

# SMART DIGITAL CHITS AND FINANCE MANAGEMENT SYSTEM

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**Abstract:** A desktop program called the Smart Digital Chits and Finance Management System was created to automate conventional chit fund procedures. Maintaining records and tracking payments in manual systems takes a lot of time and is prone to mistakes. For the management of user registration, chit creation, payment tracking, lottery selection, and report generation, this system offers a safe online platform. Python, Tkinter, and SQLite were used in the development of the application to guarantee effective data storage and intuitive user interface. Data protection is improved by security features like role-based access control and password hashing. The system guarantees accurate financial management, decreases manual labor, and increases transparency. Web deployment and online payment integration are possible future improvements.

**Keywords:** Chit Fund Management, Financial Automation, Lottery System, Payment Tracking, Report Generation

## I. INTRODUCTION

The Smart Digital Chits and Finance Management System automates and modernizes traditional chit fund operations through a secure digital platform. In a chit fund, members contribute a fixed amount regularly, and the collected amount is distributed to one member through a lottery or bidding process until all members receive the benefit once. Chit funds are commonly used in local communities for short-term savings and financial support.

Traditional management methods rely on manual records or spreadsheets, leading to calculation errors, poor data handling, limited transparency, and difficulty in tracking payments. The proposed desktop application overcomes these issues by automating member management, payment tracking, lottery processing, notifications, and report generation. Developed using Python, Tkinter, and SQLite, it ensures secure storage, accurate calculations, and improved efficiency and transparency in chit fund management.

## II. LITERATURE REVIEW

Digital transformation has significantly improved financial services by enhancing transparency, efficiency, and security. B. S. K and L. P. [1] highlight the importance of digital platforms in building trust and improving customer engagement in chit fund systems. Similarly, Aquin Manuvel [2] emphasizes the need for secure and regulated digital solutions to address risks in traditional chit fund operations.

Fintech advancements play a major role in modern financial management. Liu et al. [3] and Philippon [4] explain that digital technologies improve financial accessibility, automation, and data security. Ambika and Shambhu Lingappa [5] further state that technological adoption in chit fund companies enhances administrative efficiency and reduces manual errors.

Vives [6] discusses digital disruption in financial institutions, while Das and Ali [7] demonstrate how digital tools improve transaction accuracy and reporting in financial services. Nicoletti [8], Lee and Shin [9], and Gomber et al. [10] collectively emphasize the role of fintech ecosystems, secure databases, and automation in strengthening financial systems.

These studies support the development of the Smart Digital Chits and Finance Management System as a secure and automated solution for modernizing traditional chit fund management.

### **III. PROBLEM STATEMENT**

Traditional chit fund management mainly depends on paper records or basic spreadsheets. This manual approach makes it difficult to track contributions accurately, maintain proper financial records, and ensure transparency in lottery selection. Hand calculations increase the risk of human error, data duplication, and financial mismanagement.

Retrieving past records such as payment history, previous winners, and financial summaries is also time-consuming. In addition, limited security measures put sensitive financial and member data at risk, and lack of transparency may reduce members' trust.

Therefore, a secure and automated digital system is needed to manage chit operations efficiently, ensure accurate financial tracking, enhance data security, and provide transparent lottery processing. The Smart Digital Chits and Finance Management System is proposed to overcome these limitations and modernize chit fund management.

### **IV. OBJECTIVES**

Creating a safe and effective digital platform to automate conventional chit fund operations is the primary goal of the Smart Digital Chits and Finance Management System. The system seeks to increase chit activity transparency and streamline financial management.

The project's particular goals are:

- To automate safe login procedures and member registration.
- To make it simple to create and administer chit schemes.
- To keep precise records of all transactions and payments.
- To put in place an open and equitable lottery selection process.
- To automatically produce financial summaries and reports.
- To send out notification alerts regarding lottery results and past-due payments.
- To use role-based access control and password hashing to guarantee data security.
- To increase operational effectiveness and decrease human error.

By achieving these objectives, the system ensures reliable, transparent, and efficient management of chit and finance operations.

### **V. SYSTEM ANALYSIS**

The process of examining the current system, determining its shortcomings, and suggesting a better one is known as system analysis. Traditional approaches to chit fund management mainly depend on manual procedures. These manual systems raise the possibility of errors and produce inefficiencies. Thus, examining the existing system aids in creating a digital solution that is more automated and dependable.

#### **5.1 Existing System**

The majority of the current chit fund management system is done by hand with paper registers, notebooks, or basic spreadsheet files. The administrator manually records all member information, payment histories, and lottery outcomes. The following are the main shortcomings of the current system:

- Payment tracking errors resulting from manual calculations.
- Maintaining and updating records can be challenging.
- Inadequate financial data security.
- Preparing reports takes a lot of time.
- Restricted openness in the selection of lottery winners.
- Risk of data loss as a result of physical records being lost or damaged.

These problems make it difficult and ineffective to manage a large number of members.

#### **5.2 Proposed System**

The Smart Digital Chits and Finance Management System is a computerized solution that is introduced in the proposed system. This system uses a desktop application to automate all significant chit operations.

The suggested system offers:

- Secure system for logging in and registering users.
- Automated creation and administration of chit schemes.

- Precise tracking of payments and archiving of transactions.
- Random and transparent lottery selection procedure.
- Financial summaries are automatically generated in reports.
- Alerts for lottery results and payment deadlines.

The system increases overall efficiency, improves transparency, strengthens data security, and decreases manual errors by digitizing the process.

### 5.3 Feasibility Study

To determine whether the suggested system is feasible and workable, a feasibility study is carried out. It guarantees that the system can be effectively implemented with the resources at hand.

#### 5.3.1 Technical Feasibility

Because the system makes use of widely accessible technologies like Python, Tkinter, and SQLite, it is technically feasible. These tools work with typical desktop computers and are lightweight. No sophisticated hardware is needed. The development environment is easy to use and maintain.

#### 5.3.2 Economic Feasibility

The project is economically feasible because it uses open-source software and does not need costly licenses. The implementation cost is low since it can run on current desktop systems. Maintenance costs are also low, making it affordable for small financial groups.

#### 5.3.3 Operational Feasibility

The system is operationally feasible due to its user-friendly interface. Administrators and users can learn and use the system easily with little training. The automated features reduce manual tasks and improve efficiency in daily operations.

## VI. SYSTEM DESIGN

System design defines the structure and interaction of components in the Smart Digital Chits and Finance Management System. It describes the system architecture, user interface, database structure, and security features. The design ensures modularity, scalability, security, and easy maintenance while enabling smooth data flow and efficient processing.

### 6.1 Overall Architecture

The system follows a three-layer architecture:

#### 1. Presentation Layer (User Interface Layer)

This layer manages interaction between users and the system. It collects input and displays outputs such as reports, lottery results, and notifications. The interface is developed using Tkinter with graphical elements like buttons, labels, text fields, and dashboards.

#### 2. Business Logic Layer (Application Layer)

This layer handles core functionalities, including:

- User validation and authentication
- Chit scheme management
- Payment calculations
- Lottery processing logic
- Report generation

All operations are implemented in Python, ensuring proper validation before data is stored or retrieved.

#### 3. Database Layer

SQLite is used to securely store system data, including users, chits, payments, transactions, lottery history, and notifications. Primary and foreign keys maintain data integrity.

### Data Flow

User Input → Processing & Validation → Database Storage/Retrieval → Output Display

This layered architecture separates responsibilities, making the system easier to maintain and upgrade.

### UI Design Principles

The interface follows key design principles such as simplicity, clarity, consistent layout, proper alignment, smooth navigation, and validation messages. Tkinter widgets like Frames, Labels, Buttons, Entry fields, and Message boxes are used to create a clean and user-friendly interface.

## VII. SYSTEM MODULES

The Smart Digital Chits and Finance Management System is divided into two main modules: **Admin Module** and **User Module**. These modules ensure organized, secure, and transparent chit management.

### 7.1 Admin Module

The Admin Module acts as the central control unit of the system. The administrator manages users, chit schemes, lotteries, transactions, reports, and notifications.

#### 7.1.1 User Approval Management

The administrator verifies and approves registered users to prevent unauthorized access. Functions include:

- Viewing new registrations
- Approving or rejecting requests
- Managing active/inactive users
- Updating user details

#### 7.1.2 Chit Creation & Monitoring

The administrator creates chit schemes by defining:

- Chit name
- Total amount
- Monthly contribution
- Duration
- Maximum members

The system tracks payments, updates contributions automatically, and shows pending dues.

#### 7.1.3 Lottery System

The system conducts a fair and random lottery for each cycle. It:

- Selects winners randomly
- Records results in the database
- Prevents duplicate winners
- Maintains lottery history

This ensures fairness and transparency.

#### 7.1.4 Report Generation

The system automatically generates:

- Monthly collection reports
- Payment status reports
- Contribution summaries
- Lottery history reports

Reports help monitor financial performance and may include graphical summaries.

#### 7.1.5 Notifications

Administrators send alerts such as:

- Payment reminders
- Lottery announcements
- Chit closure updates
- General notifications

### 7.2 User Module

The User Module allows members to manage their participation in chit schemes.

#### 7.2.1 Registration System

Users register by providing personal and login details. Accounts require admin approval before activation.

#### 7.2.2 Secure Login

Users log in with secured credentials. Password hashing and role-based access control protect sensitive data.

### 7.2.3 Join Chit Scheme

Approved users can view and join available chits, subject to member limits.

### 7.2.4 Payment Management

Users can:

- Make monthly payments
- View transaction history
- Check payment status
- View pending dues

### 7.2.5 Lottery Result Viewing

Users can view:

- Winner name
- Chit details
- Lottery date
- Previous winners

This transparency strengthens trust among members.

## VIII. RESULTS

The Smart Digital Chits and Finance Management System was successfully developed and tested to automate traditional chit operations. It efficiently manages user accounts, payment tracking, lottery processing, and report generation. The implementation reduced manual work, minimized calculation errors, and improved transparency.

The results confirm that the system meets the objectives defined during analysis and design. All modules function correctly and integrate smoothly with the database.

### 8.1 Output Screens

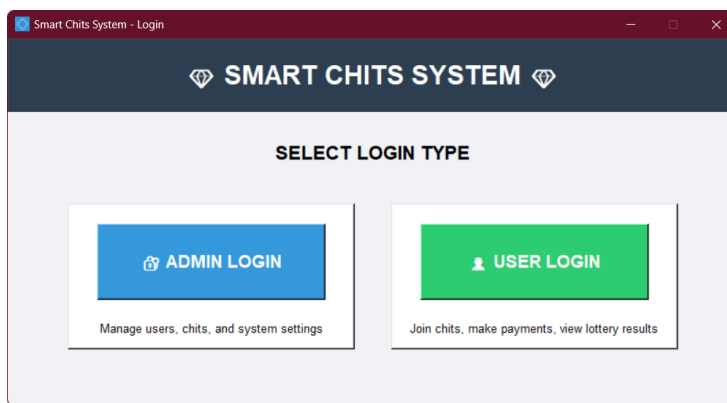


Fig.1 Login Type

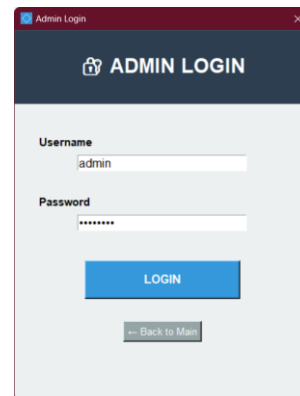


Fig.2 Admin

### Login

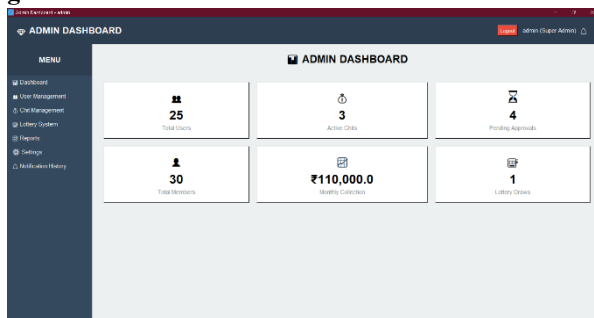


Fig.3 Admin Dashboard

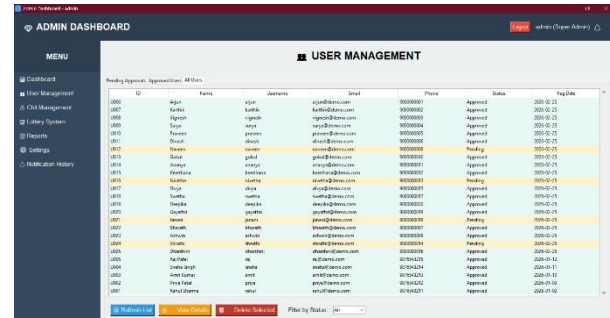


Fig.4 User Management

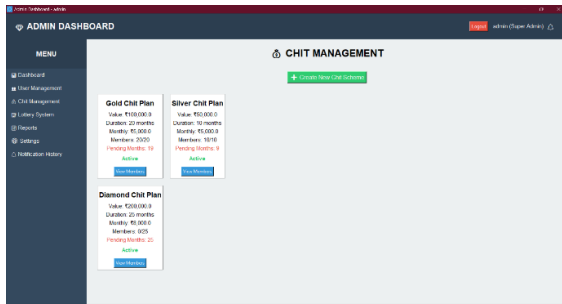


Fig.5 Chit Management

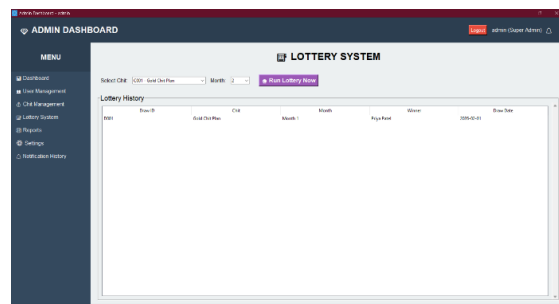


Fig.6 Lottery

## System



Fig.7 Report & Analytics

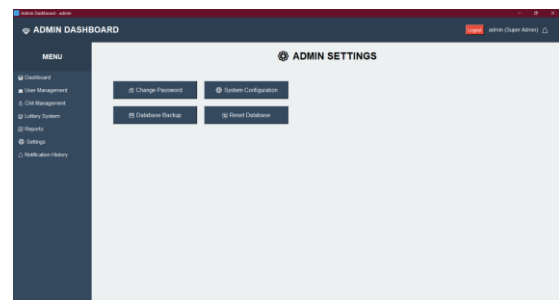


Fig.8 Admin

## Settings

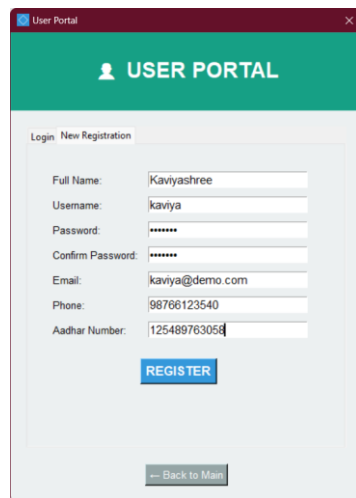


Fig.9 New User Registration

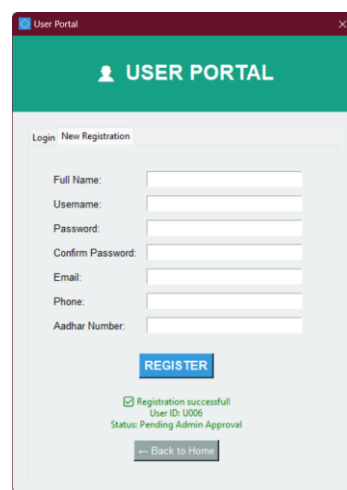


Fig.10 Registration Successful

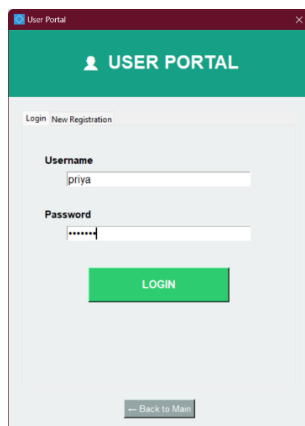


Fig.11 User Login

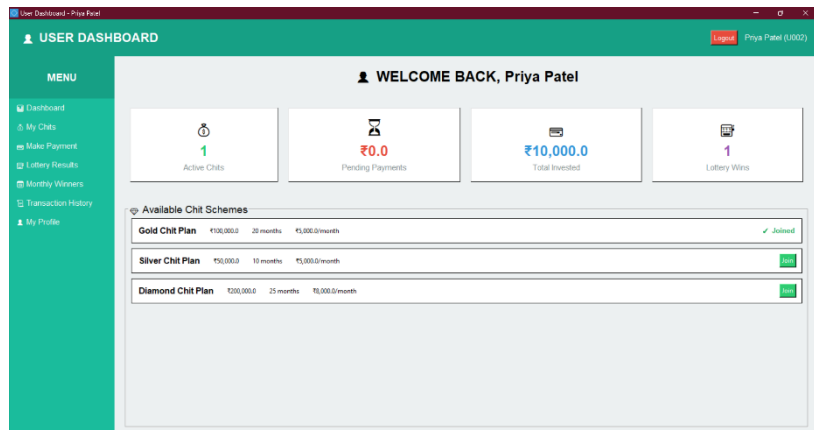


Fig.12 User Dashboard

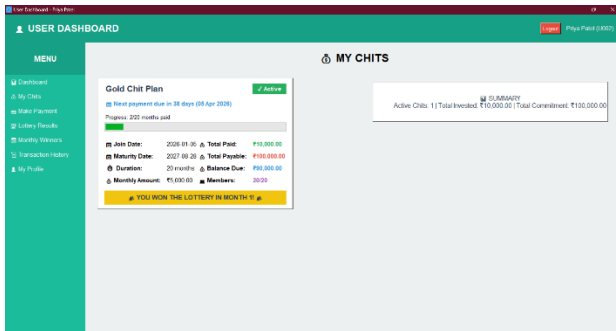


Fig.13 My Chits

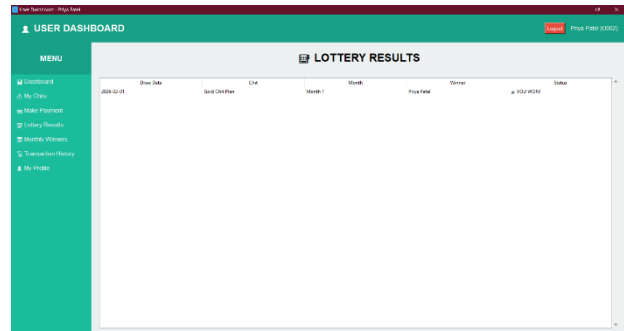


Fig.14 Lottery

Results

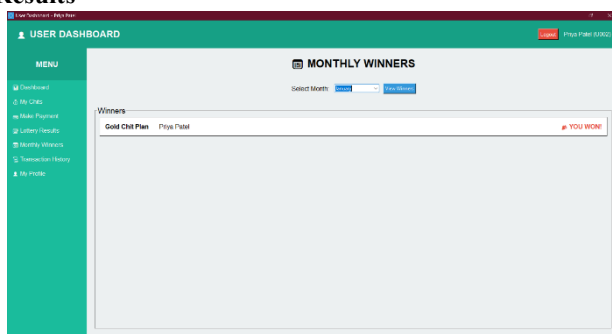


Fig.15 Monthly Winners

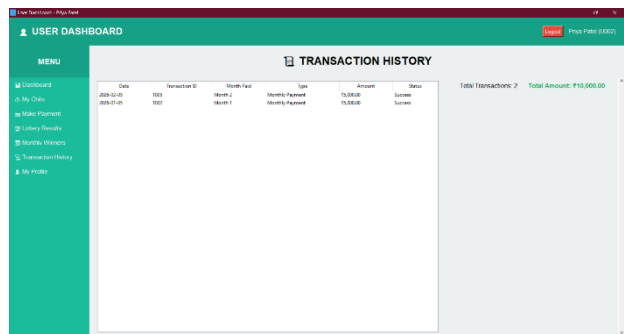


Fig.16 Transaction History

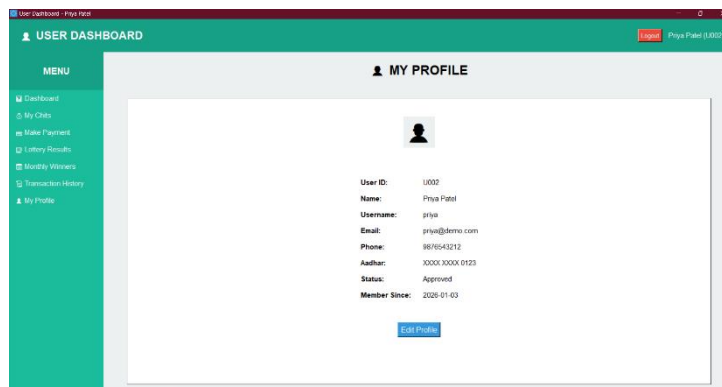


Fig.17 User's Profile

8.2 System Performance

The system performs efficiently on standard desktop computers without requiring high-end hardware. Since SQLite is a lightweight database, data retrieval and storage operations are fast and reliable.

Performance observations include:

- Quick login authentication
- Fast database response time
- Accurate payment calculation
- Smooth lottery execution
- Instant report generation

The application handles moderate data volumes efficiently and maintains consistent performance without system crashes. Proper validation and error handling mechanisms ensure system stability.

8.3 Report Generation

The reporting module generates detailed financial summaries automatically based on stored transaction data. Reports help administrators analyze the performance of chit schemes and monitor payment status.

Types of reports generated:

- Monthly collection report

- Member payment status report
- Individual contribution summary
- Lottery history report

Reports may include graphical visualizations such as bar charts and summary tables for better financial analysis. These reports assist in decision-making and financial tracking.

Overall, the report generation feature improves transparency, accountability, and efficiency in chit fund management.

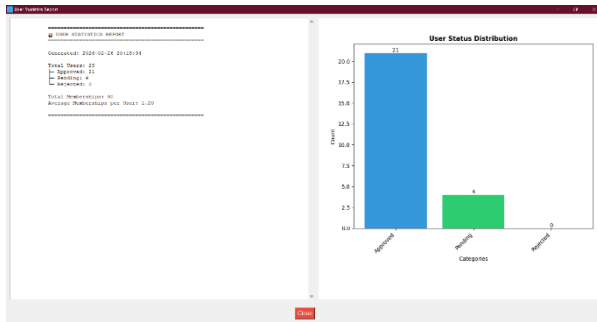


Fig.18 User Statistics Report

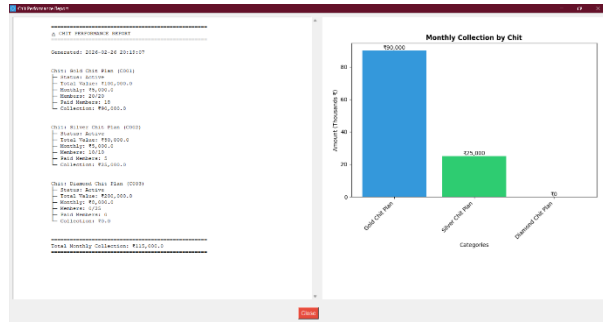


Fig.19 Chit Performance

Report

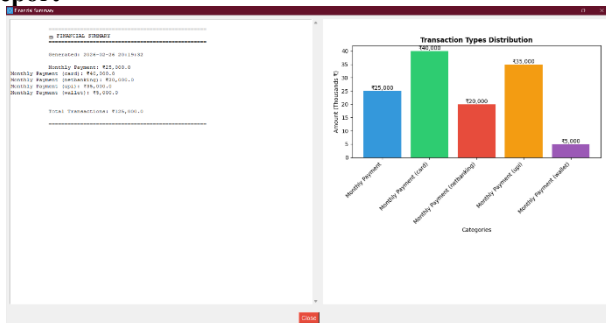


Fig.20 Financial Summary

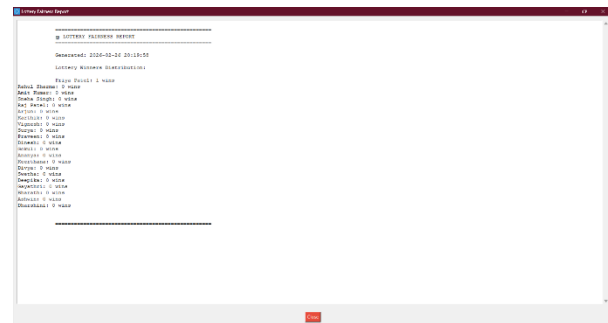


Fig.21 Lottery Fairness Report

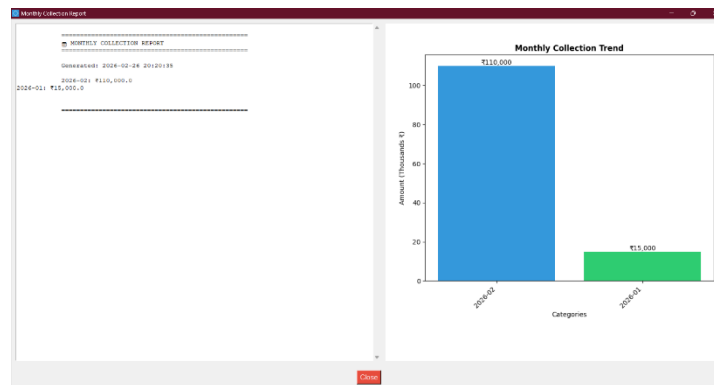


Fig.22 Monthly Collection Report

IX. CONCLUSION

The Smart Digital Chits and Finance Management System provide a streamlined and secure method for managing chit fund activities online. It eliminates errors associated with manual record-keeping and clarifies the processes of payment tracking and lottery selection. The platform integrates user management, chit scheme administration, automated lottery processing, and report creation into a single system.

Developed using Python, Tkinter, and SQLite, the application ensures dependable performance and secure data storage. In summary, the system enhances operational efficiency, reduces workloads, and modernizes traditional financial management methods. Future enhancements could further improve accessibility and functionality.

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