

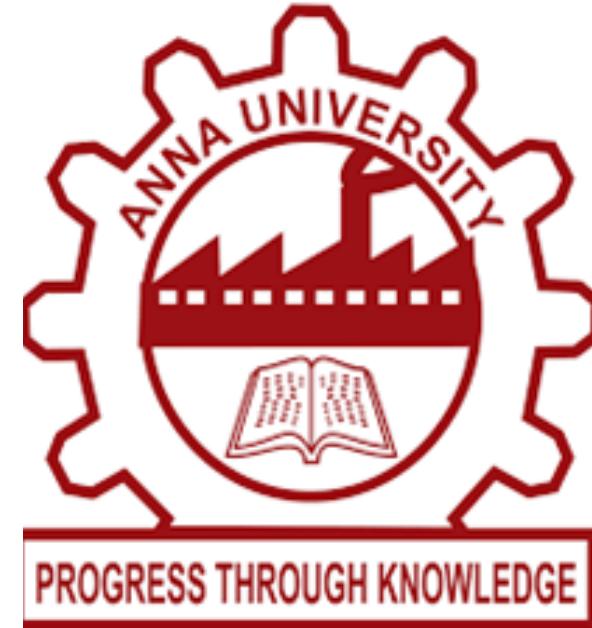


PANIMALAR ENGINEERING COLLEGE

An Autonomous Institution, Affiliated to Anna University, Chennai
A Christian Minority Institution

(JAISAKTHI EDUCATIONAL TRUST)

Approved by All India Council for Technical Education



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

SECURITY-AWARE DYNAMIC SCHEDULING FOR REAL-TIME OPTIMIZATION

TEAM MEMBERS

S HARINIPRIYA	(211419104091)
P MADHUMITHA	(211419104155)
B DHARRMIYA THULASI	(211419104062)

GUIDED BY:
MS.V.SATHIYA

COORDINATOR:
DR. KAVITHA SUBRAMANI M.E,PH.D.,

ABSTRACT

Large number of cloud-based techniques have been used in industrial control systems (ICS), which also brings many security threats. The emergence of security-aware industrial control has paved the way of security-aware scheduling in cloud-based industrial applications. Edge cloud computing paradigm extends the computing ability of traditional cloud model with low-latency local resources. , heterogeneous clouds that consist of both centralized resources and edge resources may be a promising resource model to provide both scalable and low-latency resources for cloud-based industrial applications. A security-aware scheduling method based on distributed particle swarm optimization is presented for resource allocation with security concerns. To deal with the dynamics of edge resources and the mobility of mobile industrial applications, a dynamic scheduling mechanism based on dynamic workflow model is proposed for realtime optimization.

PROBLEM STATEMENT

An increasing number of real-time applications, such as aircraft control and medical electronics systems, require high quality of security to assure confidentiality, authenticity and integrity of information. However, most existing algorithms for scheduling independent tasks in real-time systems do not adequately consider security requirements of real-time tasks. In recognition of this problem we propose a novel dynamic scheduling algorithm with security awareness, which is capable of achieving high quality of security for real-time tasks while improving resource utilization. We have conducted extensive simulation experiments to quantitatively evaluate the performance of our approach. Specifically, experimental results show that compared with three heuristic algorithms, the proposed algorithm can consistently improve overall system performance in terms of quality of security and system guarantee ratio under a wide range of workload characteristics.

LITERATURE SURVEY:

S.NO	YEAR	AUTHOR(S)	PAPER TITLE	DESCRIPTION	MERITS/ DEMERITS
1.	2019	JIACHENG XIE 1,2, XUEWEN WANG1 , ZHAOJIAN YANG1, SHANGQING HAO2	An Integrated Cloud CAE Simulation System for Industrial Service Applications	The cloud-based computer-aided engineering (CAE) technology expands the application scope of CAE, solves the problem of uneven distribution, and improves the efficiency of the simulation resources. In particular, it properly solves the CAE analysis problems of small- and medium-sized machinery and equipment enterprises.	The system: 1) connects the dispatching manager through the network. 2) clusters the servers according to their load and usage. The proposed simulation system serves the needs of users both quickly and efficiently.

S.NO	YEAR	AUTHOR(S)	PAPER TITLE	DESCRIPTION	MERITS/ DEMERITS
2.	2020	K. L. KEUNG , C. K. M. LEE	Cloud-Based Cyber-Physical Robotic Mobile Fulfillment Systems: A Case Study of Collision Avoidance	The rapid development and implementation of the Internet of Things (IoT) and Cyber-Physical Systems (CPS) in the engineering and manufacturing field have embraced a virtual identity to ensure nearly real-time adjustment. Robotic Mobile Fulfillment System (RMFS) is a system controlling mobile robots, mobile storage rack and picking workstations and charging stations infrastructure in the context of robotic-assisted warehouse.	By providing an analysis of cloud services and IoT enhancement, theoretical concepts from the literatures are consolidated to solve the research questions on how RMFS offering better order fulfillment can gain benefits in terms of operational efficiency and system reliability.

S.NO	YEAR	AUTHOR(S)	PAPER TITLE	DESCRIPTION	MERITS/ DEMERITS
3.	2017	SAAD MUBEEN, ALMA DIDIC, KRISTIAN SANDSTRÖM	Delay Mitigation in Offloaded Cloud Controllers in Industrial IoT	This paper investigates the interplay of cloud computing fog computing, and Internet of Things in control applications targeting the automation industry. In this context, a prototype is developed to explore the use of IoT devices that communicate with a cloud-based controller	The experiments are performed while considering arbitrary jitter and delays, i.e., they can be smaller than, equal to, or greater than the sampling period. This paper also applies mitigation mechanisms to deal with the delays and jitter that are caused by the networks when the controller is offloaded to the fog or cloud.

S.NO	YEAR	AUTHOR(S)	PAPER TITLE	DESCRIPTION	MERITS/ DEMERITS
4.	2019	NAIARA MURO JORDI TORRES	Architecture for a Multimodal and Domain Independent Clinical Decision Support System Software Development Kit	The proposed architecture aims to cope with guideline knowledge gaps and pitfalls by harmonizing different modalities of decision support and information sources to provide the most complete, personalized, and up-to-date propositions to manage patients.	This structure allows the tracking, computation, and evaluation of all the decisions made over time based on patient clinical outcomes. Finally, different user-friendly and easy-to-use authoring tools have been implemented.

S.NO	YEAR	AUTHOR(S)	PAPER TITLE	DESCRIPTION	MERITS/ DEMERITS
5.	2019	DUO ZHANG, JIEFANG WANG	Time and Attribute Based Dual Access Control and Data Integrity Verifiable Scheme in Cloud Computing Applications	A hierarchical time tree is introduced in the attribute-based encryption technology. The decryption operation can only be performed if the attribute set of user satisfies the data owner's access policy. In this way, the data is dual controlled with time and attributes to solve the problem of privacy data leakage caused by private key leakage.	This structure allows the tracking, computation, and evaluation of all the decisions made over time based on patient clinical outcomes. Finally, different user-friendly and easy-to-use authoring tools have been implemented.

EXISTING SYSTEM:

When resources are allocated users separately, require more resources. Though a particular number of resources are available there is a need to provide accessibility. Sometimes, when the resources are allocated there is a change in access by unknown users.

Disadvantage:

It easily fall into local optimum in high-dimensional space and has a low convergence rate in the iterative process.

There is a high latency issue.

PROPOSED SYSTEM:

Our algorithms are designed to dynamically schedule tasks with security requirements in a real-time environment. Whenever there is a need for resource allocation, the daily request is provided to an authorized person. After finishing their services, the authority will remove the access control from the members. They provide access control again to them when receiving the request from the users or concerned persons.

Technique:

RSA Algorithm,
SQL technique,
PSO Algorithm

REQUIREMENTS ENGINEERING

GENERAL REQUIREMENT:

These are the requirements for doing the project. Without using these tools and software's we can't do the project. So we have two requirements to do the project. They are

1. Hardware Requirements.
2. Software Requirements.

HARDWARE REQUIREMENTS:

The hardware requirements may serve as the basis for a contract for the implementation of the system and should therefore be a complete and consistent specification of the whole system. They are used by software engineers as the starting point for the system design. It shows what the system does and not how it should be implemented.

PROCESSOR : PENTIUM IV 2.6 GHz, Intel Core 2 Duo.

RAM : 4GB DDR RAM

MONITOR : 15" COLOR

HARD DISK : 40 GB

SOFTWARE REQUIREMENTS:

The software requirements document is the specification of the system. It should include both a definition and a specification of requirements. It is a set of what the system should do rather than how it should do it. The software requirements provide a basis for creating the software requirements specification. It is useful in estimating cost, planning team activities, performing tasks and tracking the team's and tracking the team's progress throughout the development activity.

Front End	: J2EE (JSP, SERVLETS) JAVASCRIPT
Back End	: MY SQL 5.5
Operating System	: Windows 07
IDE	: Eclipse

MODULES

1 Login

2 Add Details

3 Pickup

4 Delivery

5 Report upload

6 View

MODULE DESCRIPTION

01

LOGIN:

This module gives the way to enter into main page after login with valid input such as username or email id and password.

02

ADD DETAILS:

This module gives the way to client enter the details in form. Fill the TO address.

03

PICKUP:

This module picker up collect the client, client parcels.

MODULE DESCRIPTION

04

DELIVERY:

This module use to delivery client parcel in send address.

05

REPORT UPLOAD:

Branch manager upload the daily branch report to head office.

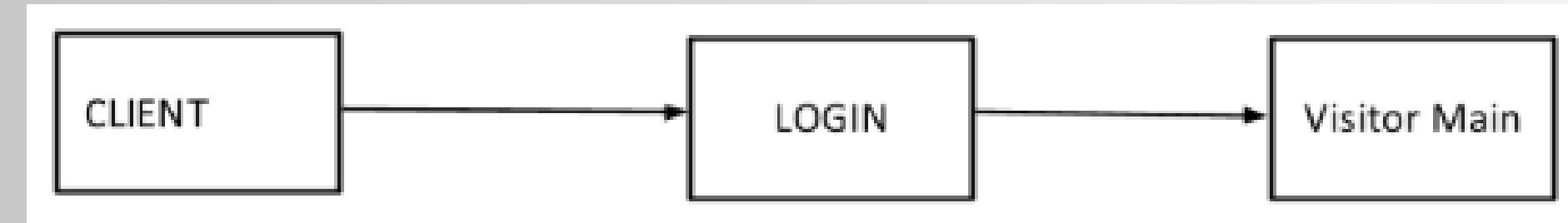
06

VIEW:

This module to help us head officer view the daily branch report. Head office view the branch manager.

MODULE DIAGRAM

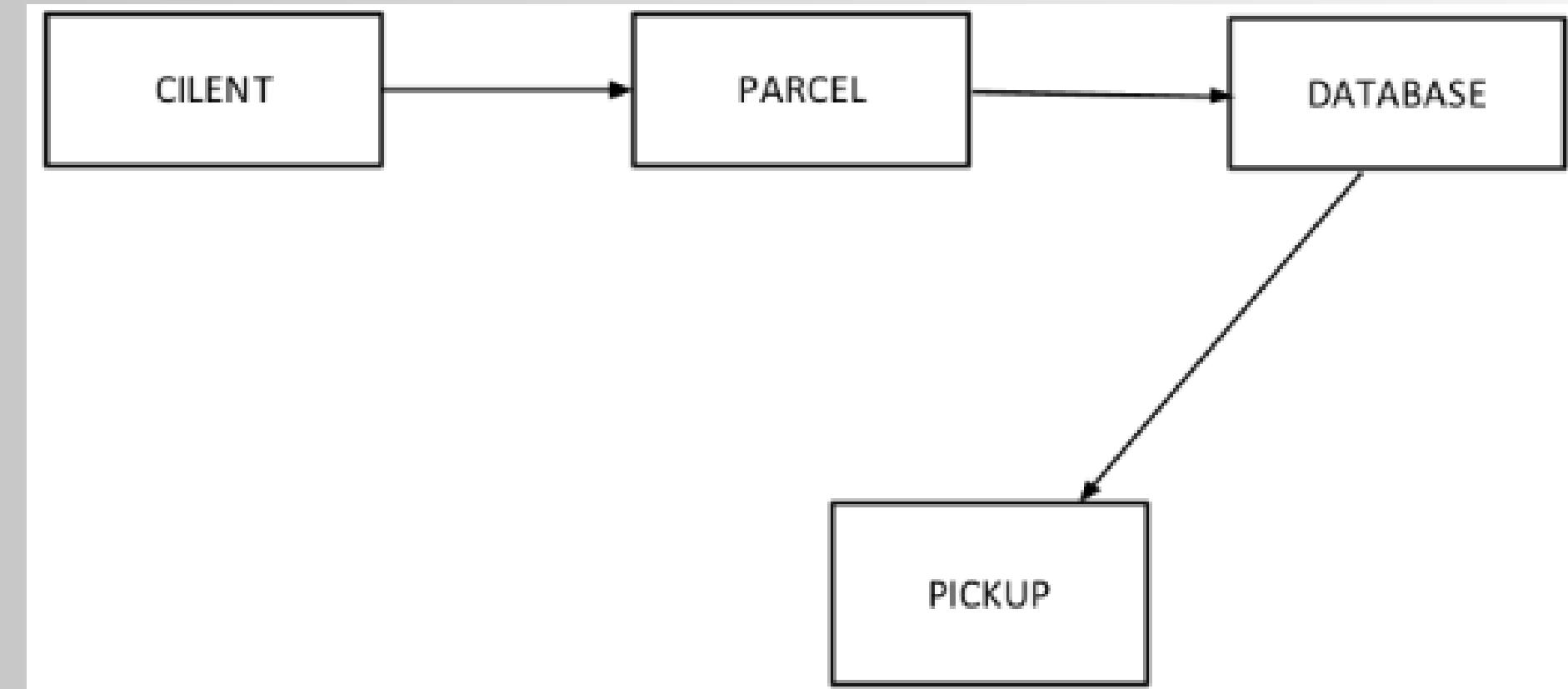
LOGIN



ADD DETAILS



PICK UP



MODULE DIAGRAM

DELIVERY



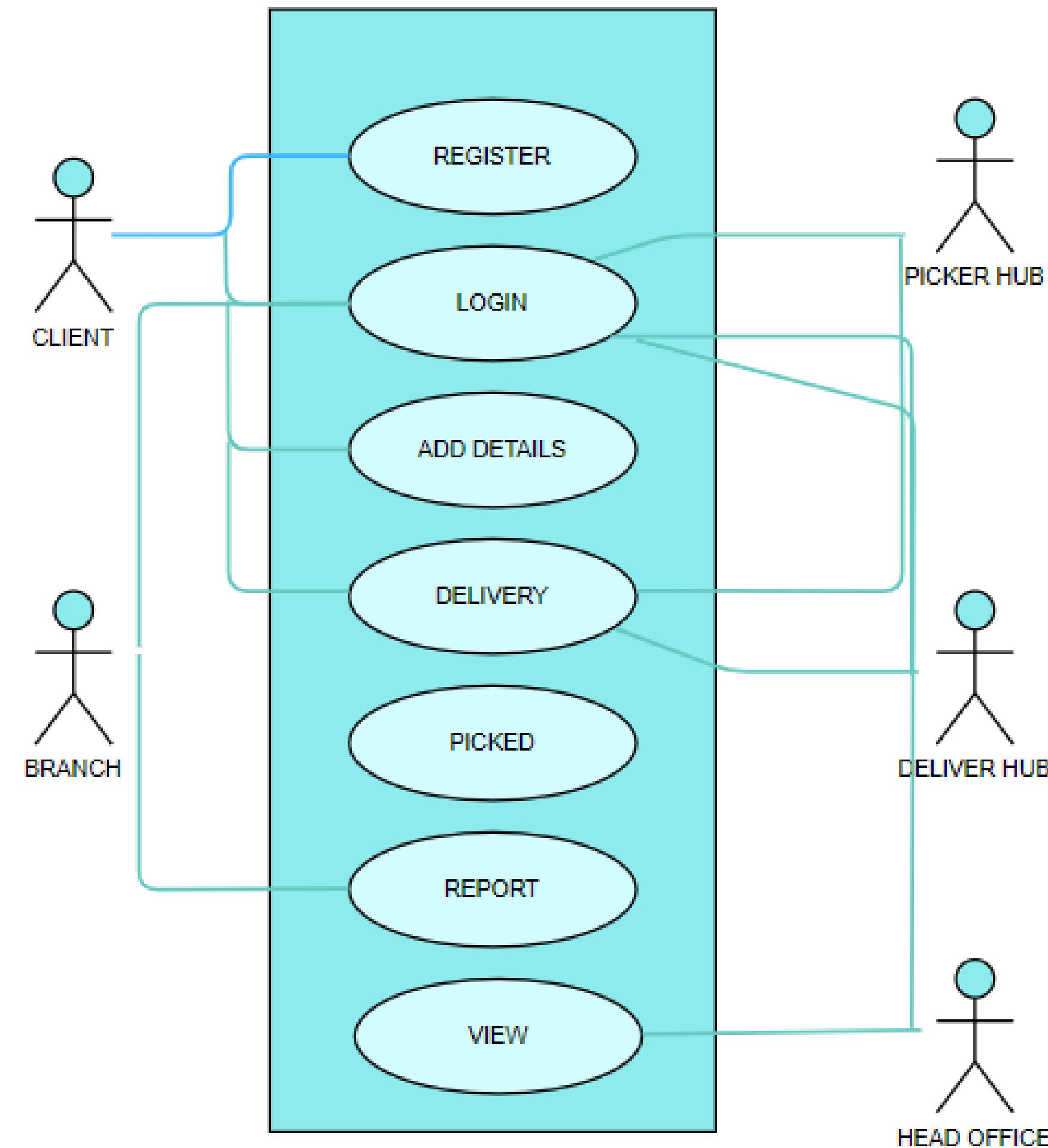
REPORT UPLOAD



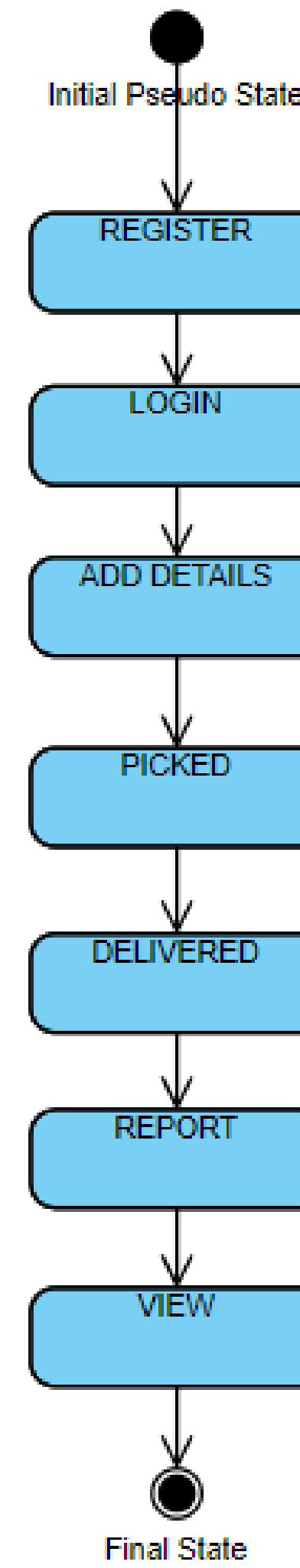
VIEW



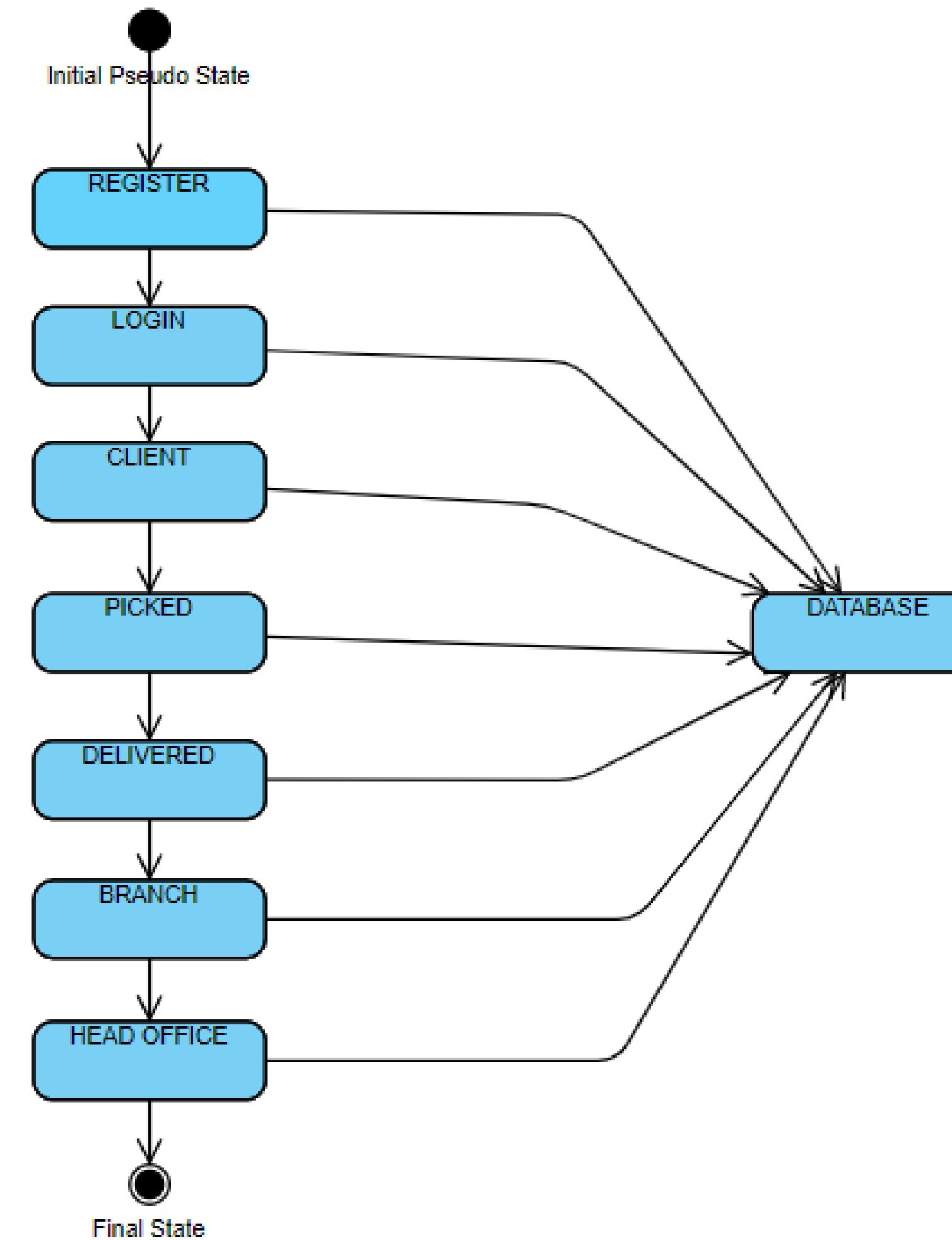
USE CASE DIAGRAM:



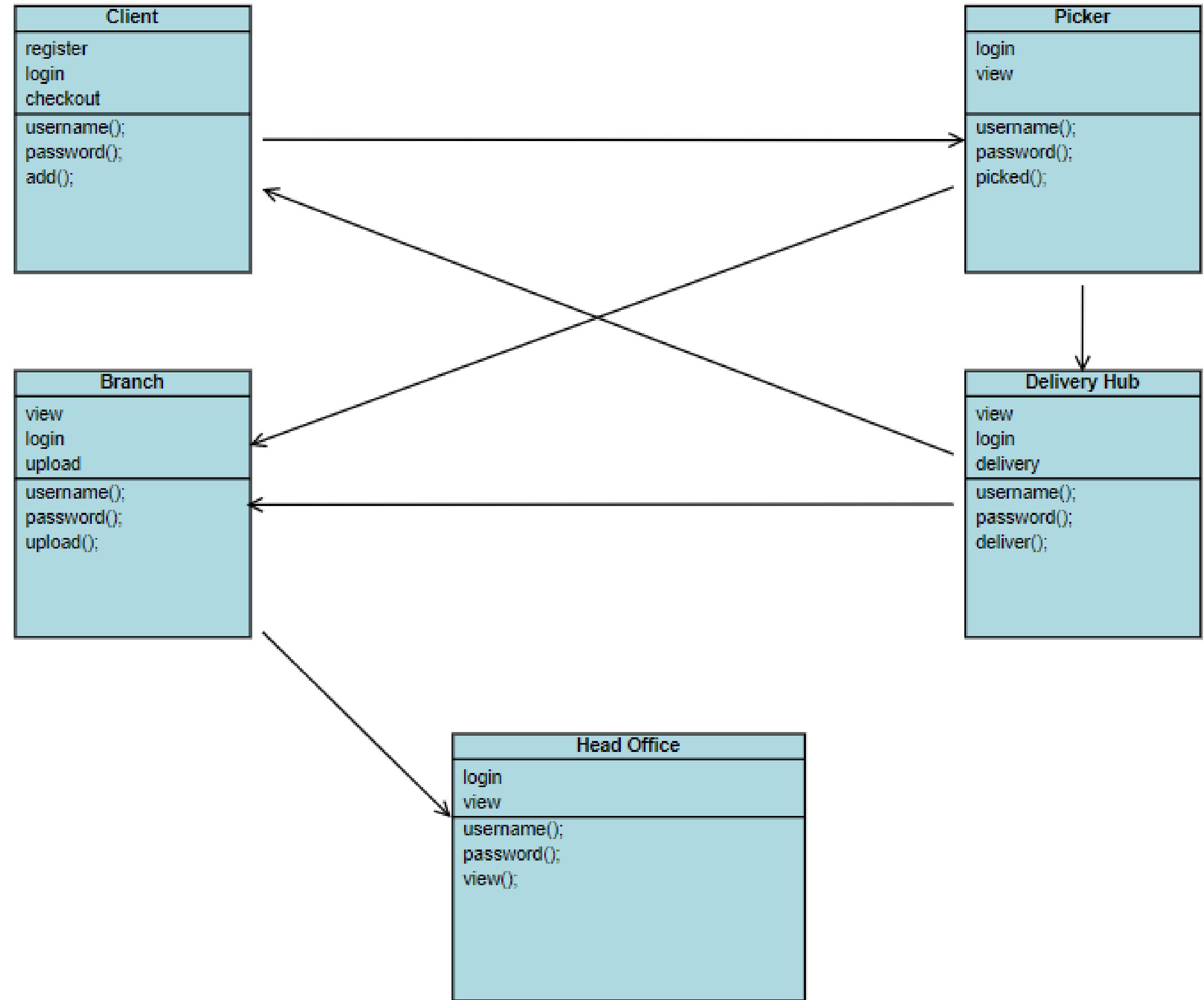
STATE DIAGRAM:



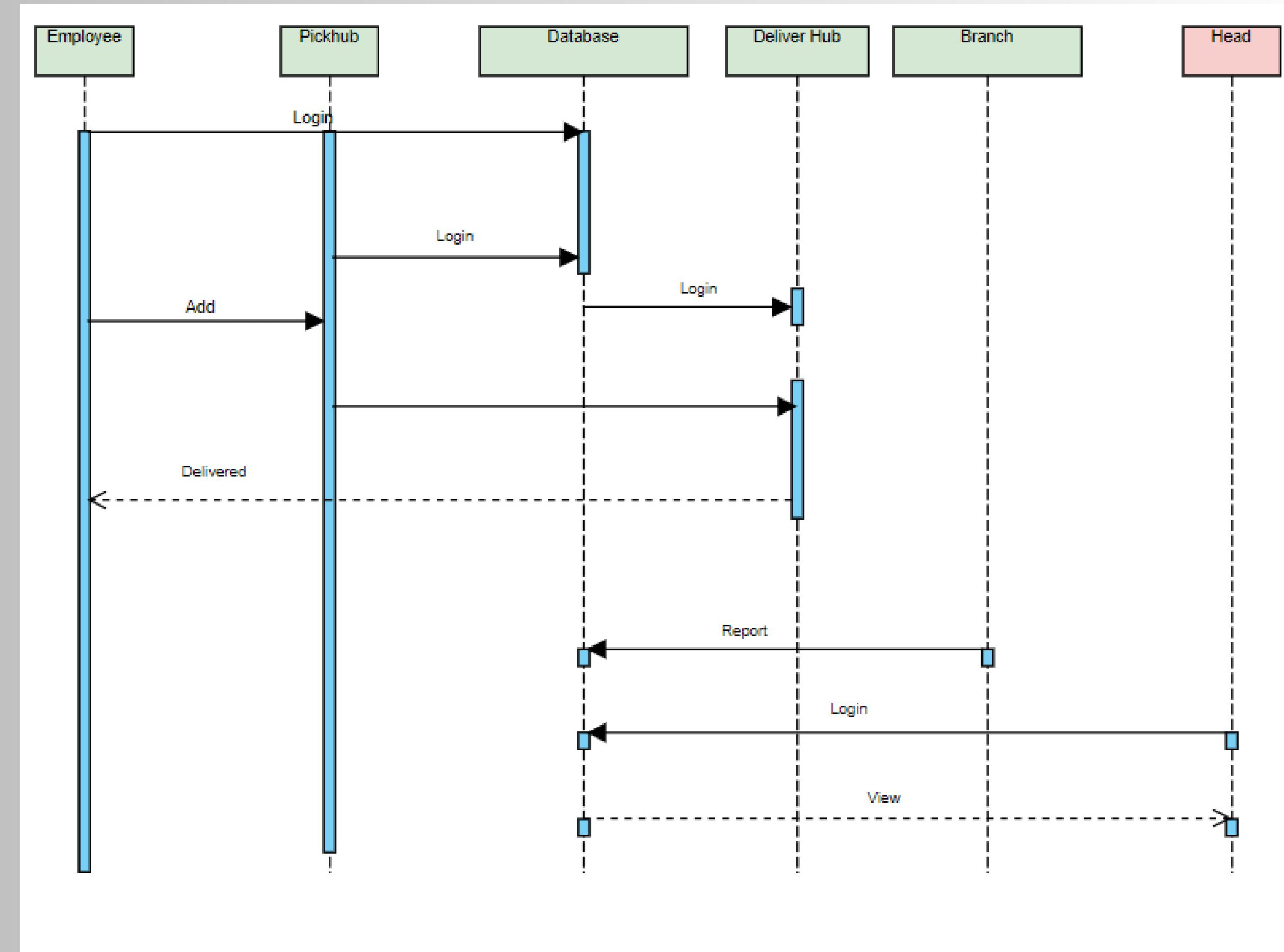
ACTIVITY DIAGRAM:



CLASS DIAGRAM:

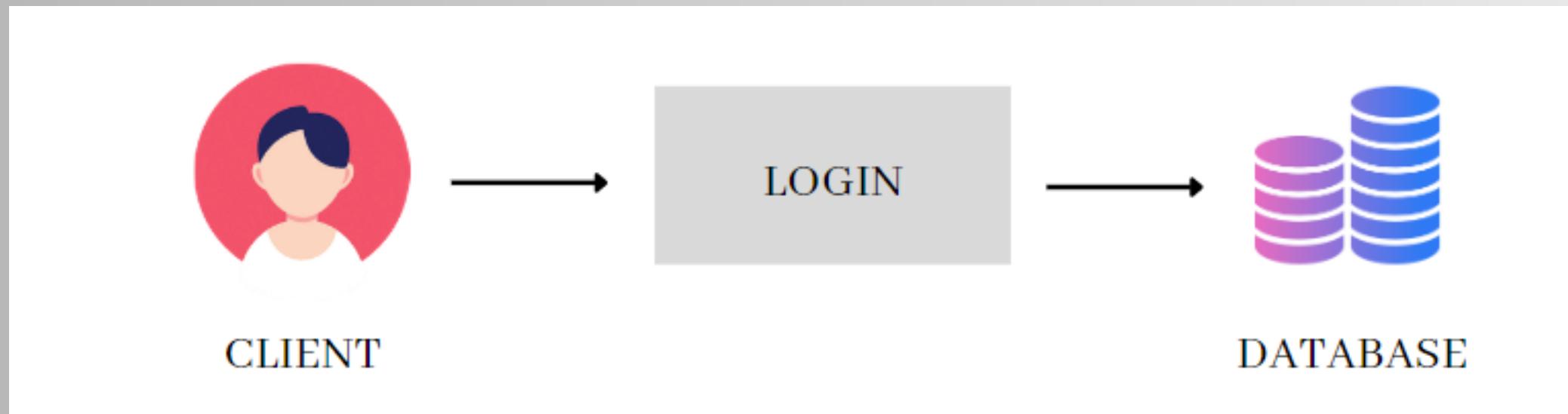


SEQUENCE DIAGRAM:



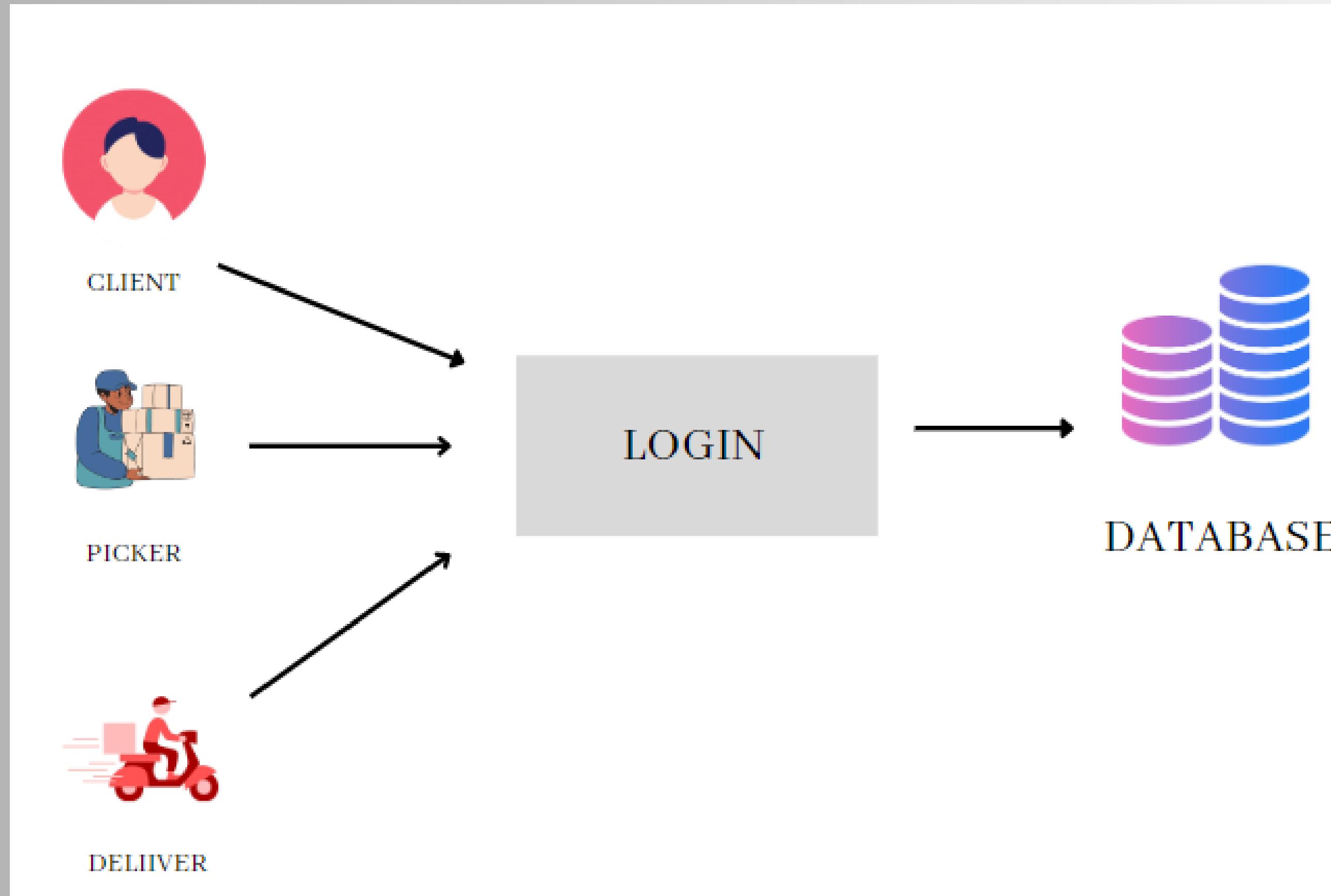
DATA FLOW DIAGRAM

LEVEL 0:



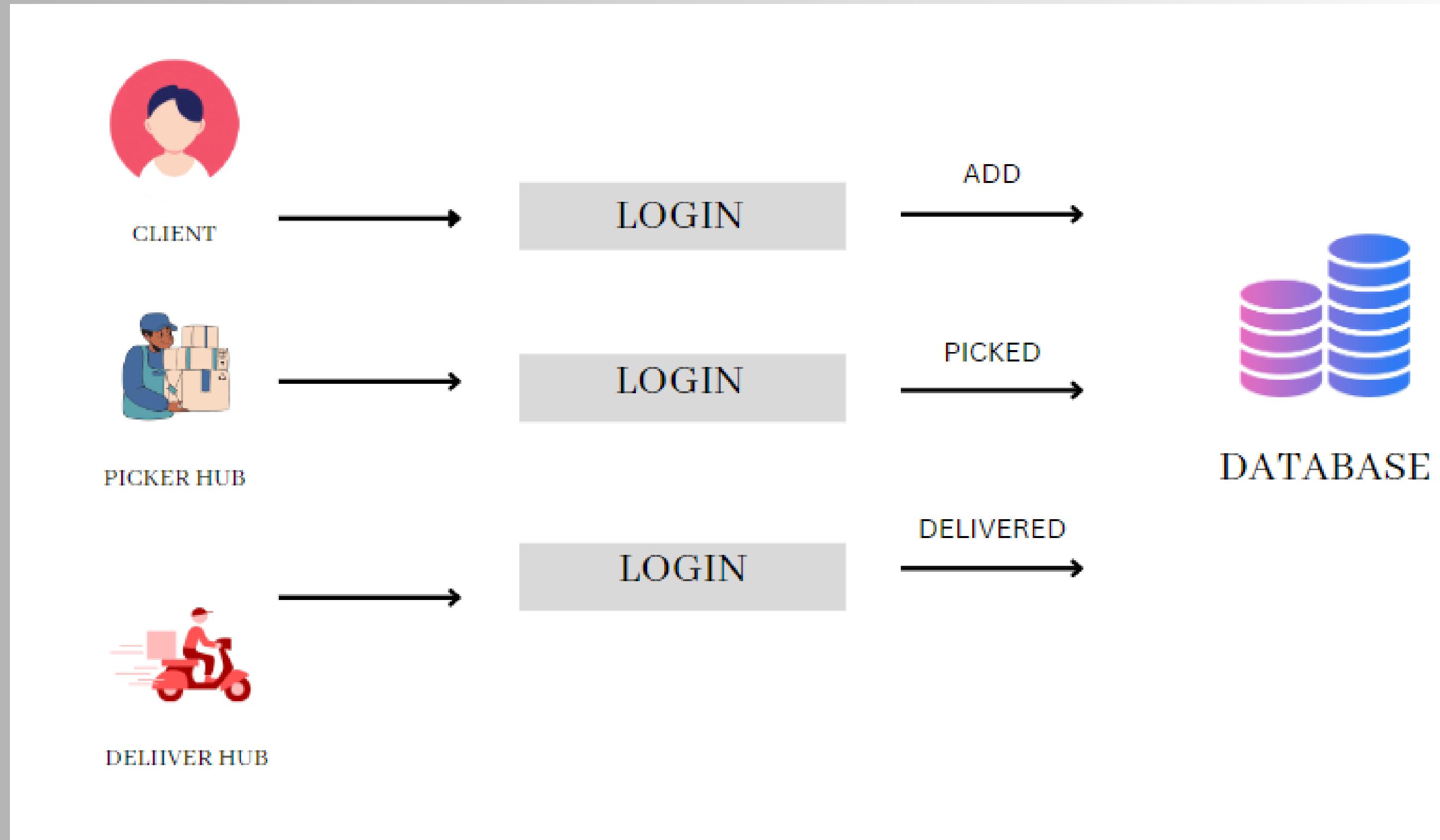
DATA FLOW DIAGRAM

LEVEL 1:

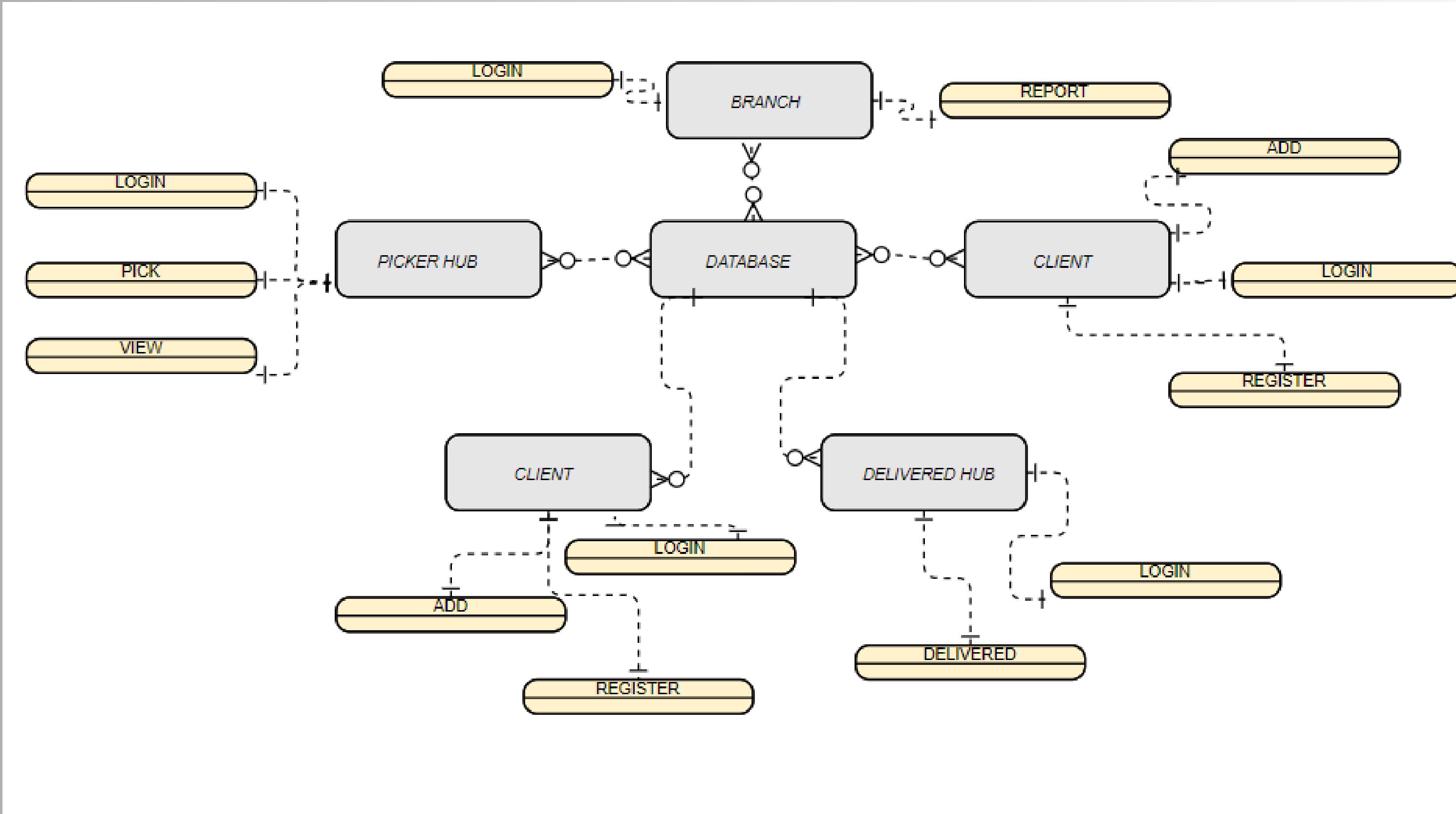


DATA FLOW DIAGRAM

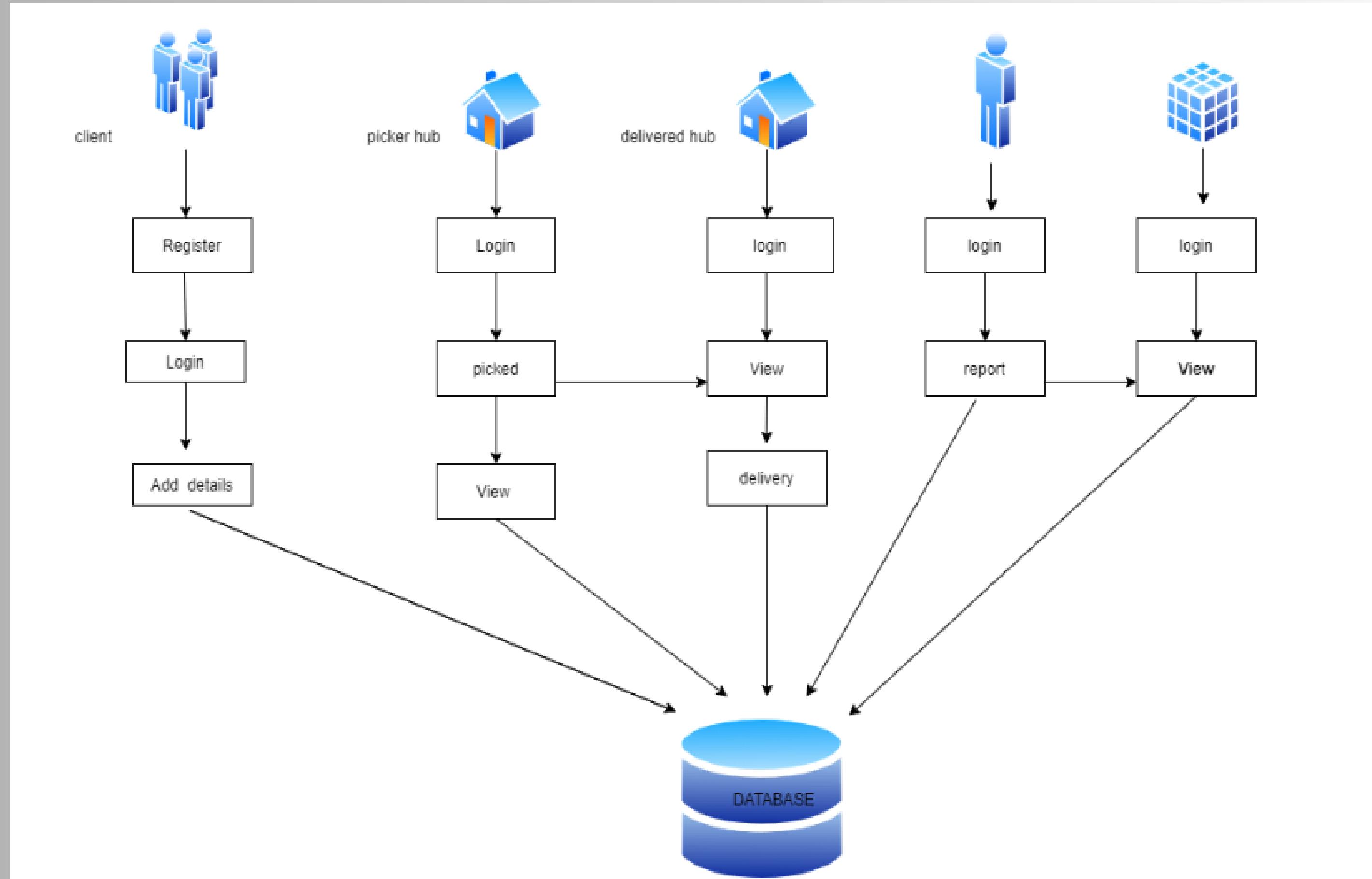
LEVEL 2:



ER DIAGRAM DIAGRAM



SYSTEM ARCHITECTURE



SCREEN SHOTS

The screenshot shows the AWS CloudShell interface in the ap-northeast-1 region. The MySQL command-line client is running. It first attempts to show tables without selecting a database, resulting in an error. Then it selects the 'transport' database and lists its tables. Finally, it runs a query on the 'clientreg' table.

```
+-----+  
6 rows in set (0.00 sec)  
  
MySQL [(none)]> show tables;  
ERROR 1046 (3D000): No database selected  
MySQL [(none)]> use transport  
Reading table information for completion of table and column names  
You can turn off this feature to get a quicker startup with -A  
  
Database changed  
MySQL [transport]> show tables;  
+-----+  
| Tables_in_transport |  
+-----+  
| clientform          |  
| clientreg           |  
| delihub              |  
| delivery             |  
| feedback             |  
| pickerrege          |  
| upload               |  
+-----+  
7 rows in set (0.00 sec)  
  
MySQL [transport]> select*from clientreg;  
+-----+-----+-----+-----+  
| name   | email        | pass    | cpass   |  
+-----+-----+-----+-----+  
| abcdef | abcdef@gmail.com | 12345  | 12345  |  
| alpha  | alpha@gmail.com  | 12345  | 12345  |  
| harani2 | harini2@gmail.com | 123   | 123   |  
| hp     | hp@gmail.com    | hp     | hp     |  
| lakshmi | lakshmi@gmail.com | lakshmi | lakshmi |  
| md     | md@gmail.com    | md     | md     |  
| Naveen  | naveen@gmail.com  | 123   | 123   |  
| Rahman  | rahman@gmail.com | 123   | 123   |  
| Thor    | thor@gmail.com   | 123   | 1523  |  
| Vijay  | vijay@gmail.com  | 123   | 123   |  
+-----+-----+-----+-----+  
10 rows in set (0.00 sec)  
  
MySQL [transport]>
```

SCREEN SHOTS

MySQL Query Browser - Connection: admin@database-2.ccnongy4d7cq.ap-northeast-1.rds.amazonaws.com:3306

File Edit View Query Script Tools Window Help

Transaction | Explain | Compare | SELECT | FROM | WHERE | GROUP | HAVING | ORDER | SET | CREATE

Resultset 1

SQL Query Area

```
• 1 SELECT * FROM transport.clientform c;
```

Schema Browser

Schemata Bookmarks History

- information_schema
- innodb
- mysql
- performance_schema
- sys
- transport
 - clientform
 - clientreg
 - delihub
 - delivery
 - name
 - taddress
 - pass
 - cpass
 - feedback
 - name
 - feedback
 - pickerrege

Syntax Functions Params Trx

- Data Definition Statements
- Data Manipulation Statements
- MySQL Utility Statements
- MySQL Transactional and Locking ...
- Database Administration Statements
- Replication Statements
- SQL Syntax for Prepared Statements

	id	name	email	cnumber
▶	9	abcdef	abcdef@gmail.com	909090909
	10	baskar	alpha@gmail.com	909090909
	11	Naveen	naveen@gmail.com	996655887
	12	Vijay	vijay@gmail.com	996655887
	13	Rahman	rahman@gmail.com	999887744
	14	admin	vijay@gmail.com	564
	15	mouli	vijay@gmail.com	65435
	16	Hp	hp@gmail.com	123456789
	17	Hp	hp@gmail.com	123456789

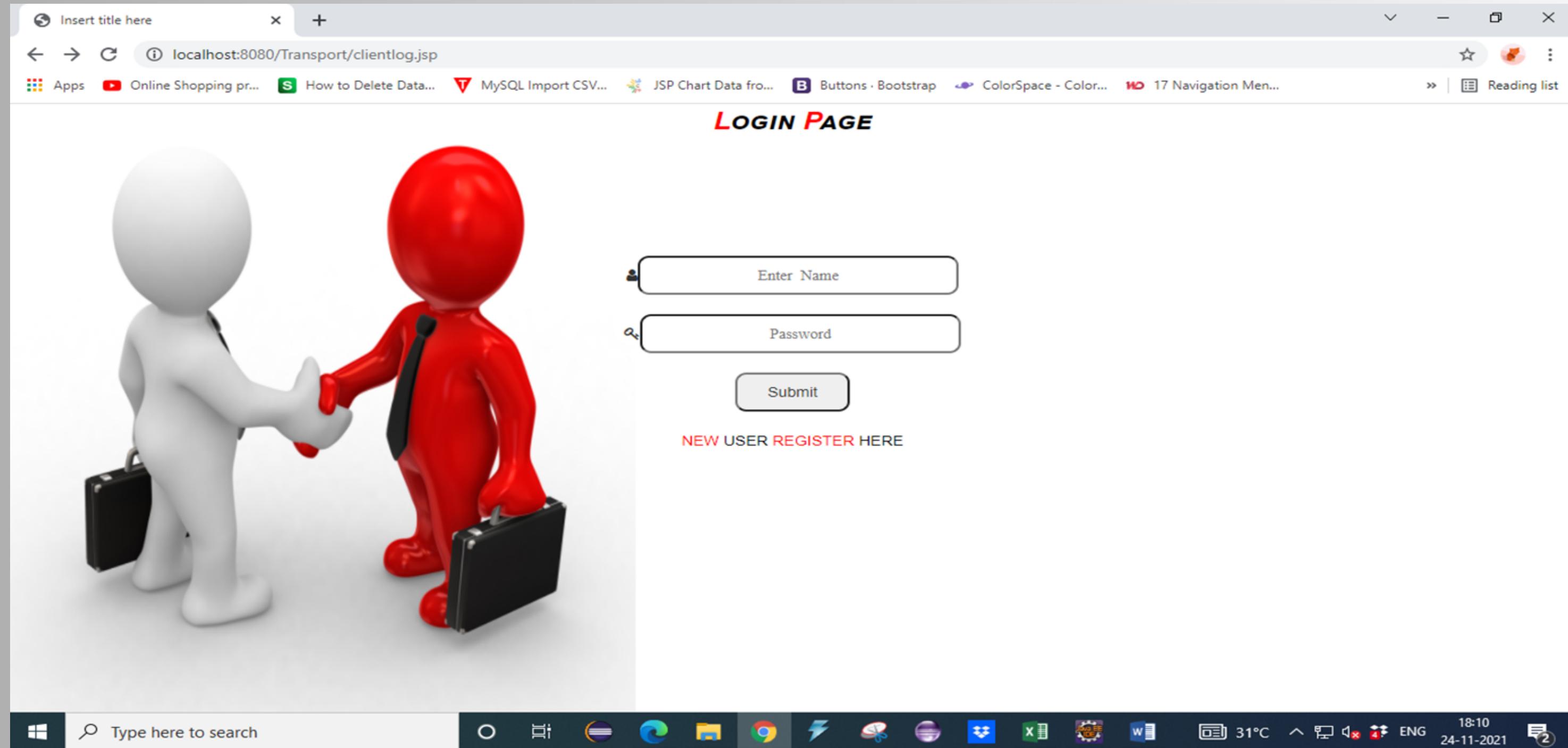
9 rows fetched in 0.0135s (0.2690s)

Edit Apply Changes Discard Changes First Last Search

SCREEN SHOTS

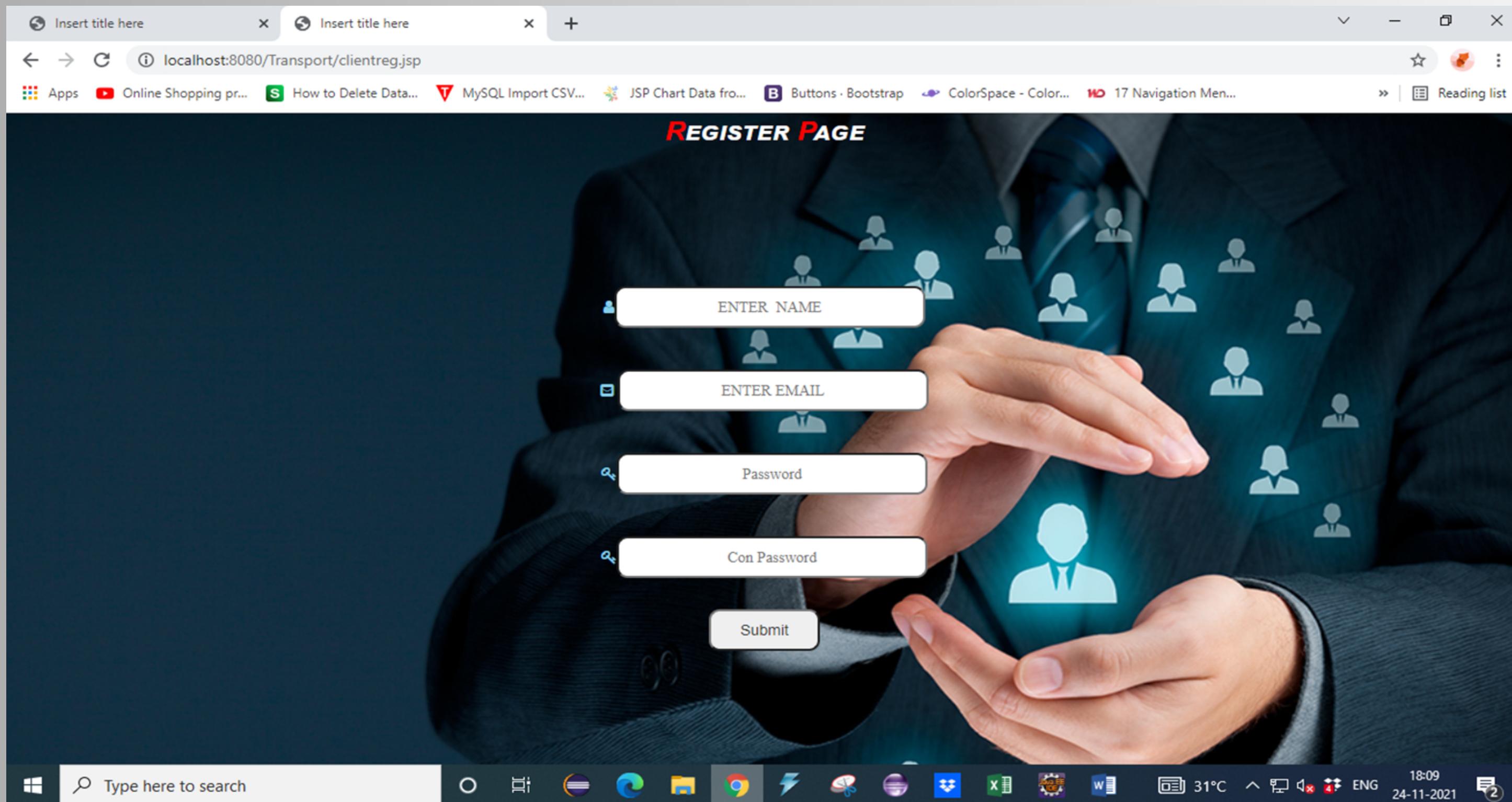


SCREEN SHOTS



The screenshot shows a web browser window displaying a login page. The title bar reads "Insert title here" and the address bar shows "localhost:8080/Transport/clientlog.jsp". The page itself is titled "LOGIN PAGE" in red capital letters. On the left side, there is a large graphic of two 3D stick figures, one white and one red, shaking hands. Both figures are wearing black ties and carrying black briefcases. To the right of the graphic are two input fields: "Enter Name" with a user icon and "Password" with a lock icon. Below these fields is a "Submit" button. At the bottom of the page, there is a link "NEW USER REGISTER HERE". The browser's taskbar at the bottom includes icons for various applications like File Explorer, Edge, Google Chrome, and Excel, along with system status indicators for battery level, temperature (31°C), and date/time (24-11-2021 18:10).

SCREEN SHOTS



FUTURE ENHANCEMENTS

- Implementing a genuine data set framework.
- Improving the productivity of conventions, as far as number of messages traded and concerning their sizes.
- Implement using two or more algorithms .

CONCLUSION

We have proposed for constant provisioning in cloud-based modern applications. It pointed toward getting a streamlined execution cost progressively with the thought of client characterized security arrangement constraints. In this cycle picker hub receives the client parcel and delivery hub delivers according to the given address. It is checked by branch supervisor. The datas are stored in cloud safely. Report will be encoded first utilizing AES Algorithm. Which in turn can be accessed by the Head by decoding.

REFERENCE

- [1] S. Zhang, X. Li, Z. Tan, T. Peng, and G. Wang, “A caching and spatial K-anonymity driven privacy enhancement scheme in continuous location based services,” *Future Gener. Comput. Syst.*, vol. 94, pp. 40–50, 2019.
- [2] Q. S. Hua et al., “Faster parallel core maintenance algorithms in dynamic graphs,” *IEEE Trans. Parallel Distrib. Syst.*, vol. 31, no. 6, pp. 1287–1300, Jun. 2020.
- [3] A. Jolfaei, X.-W. Wu, and V. Muthukkumarasamy, “On the security of permutation-only image encryption schemes,” *IEEE Trans. Inf. Forensics Secur.*, vol. 11, no. 2, pp. 235–246, Feb. 2016.
- [4] W. Gong, L. Qi, and Y. Xu, “Privacy-aware multidimensional mobile service quality prediction and recommendation in distributed fog environment,” *Wireless Commun. Mobile Comput.*, vol. 2018, 2018, Art. no. 3075849.
- [5] S. Zhang, G. Wang, M. Z. A. Bhuiyan, and Q. Liu, “A dual privacy preserving scheme in continuous location-based services,” *IEEE Internet Things J.*, vol. 5, no. 5, pp. 4191–4200, Oct. 2018.
- [6] X. Xu, X. Zhang, H. Gao, Y. Xue, L. Qi, and W. Dou, “BeCome: Blockchain-enabled computation offloading for IoT in mobile edge computing,” *IEEE Trans. Ind. Informat.*, vol. 16, no. 6, pp. 4187–4195, Jun. 2019.