

## ONLINE TRANSACTION FRAUD DETECTION

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### ABSTRACT

In this transaction fraud detection project, we aim to develop a system that can accurately identify and prevent fraudulent transactions. The project will involve the use of machine learning algorithms, rule-based systems, and verification and authentication techniques to analyze transaction data and identify fraudulent activity. The project will involve a review of the literature on fraud detection techniques, machine learning algorithms, and related studies. The project will also include the collection and preprocessing of transaction data, the development and testing of machine learning algorithms and rule-based systems.

### I. INTRODUCTION

Transaction fraud detection refers to the process of identifying and preventing fraudulent transactions. Fraudulent transactions can occur in various industries, including banking, insurance, and e-commerce. Fraudulent transactions can result in significant financial losses, reputational damage, and legal consequences for businesses and individuals. The increasing use of digital transactions has led to a rise in transaction fraud, making it more important than ever to have effective fraud detection systems in place. Transaction fraud can occur in different ways, such as identity theft, credit card fraud, and money laundering. Fraudsters are constantly developing new techniques to evade detection, making it essential to have a robust fraud detection system that can keep up with these evolving threats. Transaction fraud detection involves the use of various techniques and methods to identify fraudulent transactions. These techniques may include machine learning algorithms, rule-based systems, and verification and authentication techniques. Machine learning algorithms can learn from transaction data to identify patterns and trends that indicate fraudulent activity. Rule-based systems use predefined rules to identify fraudulent transactions based on specific characteristics. Verification and authentication techniques, such as two-factor authentication and biometric authentication, can confirm the identity of the user or entity involved in the transaction and reduce the likelihood of fraudulent activity. In this project, we will develop a transaction fraud detection system that uses machine learning algorithms, rule-based systems, and verification and authentication techniques to identify fraudulent transactions. The system will analyze transaction data in real-time and alert users of any suspicious transactions. The goal of this project is to develop a system that can accurately and efficiently detect fraudulent transactions, reducing the financial and reputational damage caused by transaction fraud. Transaction fraud detection refers to the process of identifying and preventing fraudulent transactions. Fraudulent transactions can occur in various industries, including banking, insurance, and e-commerce. Fraudulent transactions can result in significant financial losses, reputational damage, and legal consequences for businesses and individuals.

### II. METHODOLOGY

It is essential that any programmer must thoroughly know the language he or she uses when designing and analyzing. The programmer would have to analyze the program and then know the problem he needs to solve. He would then perform the process of coding while applying the process of design which he presented previously. Finally, he or she would have to test the program in order to ascertain compatibility with customer requirements. The process we have mentioned, including Analysis, Design, Coding and Testing, identifies the project's Software Development Life Cycle (SDLC) as any project would have to go through all these processes using the appropriate methodology. Otherwise, chaos would ensue. We shall use the Interactive and incremental development methodology in order to develop a prototype system. This process is characterized with flexibility and revision whenever necessary in all phases. The process would begin with an initial plan and conclude with interaction among the various phases and components. As to designing the processes used in describing and interactions in this project, we shall be using the UML (Unified Modeling Language)

### III. MODELING AND ANALYSIS

#### SYSTEM SPECIFICATION:

Software Requirements

Web Browser: IE 8.0 or Mozilla 3.0.8 or Above.OS: Windows 07 and above

Software : Eclipse , XAMP, Apache Tomcat 7.0Language : Java, J2EE (JSP and Servlet)

Front End : CSS, HTML, JAVASCRIPT, Java 1.8

Back End: MySQL

Server : Apache Tomcat 7.0

Hardware Requirements

Processor : Pentium IV or above (Minimum) RAM: 128 MB (Minimum) 256 MB or AboveHDD: 20 GB or Above  
Internet connectivity with good speed

### IV. RESULTS AND DISCUSSION

This chapter describes the system design of OSP and the topics in this chapter areER-Diagram ,Use case diagrams, class diagram, sequence diagrams, activity diagram of User, activity diagram of Admin, DFD and data base design.

#### FEASIBILITY STUDY

A feasibility study is an evaluation of a proposal designed to determine the difficulty in carrying out a designated task. Generally, a feasibility study precedestechnical development and project implementation.

##### 1. TECHNOLOGY AND SYSTEM FEASIBILITY:

The assessment is based on an outline design of system requirements in terms of Input, Processes, Output, Fields, Programs, and Procedures. This can be quantified in terms of volumes of data, trends, frequency of updating, etc. in order to estimate whether the new system will perform adequately or not. Technological feasibility is carried out basically to determine whether the company has the capability in terms of software, hardware, personnel and expertise to handle the completion of the project. HCL fulfilled all the above requirements for the efficient working of application.

##### 2. ECONOMIC FEASIBILITY:

Economic analysis is the most frequently used method for evaluating the effectiveness of a new system. More commonly known as cost/benefit analysis, the procedure is to determine the benefits and savings that are expected from a candidate system and compare them with costs. If benefits outweigh costs, then the decision is made to design and implement the system. An entrepreneur must accurately weigh the cost versus benefits before taking an action.

##### 3. COST BASED STUDY:

It is important to identify cost and benefit factors. Cost and benefits can be categorized into the following categories. Basically it is an analysis of the costs to be incurred in the system and benefits derivable out of the system. In a broad sense the costs can be divided into two types 1. Development costs

2.Operating costs.

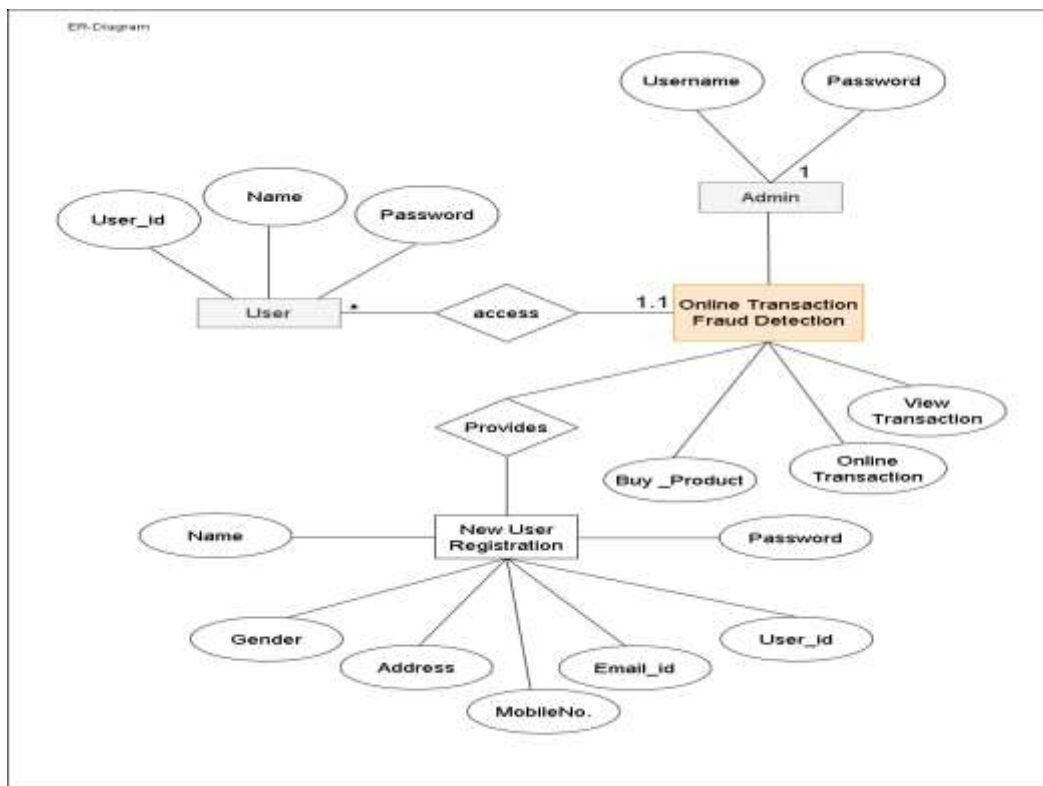
##### 4. TIME BASED STUDY:

Contrast to the traditional system management it can generate any information of data just by single click and it saves user time .No extra time is being provided to deliver application.

##### 5. OPERATIONAL FEASIBILITY:

It is a measure of how well a proposed system solves the problems, and takes advantages of the opportunities identified during scope definition and how it satisfies the requirements identified in the requirements analysis phase of system development. This project provide interactive interface to generate report as per the requirements and also user can update the information efficiently. Most of the staff in NIC is computer literate hence the user would be able to use the system. Further NIC also have trained manpower who can keep the .

**ER-Diagram:**



**Use Case Diagram:**

A use case diagram is a dynamic or behavior diagram in UML. Use case diagrams model the functionality of a system using actors and use cases. Use cases are a set of actions, services and functions that the system needs to perform.

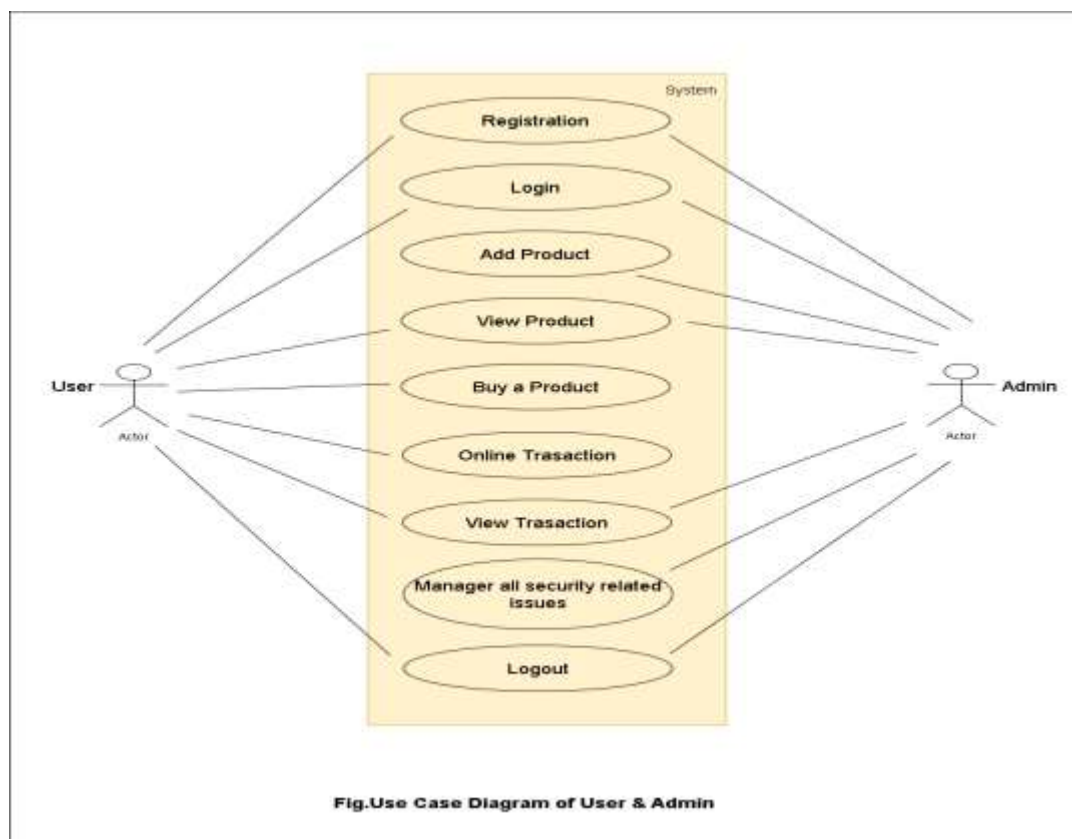
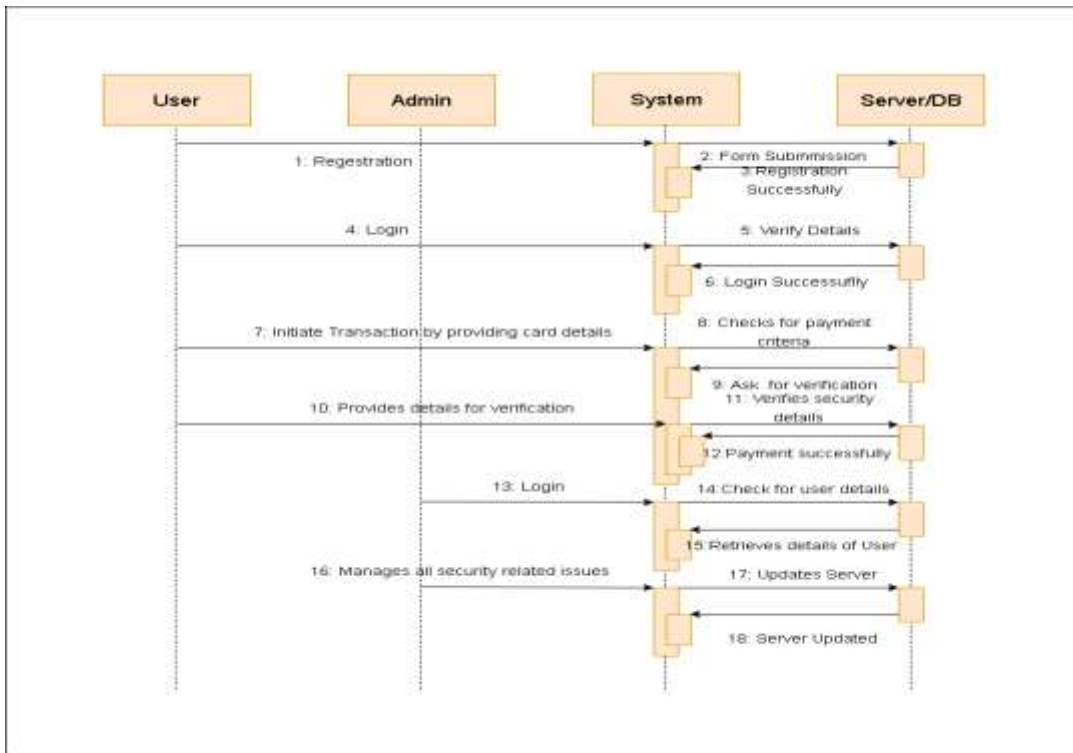
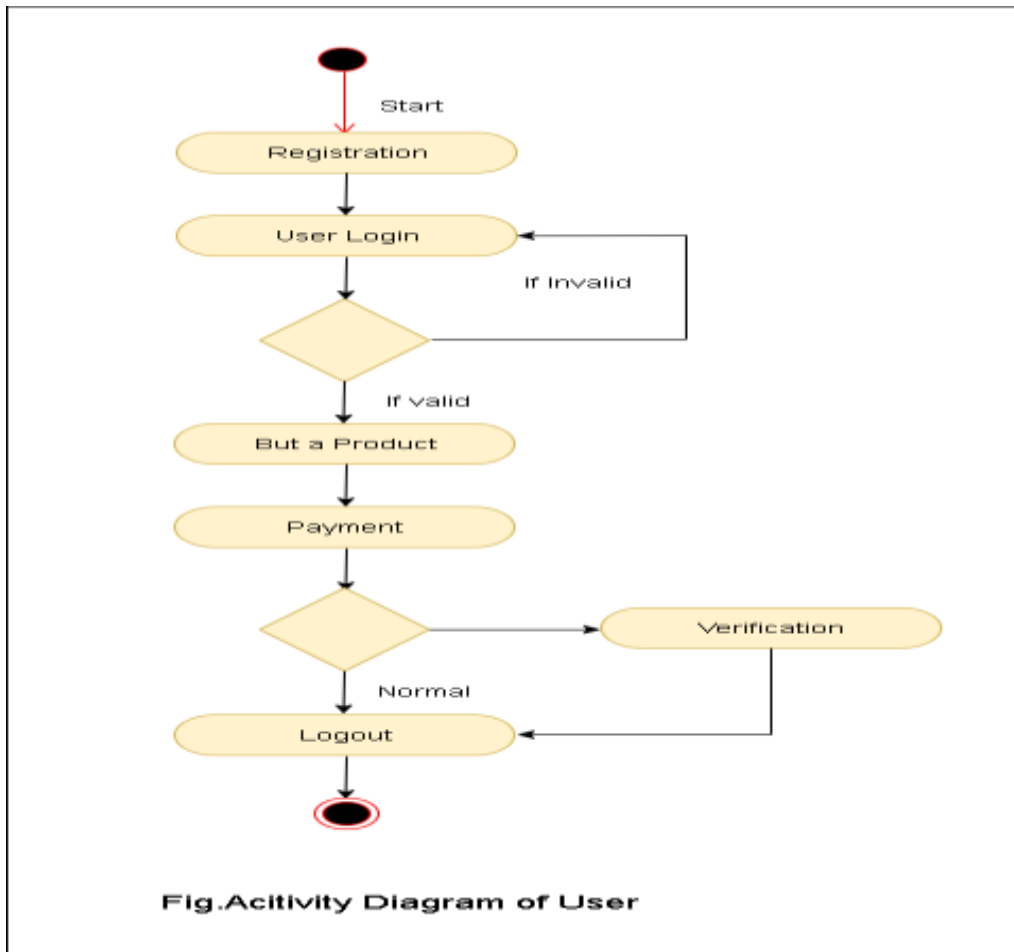


Fig. Use Case Diagram of User & Admin

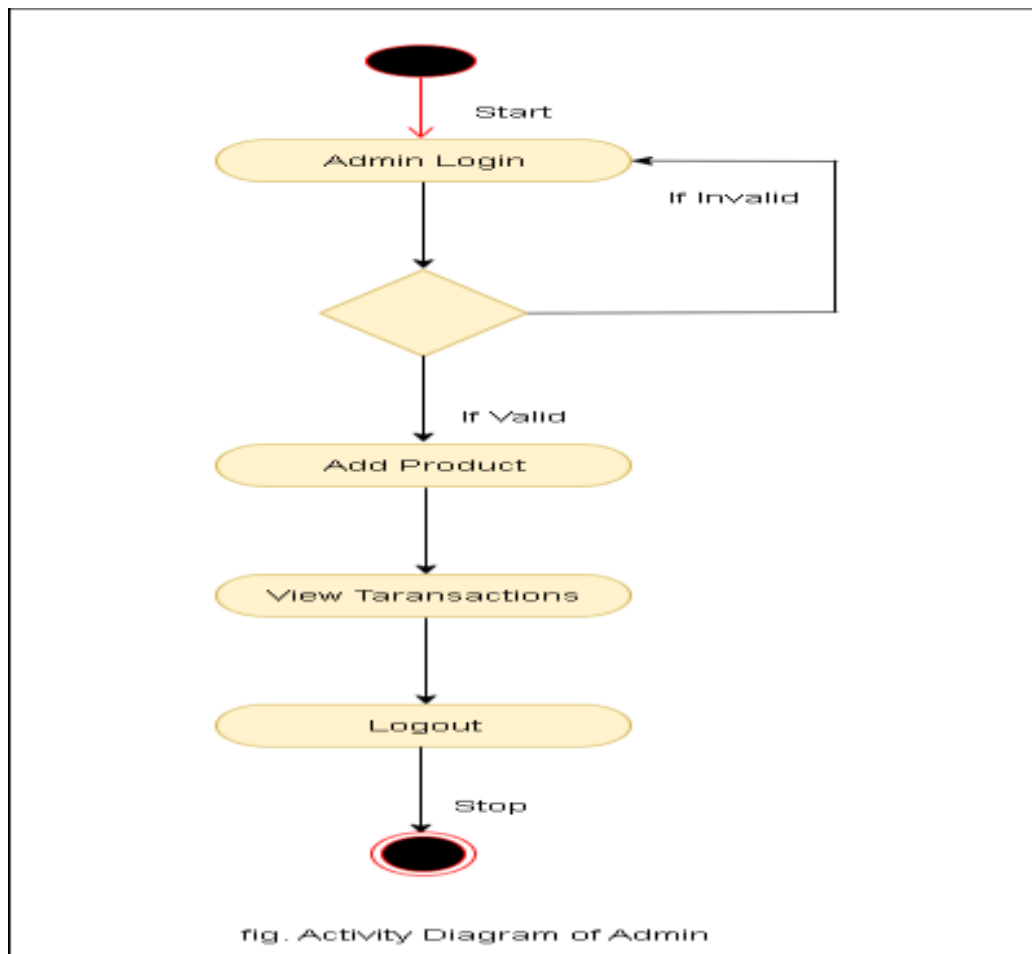
**Sequence Diagram:**



**Activity Diagram of Users:**



**Fig. Activity Diagram of User**



**DATABASE:**

Since this project is in its initial stages, and is still being developed and updated, we shall be using database files in order to store various data. This technology is useful for several reasons, including the possibility of speedily and easily amending database, database structured data will be uniform and independent of applications, the flexibility encountered in the use of the system as well as the ease in recalling and reading the data and ensuring applicability through the internet

**MYSQL**

My SQL provides a implementation of a SQL database very well suited for small to medium web pages. The database is free and open source with a commercial license available (My SQL is now owned by Oracle after they bought Sun). Common applications for My SQL include php and java based web applications that require a DB storage backend, e.g. Dokuwiki, Joomla, xwiki etc. Very many applications that use MySQL are geared towards the LAMP stack (Linux, Apache, MySQL, php). MySQL is usually used with 2 different storage engines, one is called MyISAM doesn't support transactions and stores each table in a set of 3 files. The second is called InnoDB which supports transactions, this storage engine stores all data in a single set of bytes or uses one set of bytes per database directory. MySQL has one major advantage, since it is free, it is usually available on shared hosting packages and can be easily set up in a Linux, UNIX or Windows environment. If a web application requires more than database, requires load balancing or shading, it is easy to set up maybe instances of the database requiring only the hardware costs, as opposed to commercial databases that would require a single license for each instance. MySQL has some issues with stability and clustering, it is very difficult to install a consistent database cluster with MySQL with the regular version. Depending on the database storage, MySQL will support transactions or not, so the requirements of the application have to be taken into account when creating the database tables. For large, heavy loaded databases, it is a major operations problem that changing the database structure is only possible when locking the complete tables.

## V. CONCLUSION

This in turn translated to development of an application that met the set objectives and the user requirements also. Hence, most of the set objectives weremet with the implementation of the application as it facilitated constant inflow of information from stakeholders that helped incoming up with a good design for the application.

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