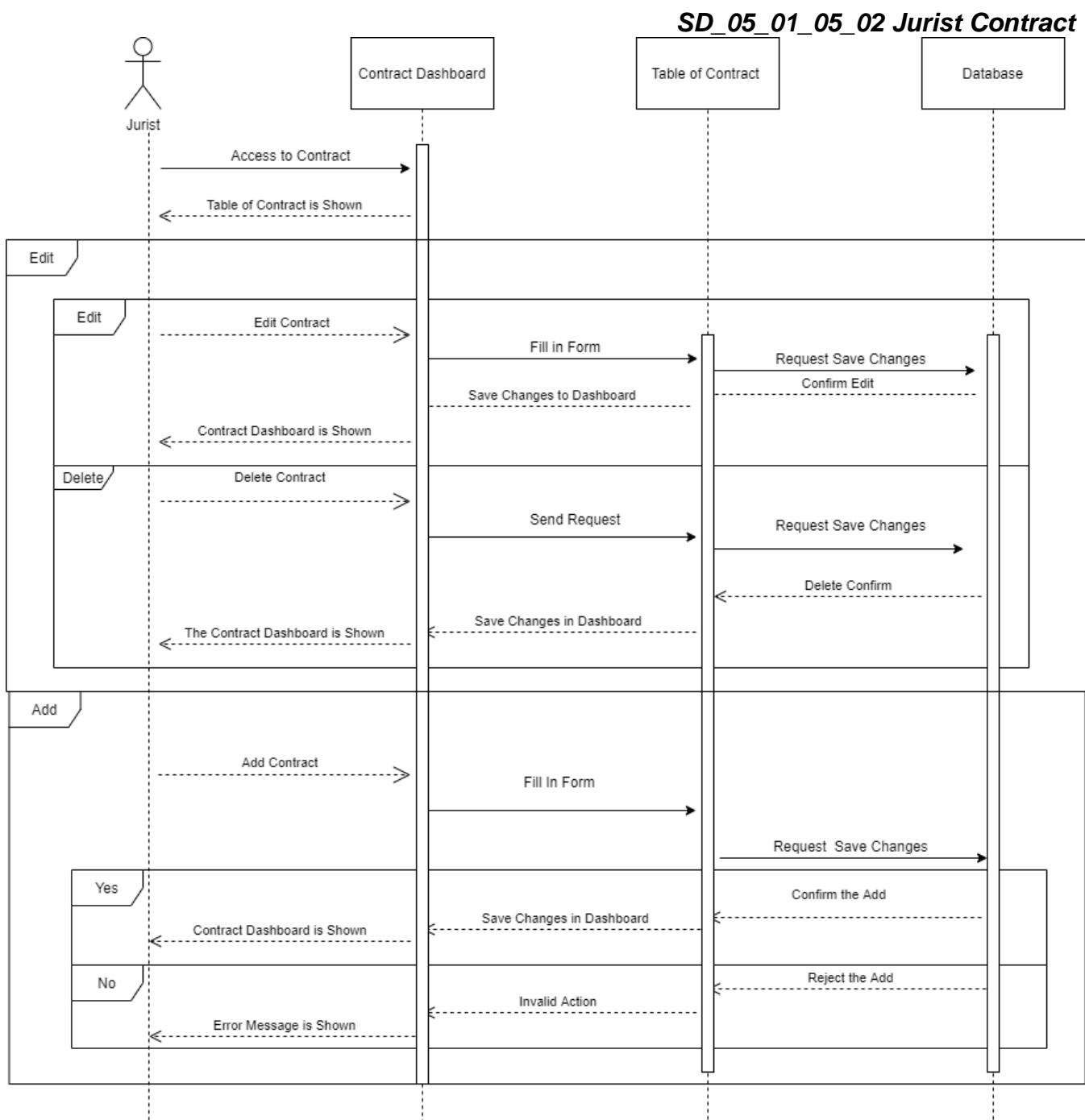
## SD\_04\_02 Manage Orders

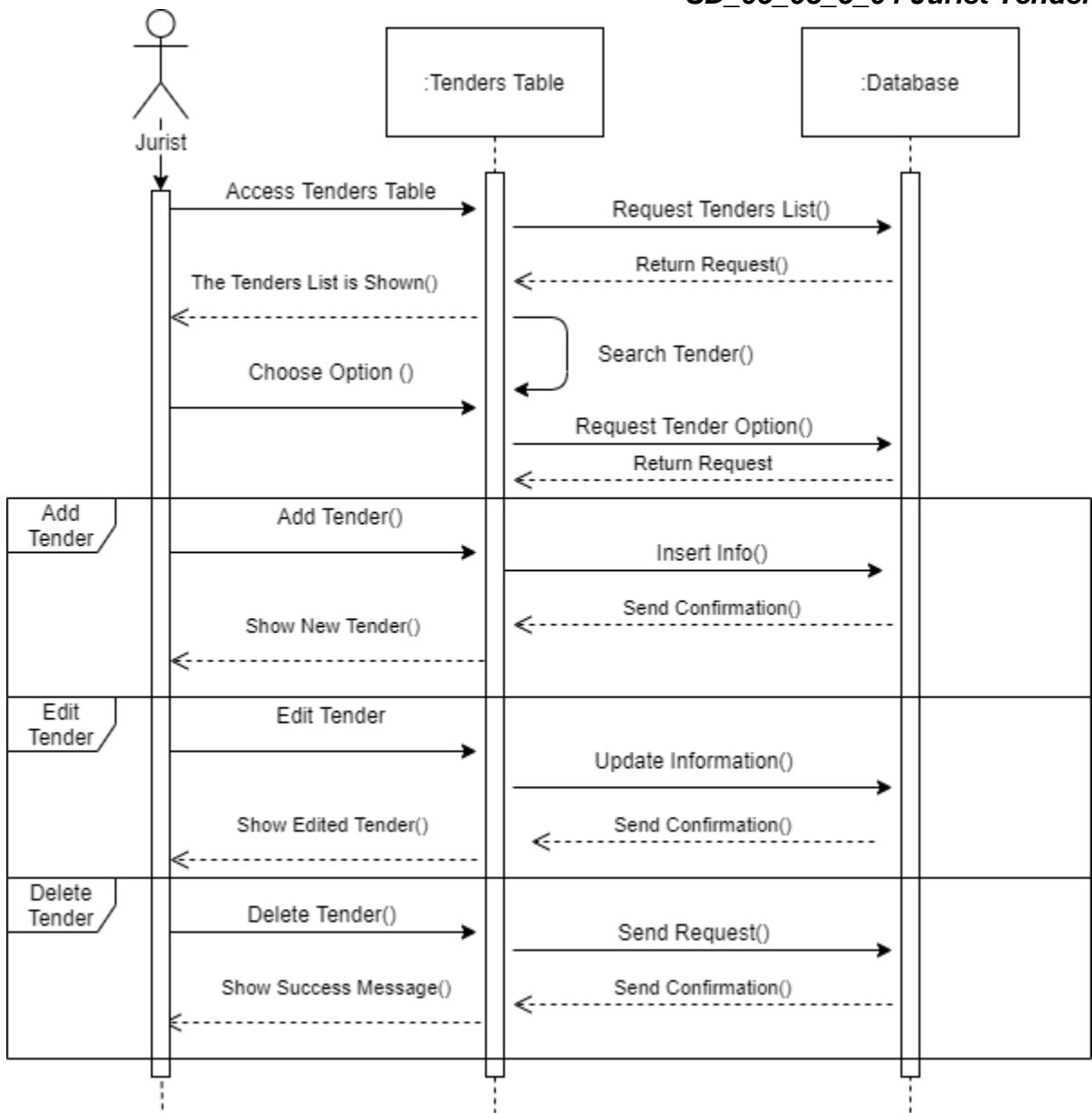


**SD\_04\_03 Manager Todo list**

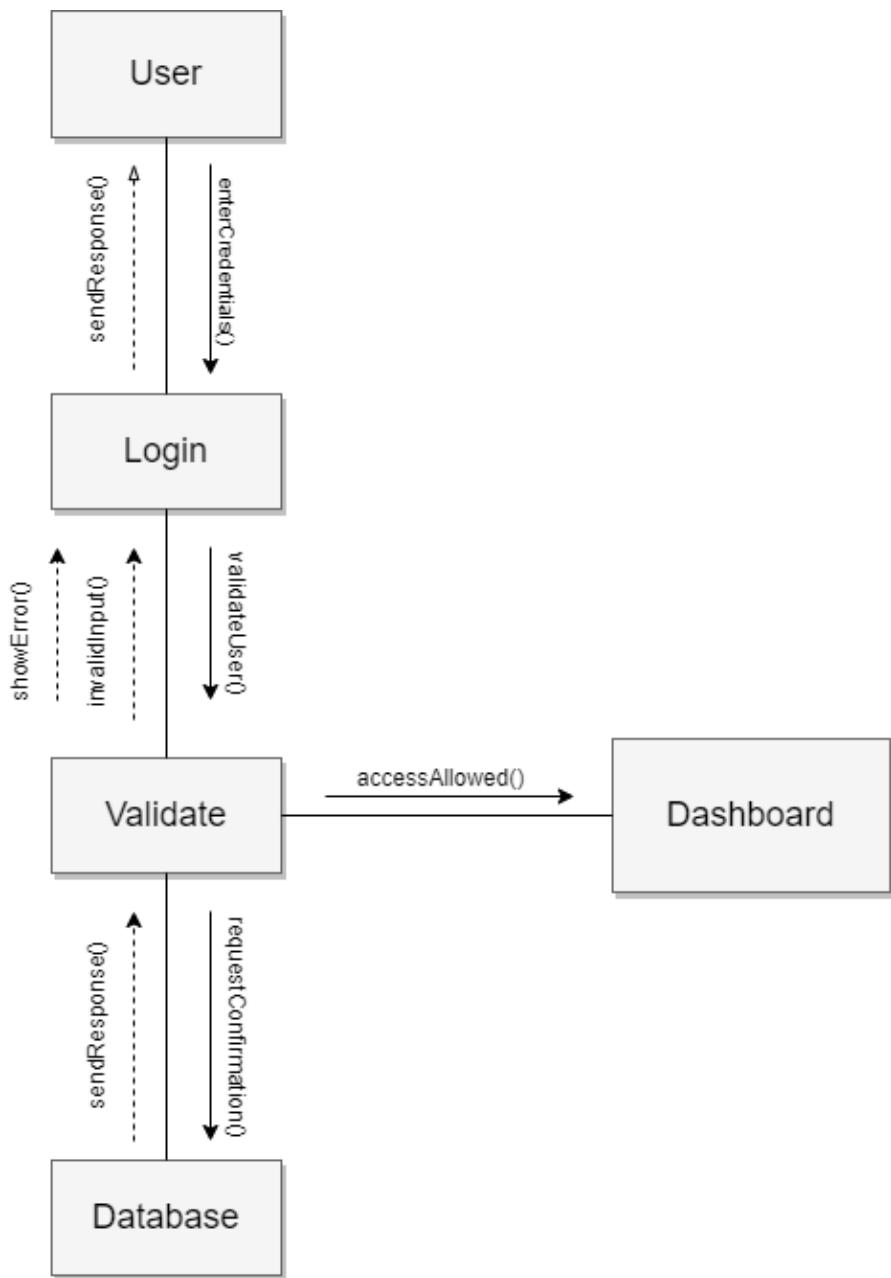


## Construction Company Management System Requirements Specification



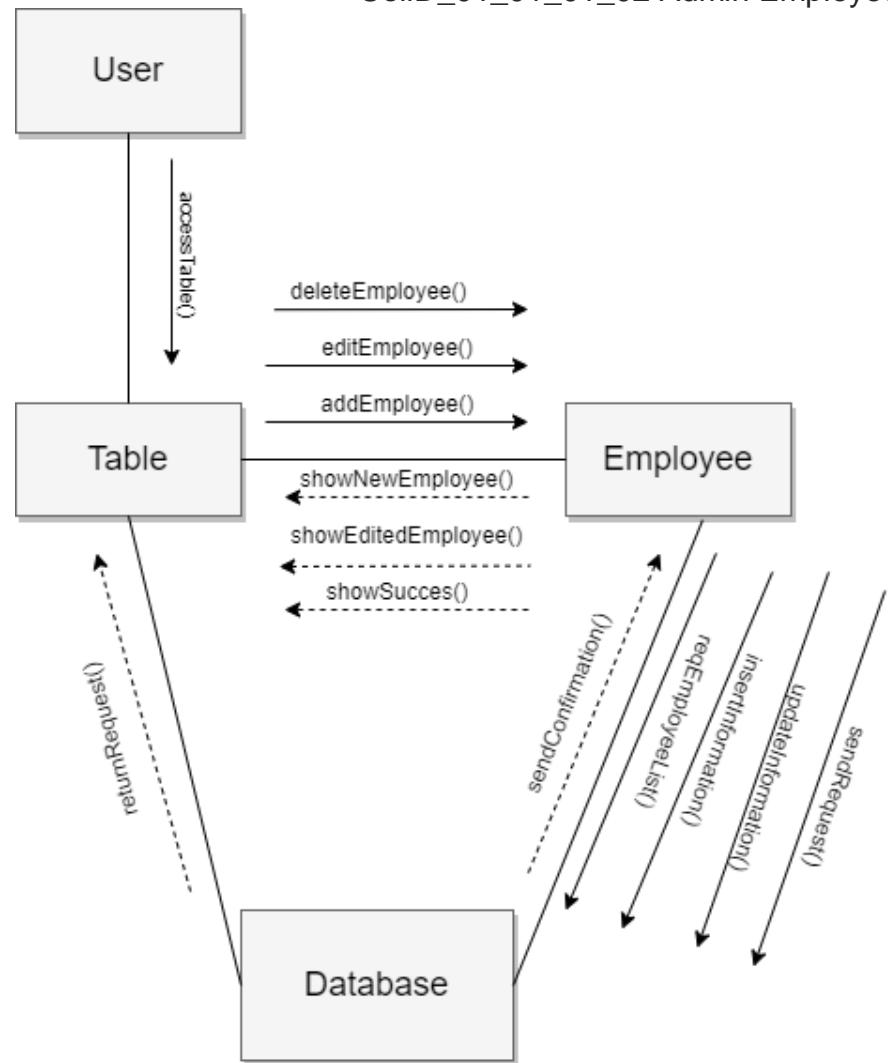


#### 4.7 Collaboration Diagrams



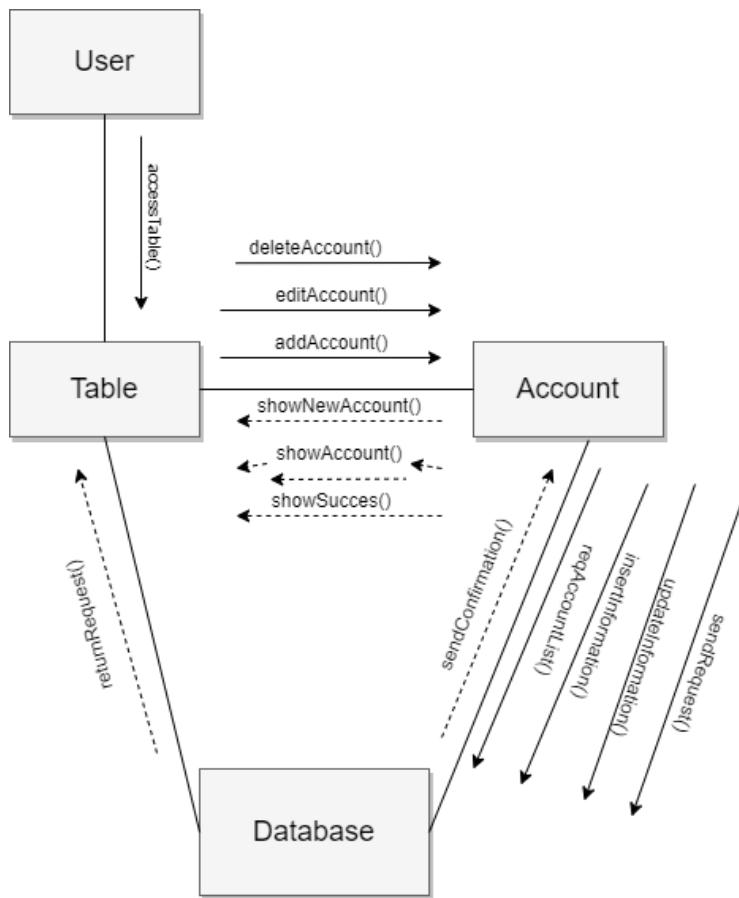
## Construction Company Management System Requirements Specification

ColID\_01\_01\_01\_02 Admin Employee



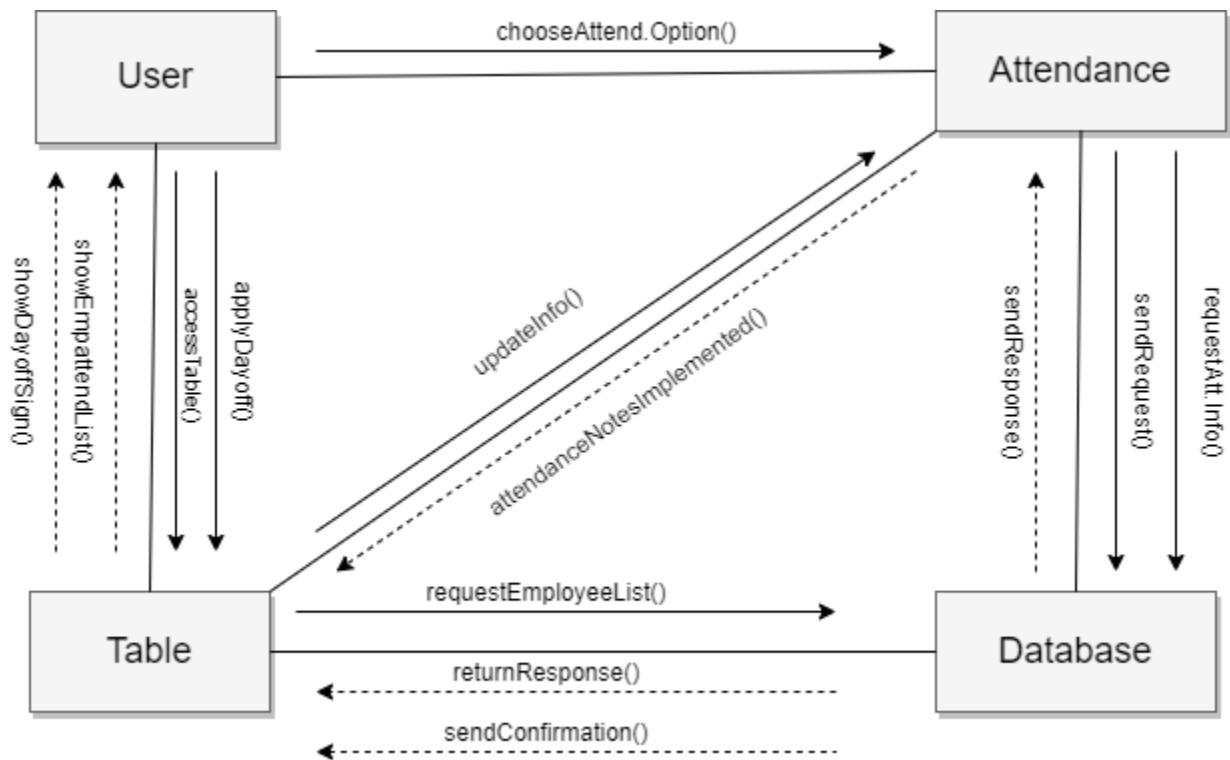
ColID\_01\_03\_01\_04 Admin Accounts

## **Construction Company Management System Requirements Specification**

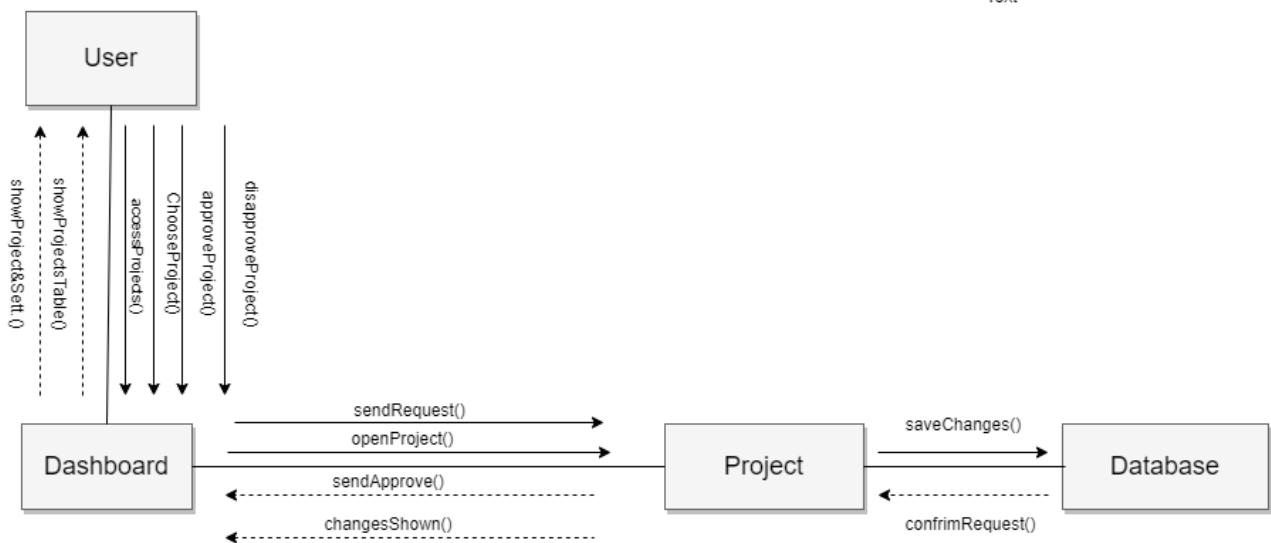


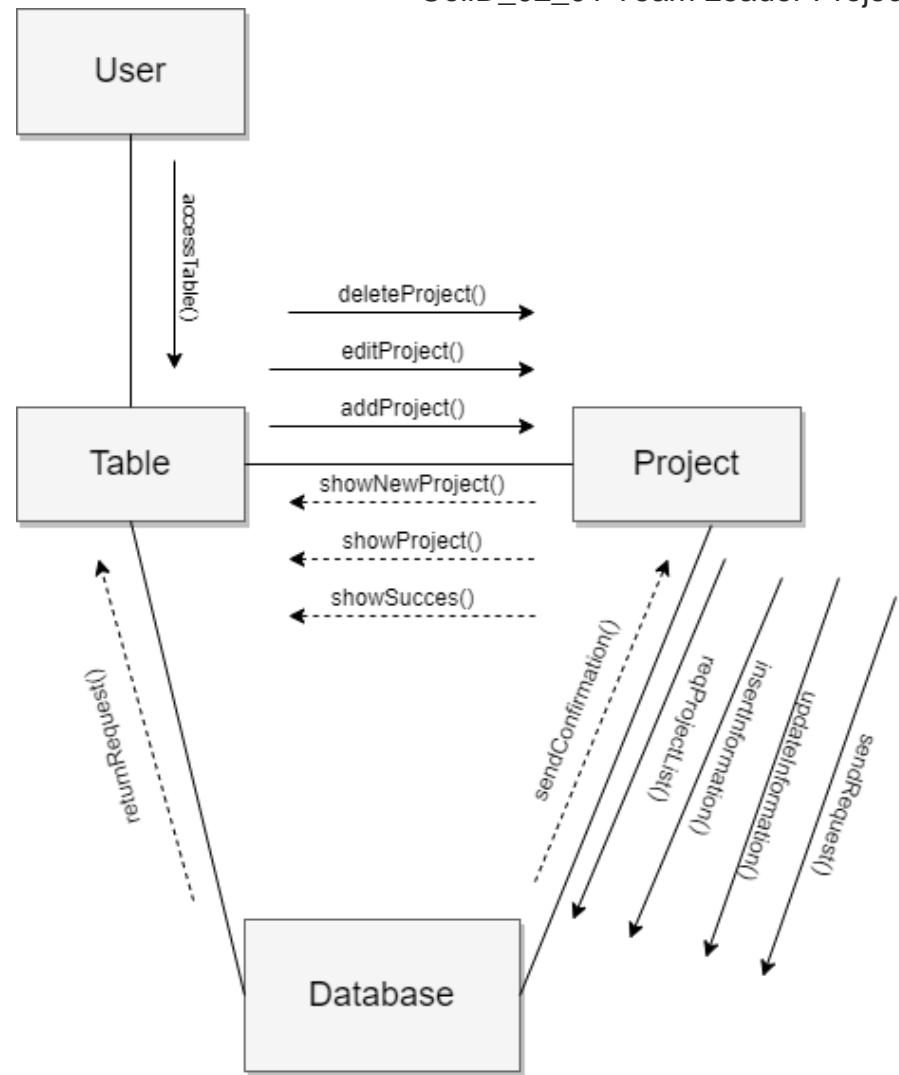
## Construction Company Management System Requirements Specification

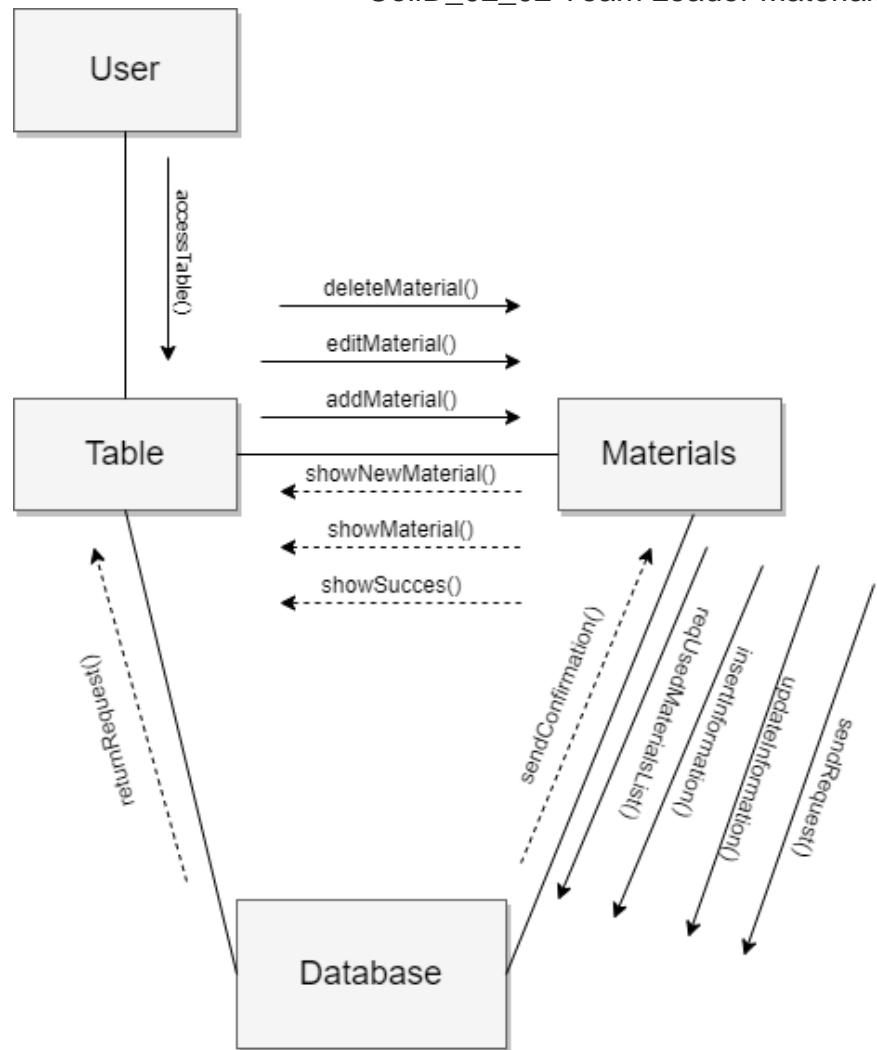
CollD\_01\_05 Amin DaysOff



CollD\_01\_06 Admin Project  
Text

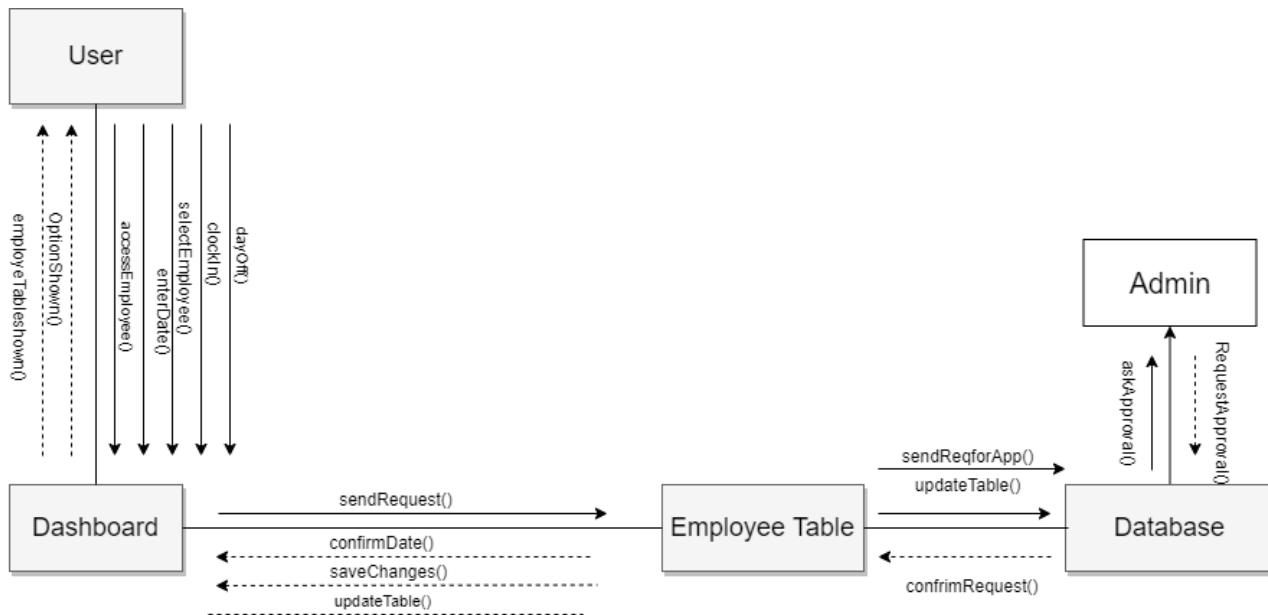






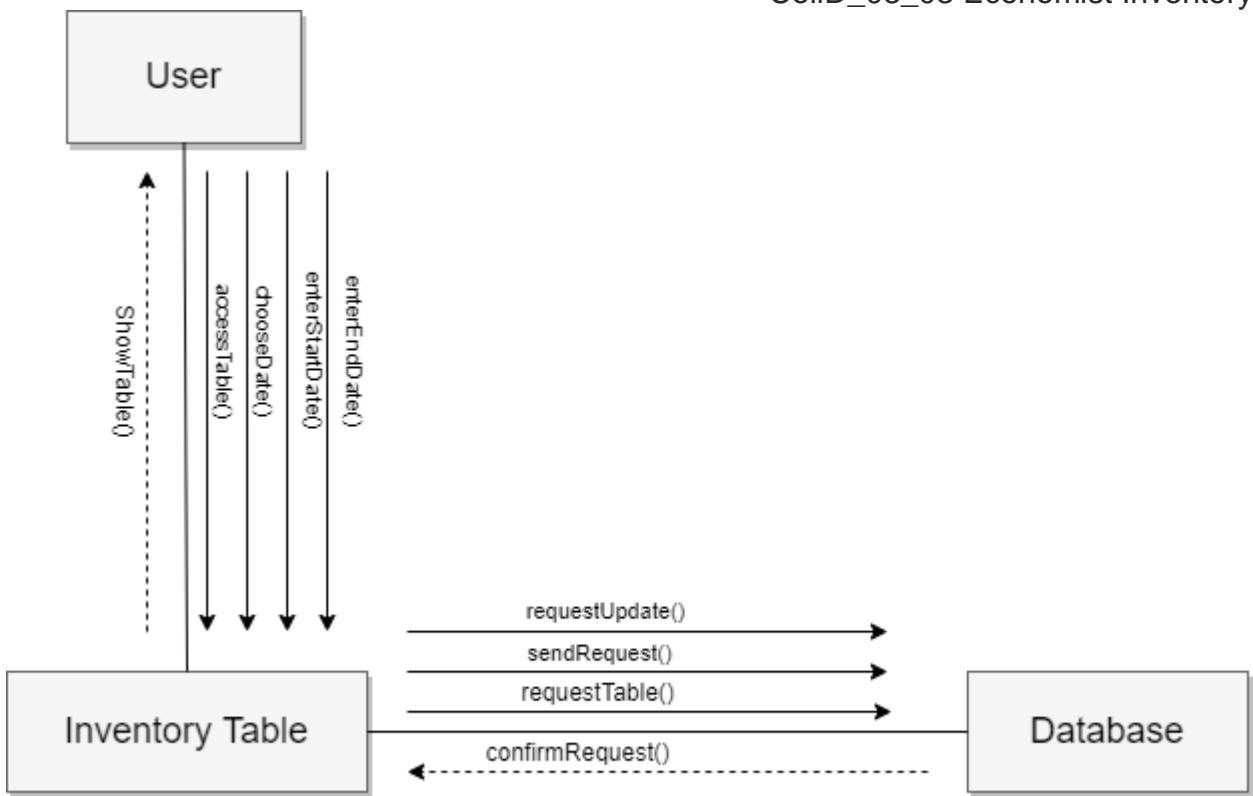
## Construction Company Management System Requirements Specification

CollD\_03\_01\_03\_02 Economist Employee



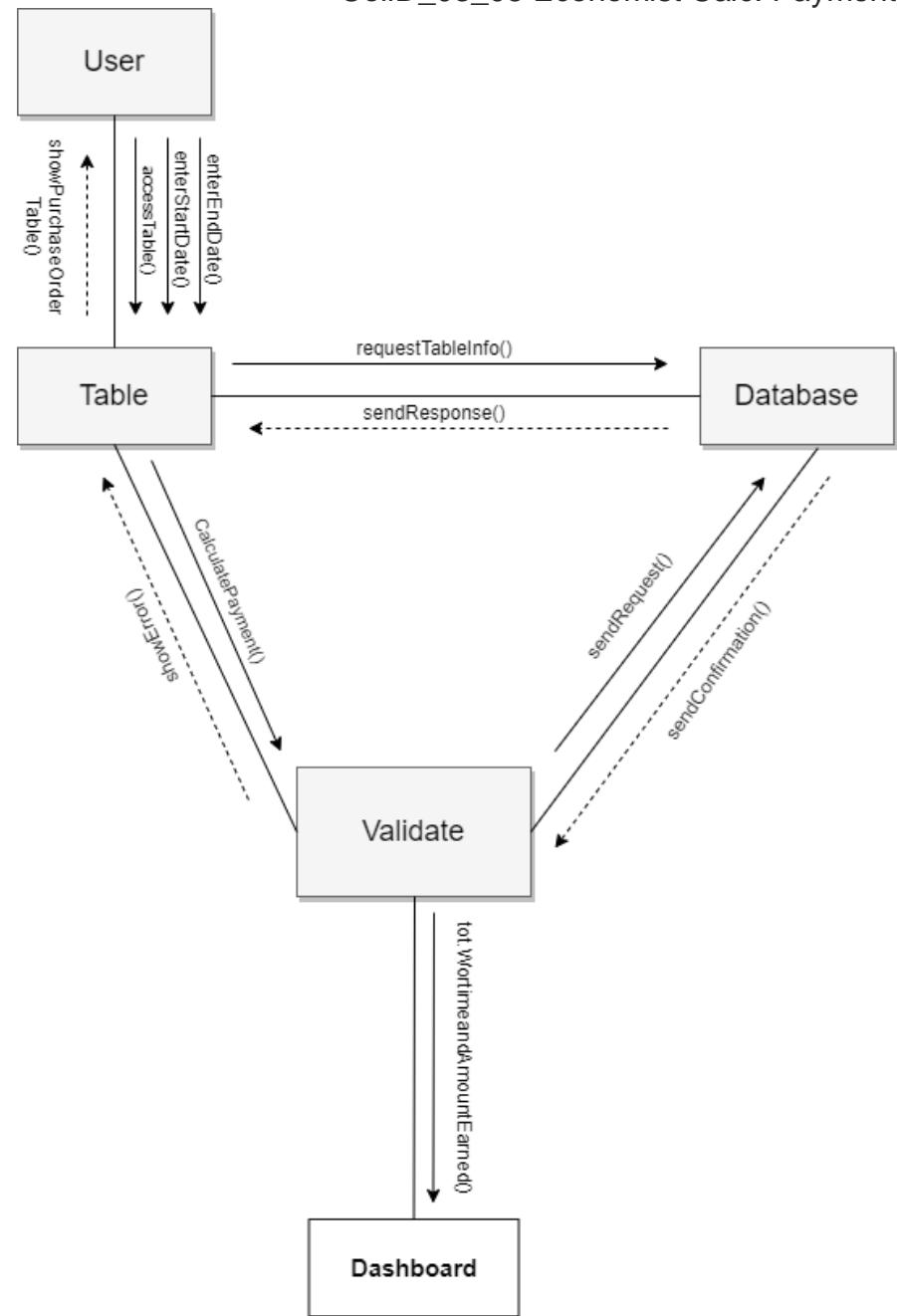
**Construction Company Management System Requirements Specification**

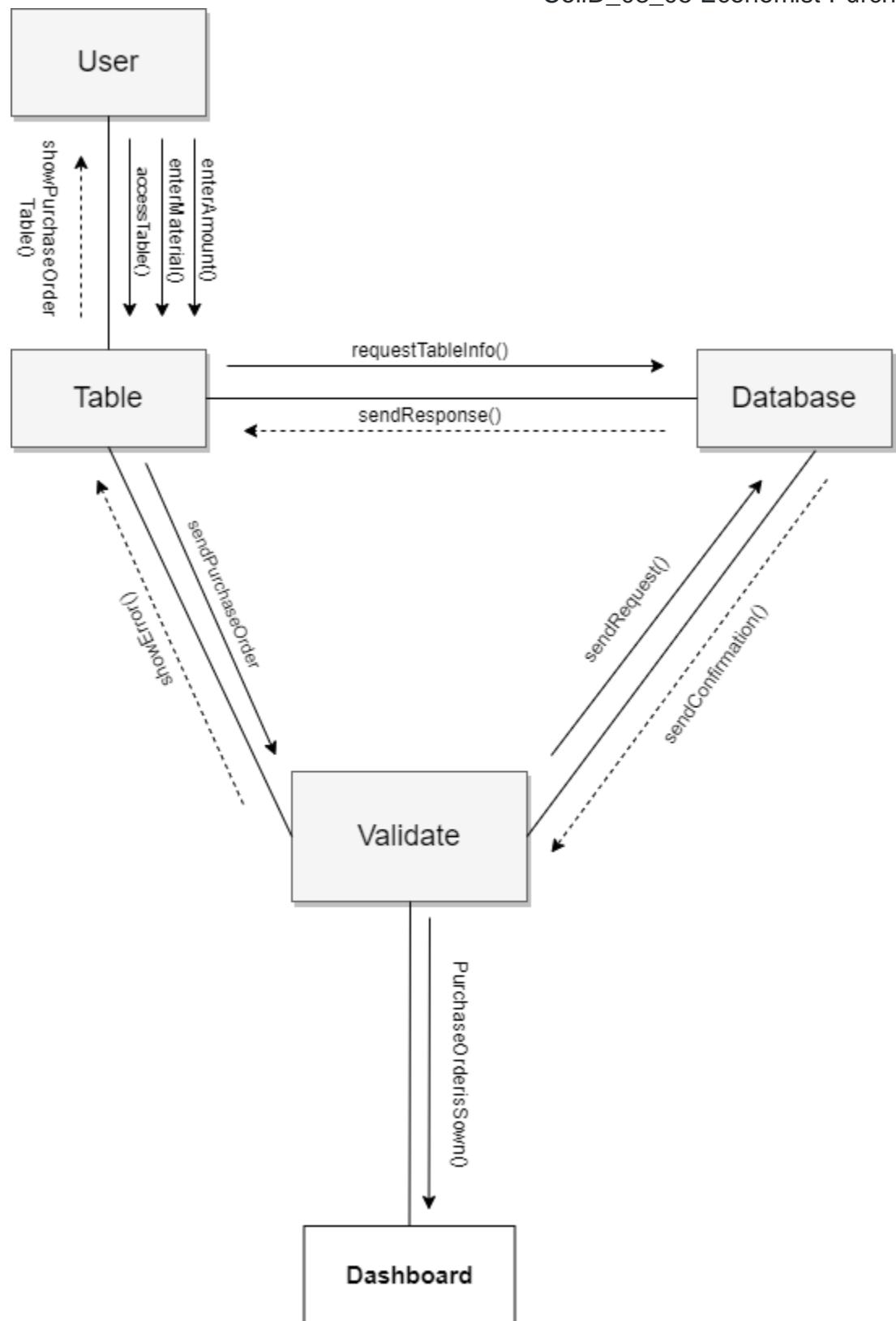
CollD\_03\_03 Economist Inventory



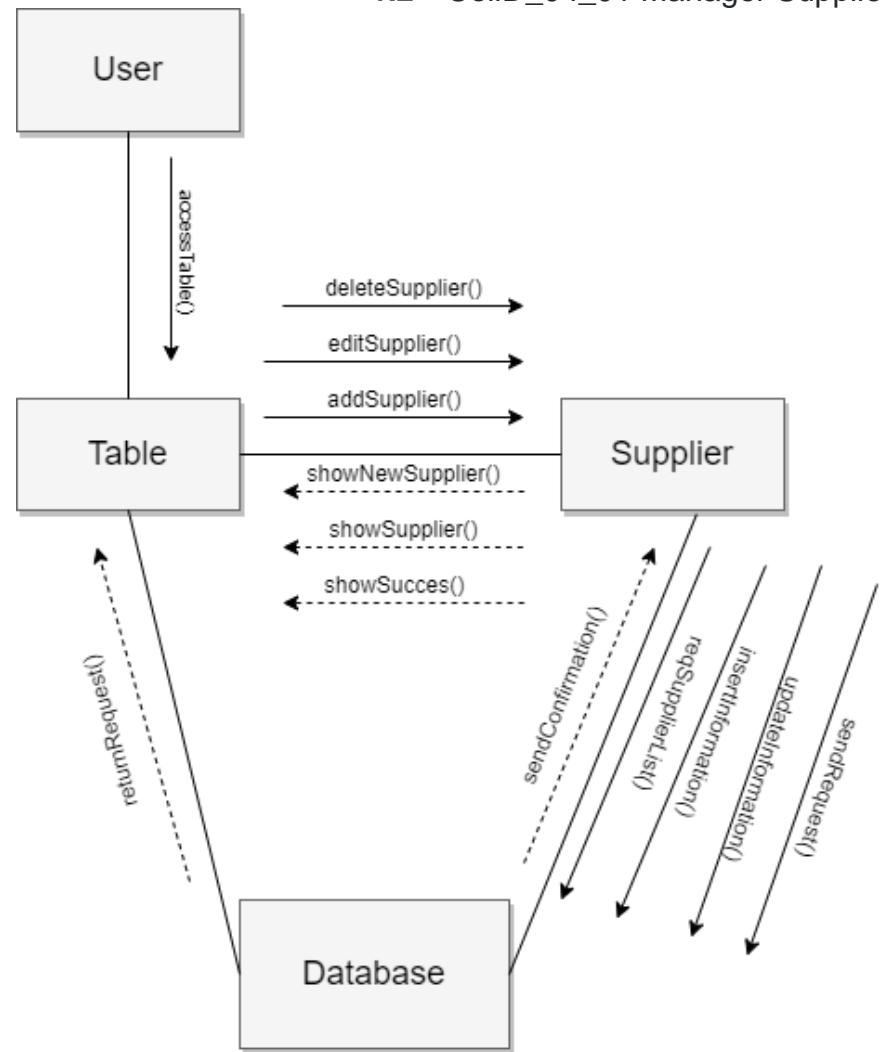
## Construction Company Management System Requirements Specification

CollD\_03\_05 Economist Calc. Payment

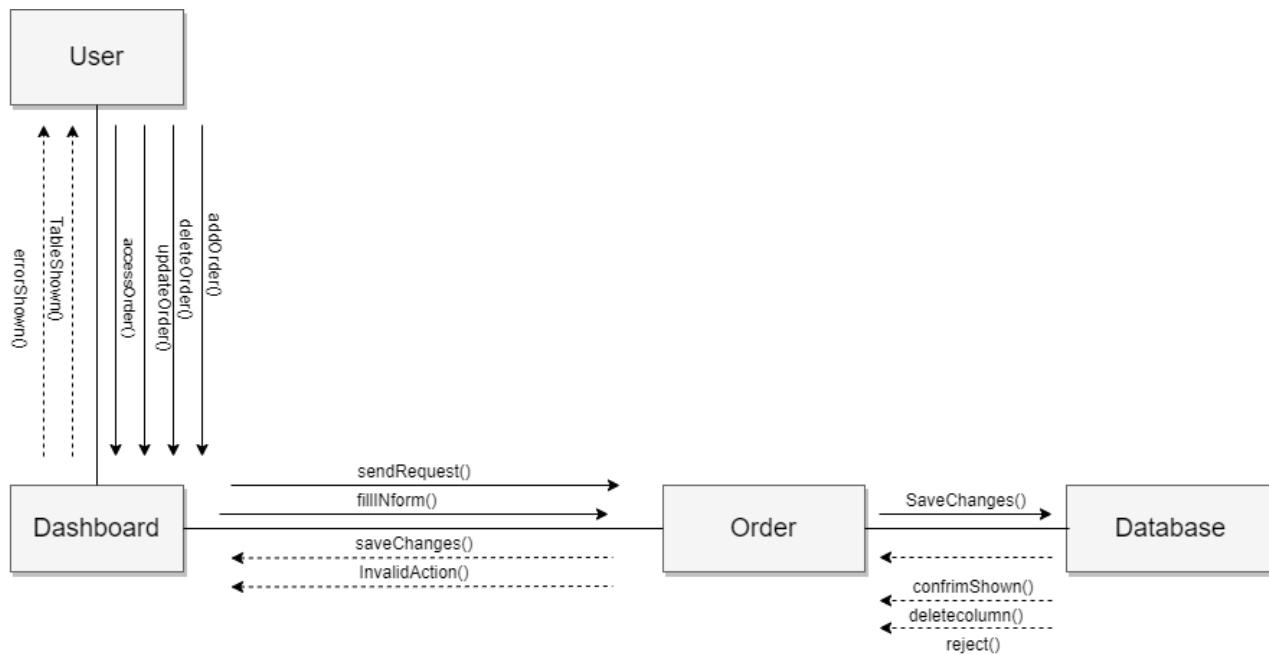




## 1.2 CollD\_04\_01 Manager Supplier

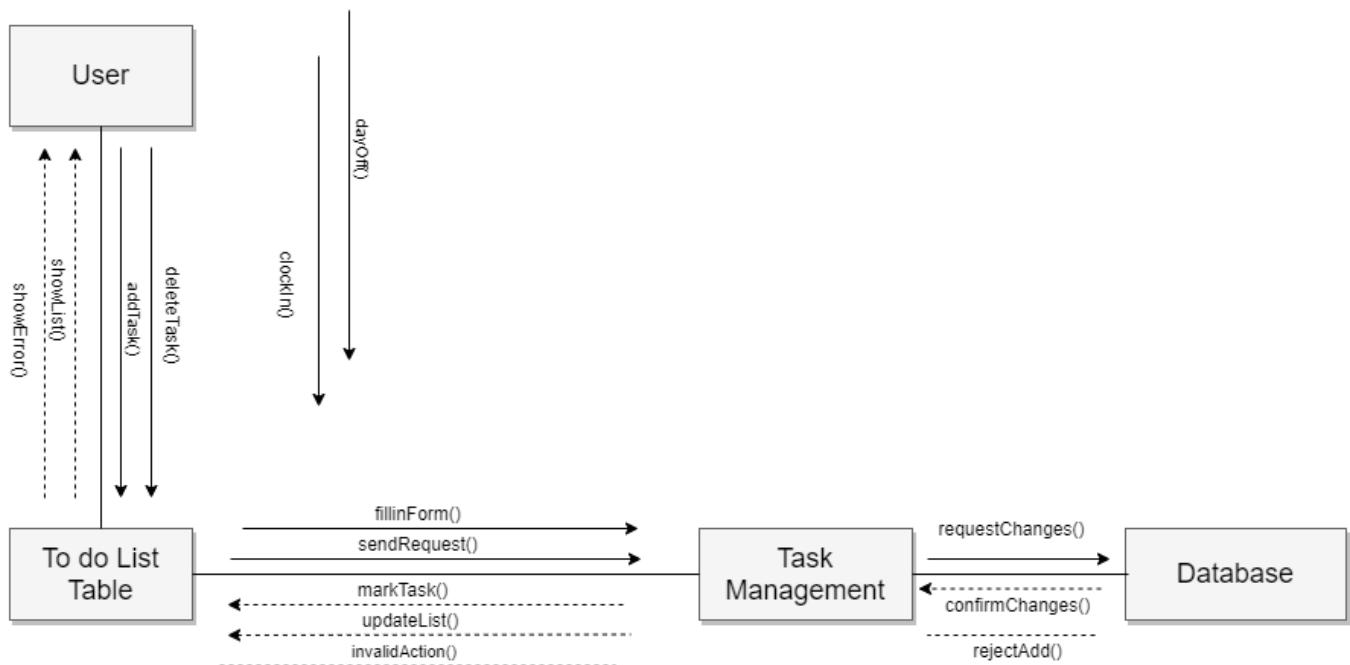


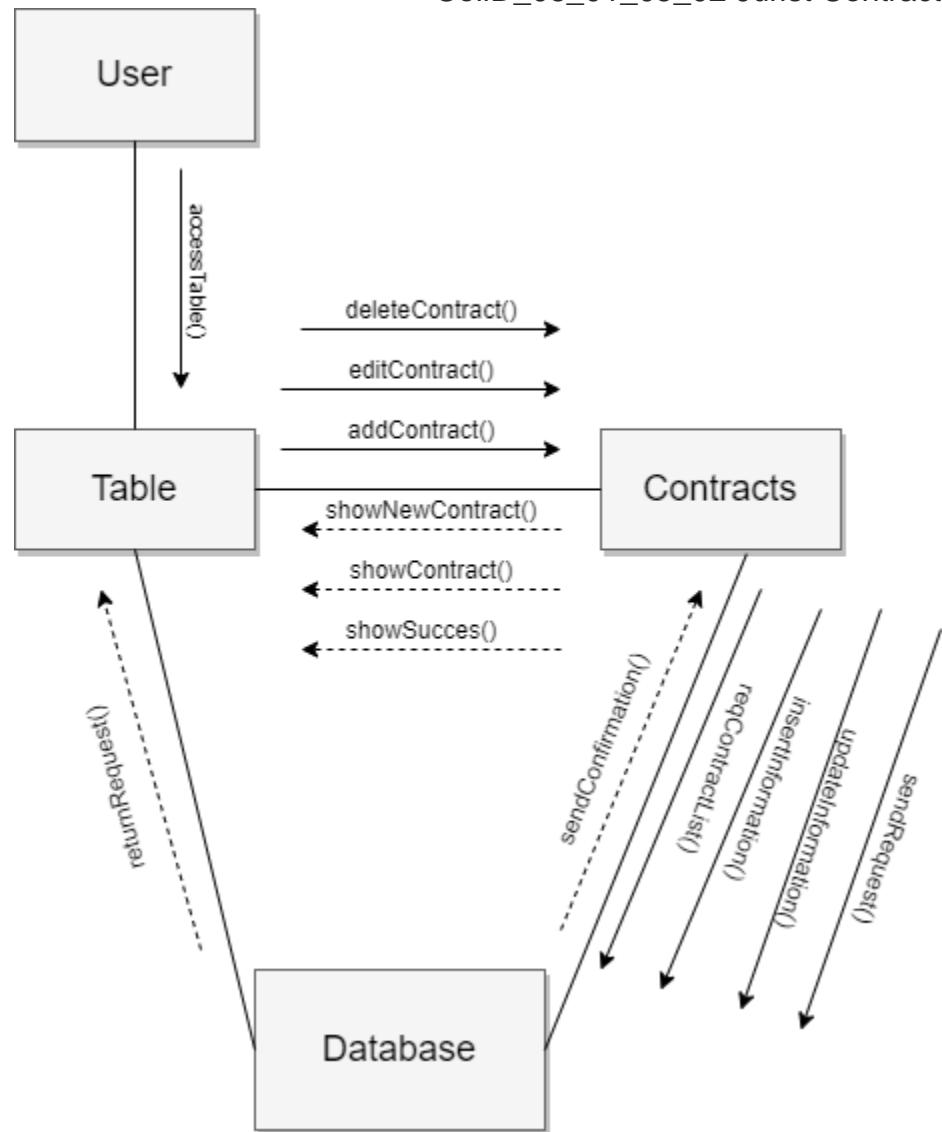
CollD\_04\_02 manager orders

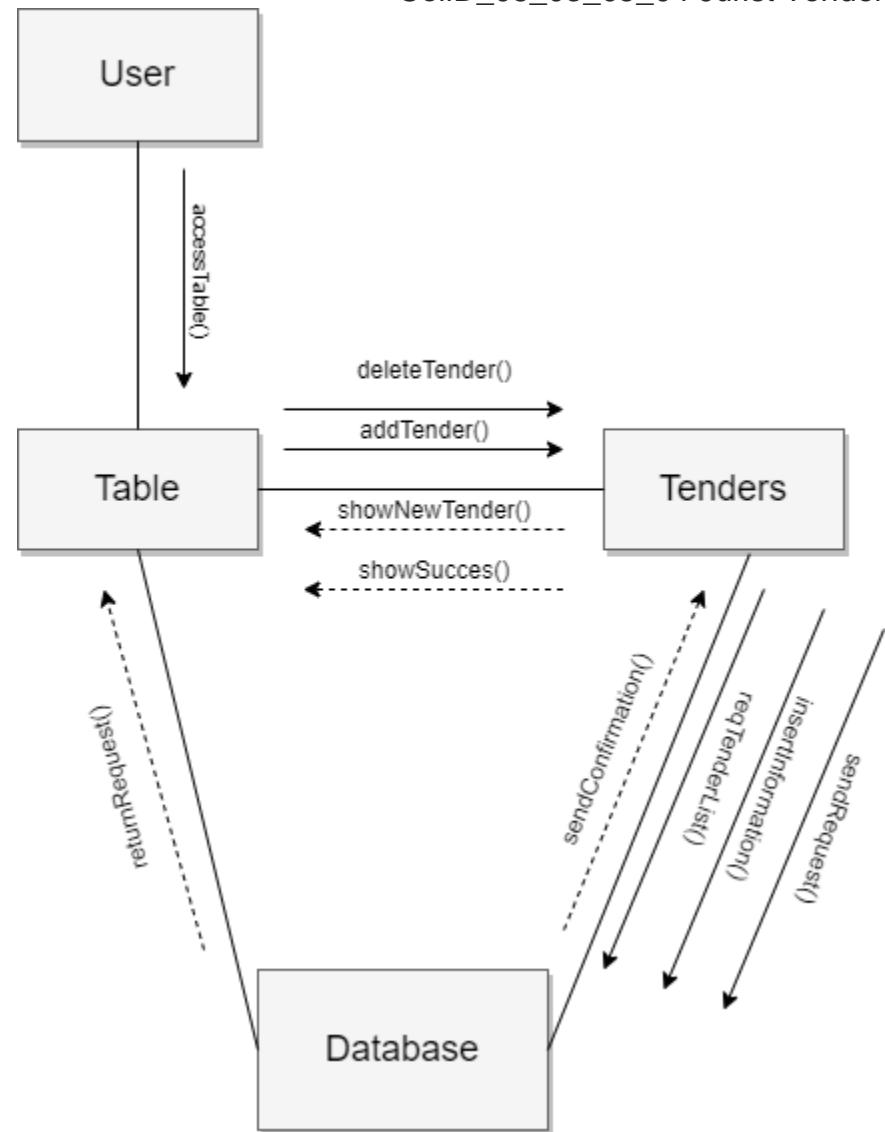


## Construction Company Management System Requirements Specification

CollD\_04\_03 Manager To do List



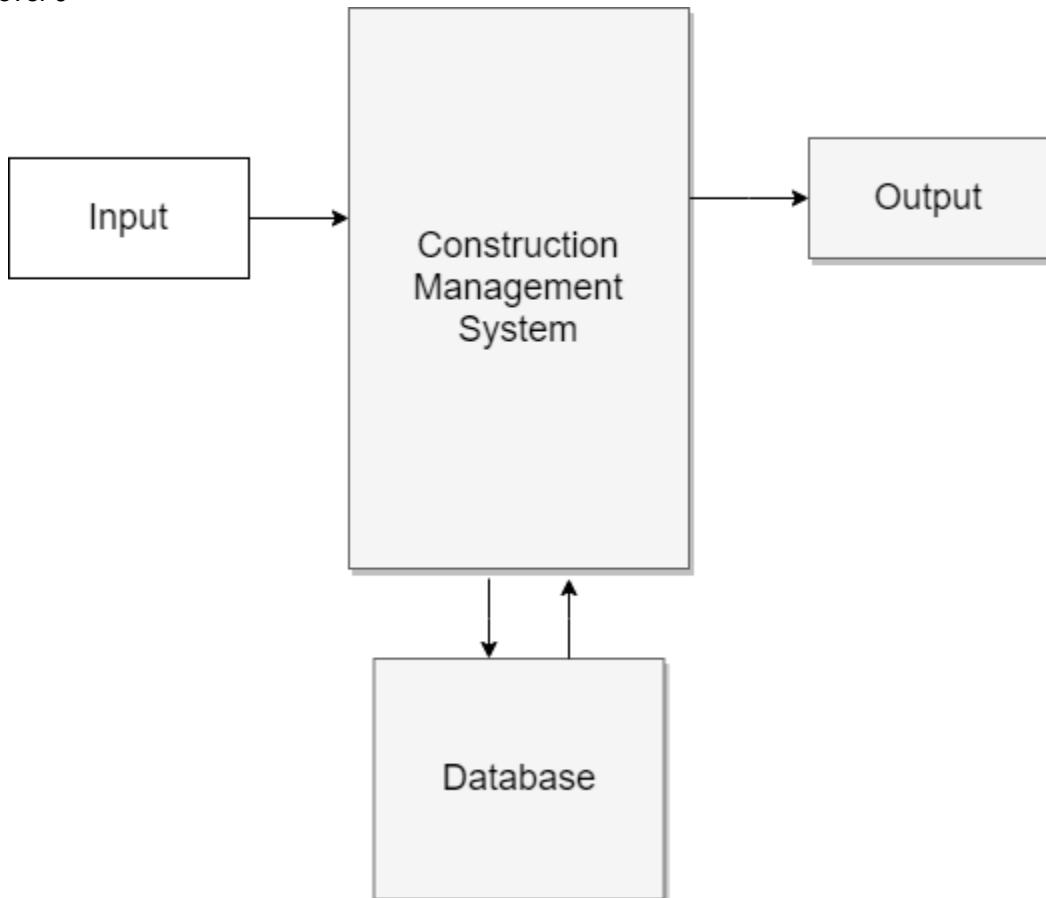




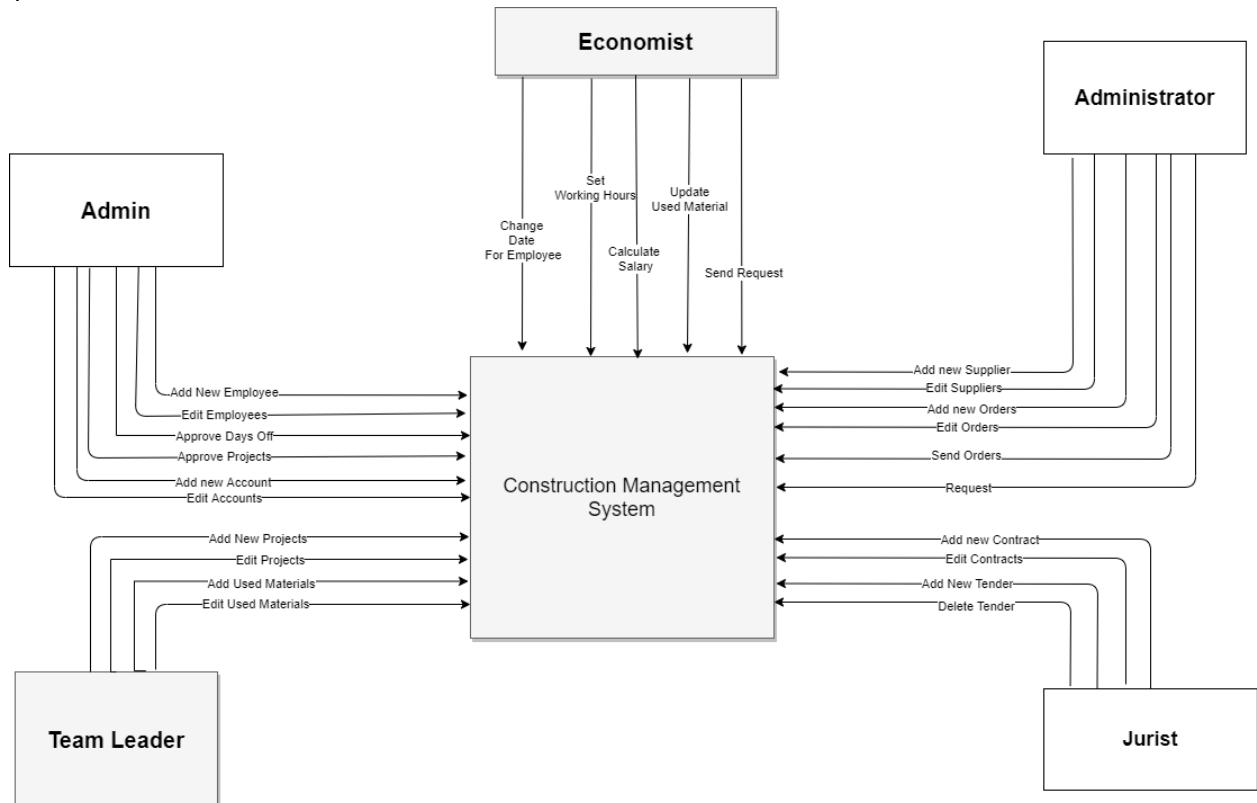
#### 4.8 Data Flow Diagrams

## Construction Company Management System Requirements Specification

DFD :Level 0

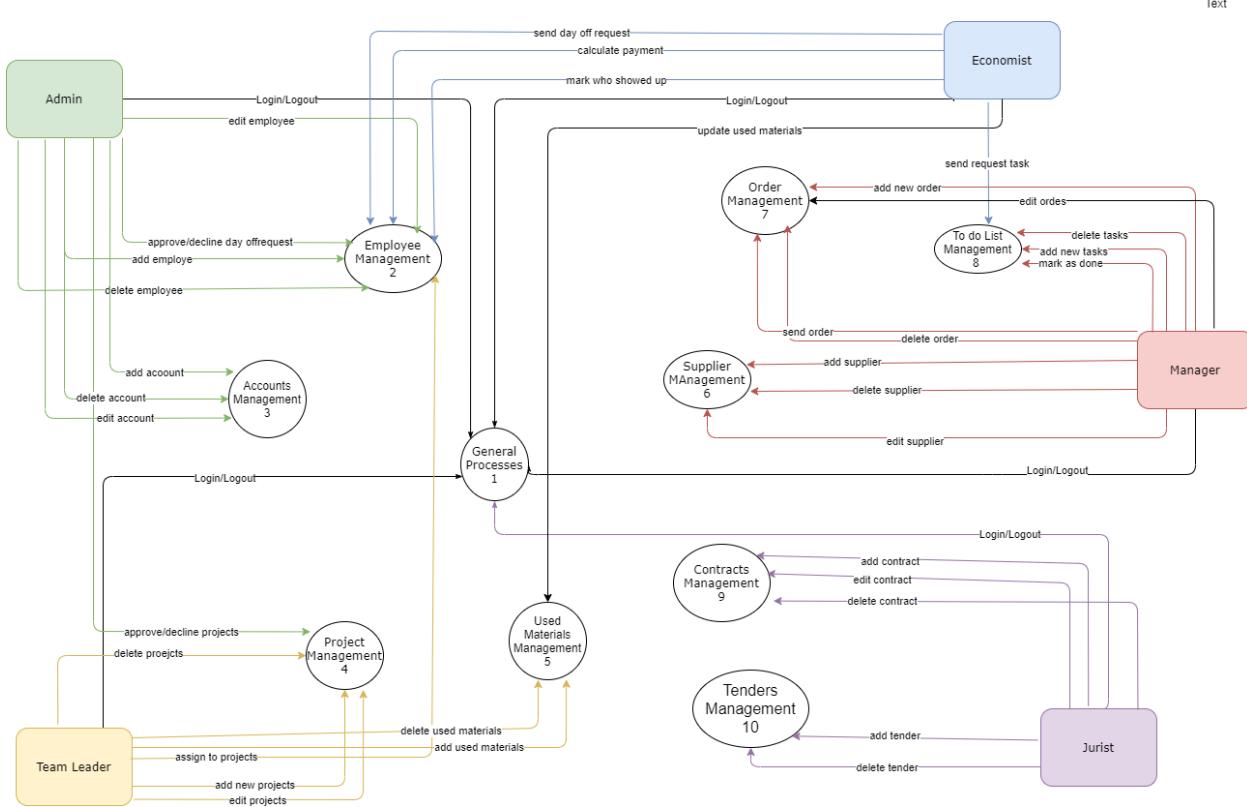


DFD: Level  
1



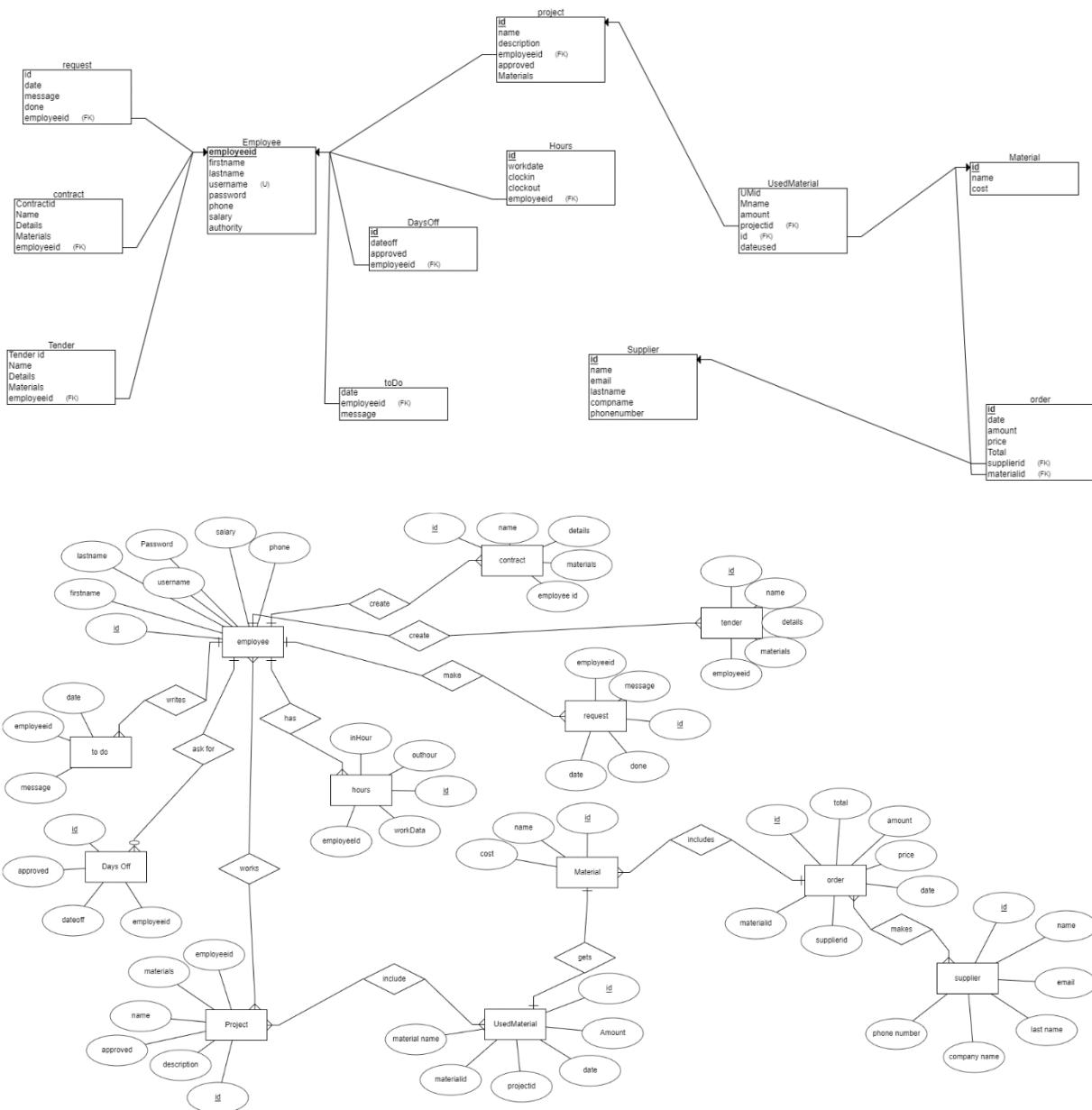
## Construction Company Management System Requirements Specification

### DFD :Level 2



### 4.9 ER Diagrams

# Construction Company Management System Requirements Specification



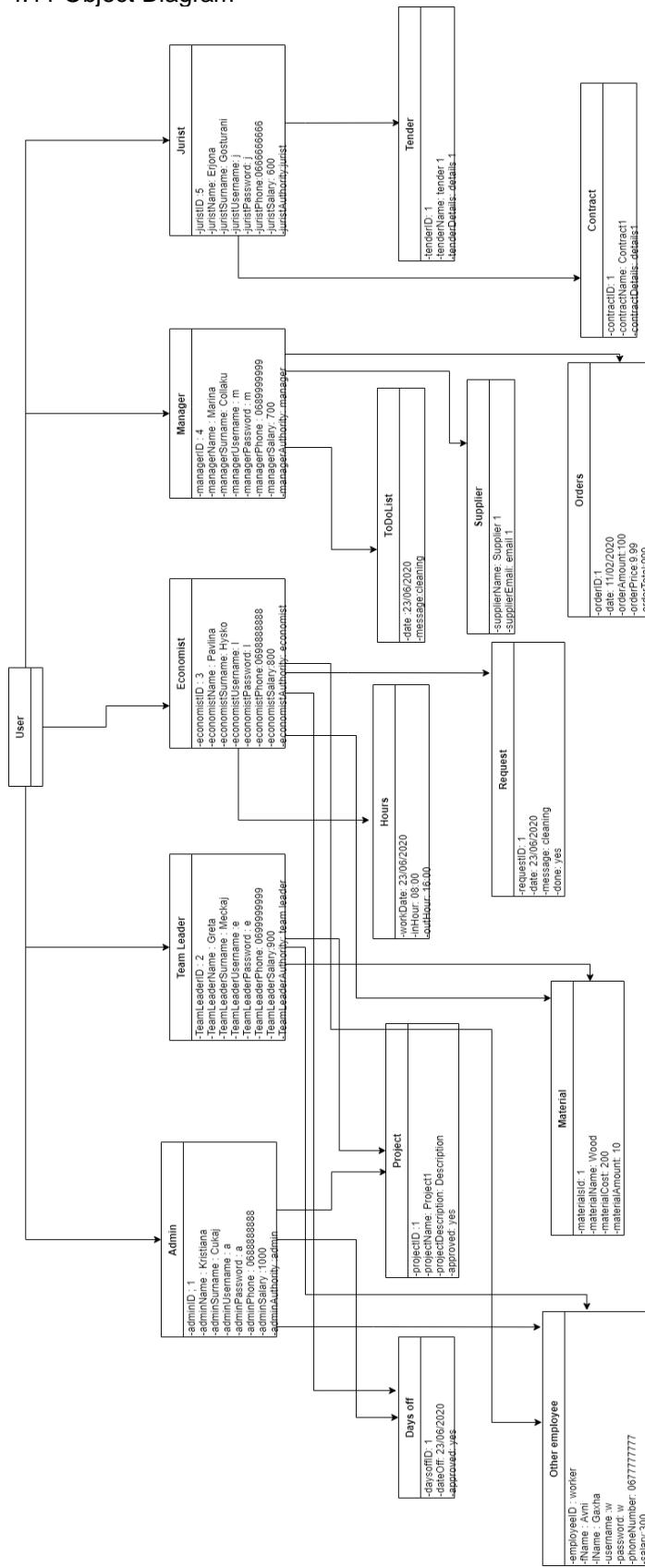
**Construction Company Management System Requirements Specification**

## 4.10 Class Diagram



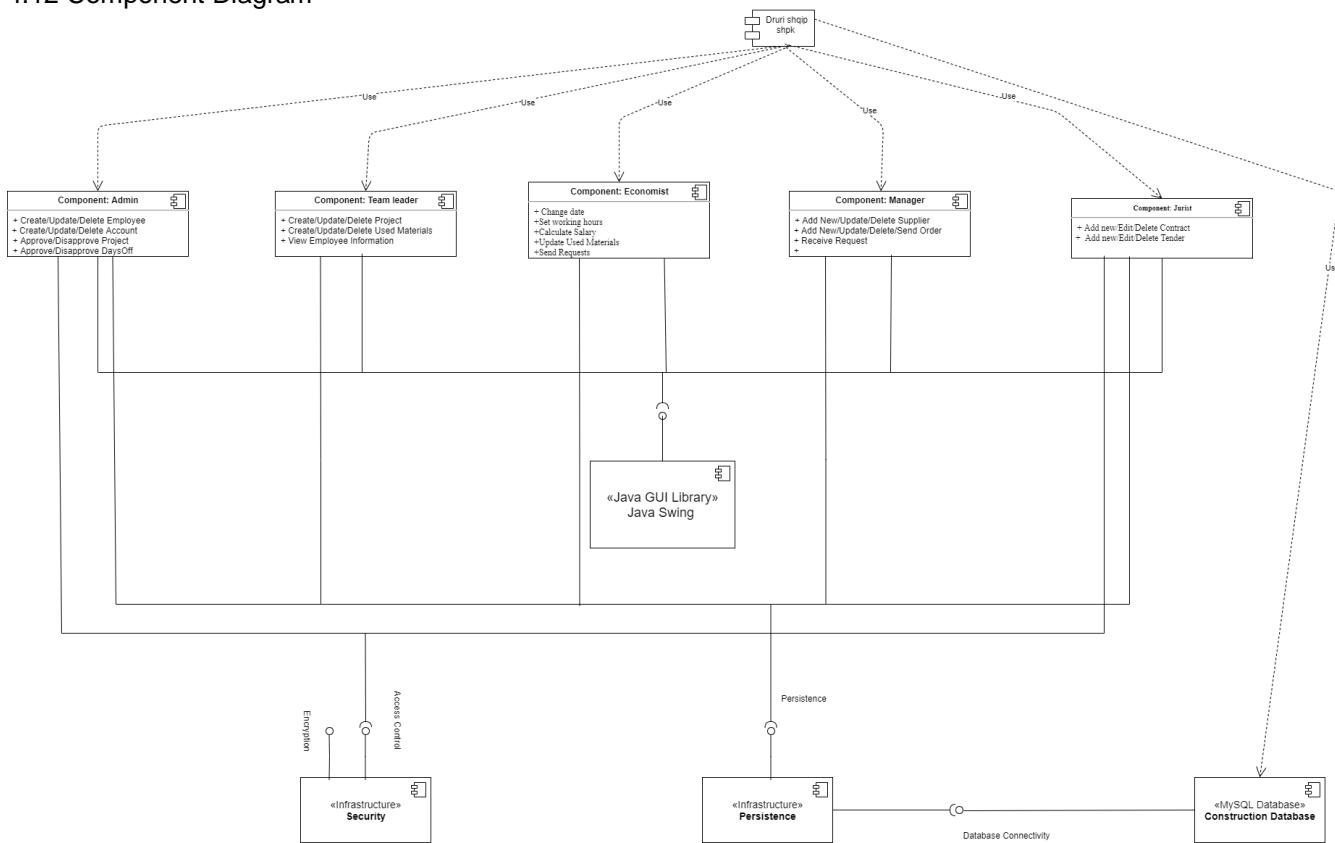
## Construction Company Management System Requirements Specification

### 4.11 Object Diagram



## Construction Company Management System Requirements Specification

### 4.12 Component Diagram



## ***Construction Company Management System Requirements Specification***

### **4.13 Deployment Diagram**

