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Expense Tracker

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Abstract: ***The project entitled "Expense Tracker "was developed using the Android Studio framework. Here XML with Java as the front end and SQLite server as the back end. The Rapid growth of Android applications is creating a great impact on our lives. The aim of this System is will keep track of Income-Expense of people on day to day basis using this application user can set a monthly expense limit according to the expenses made in the specified category, If the user exceeds that monthly expense limit in a specified category system automatically produces the alert. The daily expense tracking System will generate an overall report at the end of the month. This helps the users to keep track of their expenses and determine whether they are spending as per their set budget. And this app also allows other users to suggest activities such that the user can accept the suggestion or neglect it. Using this app users can schedule activities and set reminders so that application gives alerts to the user in an efficient manner. This application will be a solution for so many people. In this Project, we will provide a new idea to the people so that they can track and manage their Schedule And Expenses the easiest way.***
Keywords: Expense, Cost, Income, Monthly limit, Monthly expense.

I. INTRODUCTION

These days, with a fast-paced lifestyle, people tend to overlook their budget planning. Some would spend more than necessary and some might be under-budgeted to buy their necessities because they have spent too much on other stuff. Making sure having a concrete budget planning is crucial so that people would not face any financial issues in the future. The Expenses Tracker System is developed to keep track of users' spending and make a prediction for their budget monthly. The system should be able to generate reports of their spending and notify users if they have exceeded their budget. The system is designed to be dynamic as it used the least square method to produce the prediction. The system also provides users' personal information, their income as well as their expenses. The Expenses Tracker System will be an approach for people to control their spending better in more efficient ways. Management of finance and accounts has been an actual issue for a long time. People are less likely to keep track of their spending, be it, in checkbooks or even spreadsheets. Despite that, in recent decades, it has got a new perspective with the advent of modern technologies and the internet which is becoming more and more accessible. Expenses Tracker is a way that can help us to keep up with our spending. Not only that, it can help us pinpoint areas where we have been spending and track upcoming bill payments. It is a web-based system that can keep track of their expenses and determine whether they are spending as per their set budget. Potential users need to input the required data such as the expense amount, merchant, category, and date when the expense was made. This mobile system is a fully detailed expense tracker tool that will not only help users keep a check on their expenses, but also cut down the unrequired expenses, and thus will help provide a responsible lifestyle.

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III. SYSTEM ANALYSIS

It involves the analysis of a procedure or business in order to identify its goals and purposes and create systems and procedures that will achieve them in an efficient way. Use cases are a widely used systems analysis modeling tool for identifying and expressing the functional requirements of a system.

A. Existing System

In existing, we need to maintain the Excel sheets, CSV, etc. files for the user's daily and monthly expenses. Existing, there is no such complete solution to keep track of its daily expenditure easily. To do so a person has to keep a log in a diary or on a computer, also all the calculations need to be done by the user which may sometimes result in errors leading to losses.

Disadvantages

- Time-consuming
- Offline application.
- May get inaccurate results if data is not inserted in the correct manner.

B. Proposed system

sTo reduce manual calculations, we propose an application that is developed by Android. This application allows users to maintain a digital automated diary. Each user will be required to register on the system at registration time, the user will be provided an id, which will be used to maintain the record of each unique user. Expense Tracker application which will keep track of Income-Expense of a user on a day-to-day basis. This application takes Income from the user and divides it into daily expenses allowed. If u exceed that day's expense it will cut it from your income and give a new daily expense allowed amount, and if that day's expense is less it will add it in savings. The expense tracking application will generate the report at the end of the month to show Income-Expense via multiple graphs. It will let you add the savings amount which you had saved for some particular Festivals or days like Birthdays or Anniversary

Advantages

- Builds Discipline and Organization.
- Forces You to Think About Money.
- Crisis Prevention.
- Budget Planner.
- Knowing your spending habits.

C. Behavioral Model

1) Feasibility Study

A system is feasible system only if it is feasible within limited recourse and time. In this system each and every process can be feasible for the user and also a developer. It proved user-friendly input such as device-independent inputs and getting a proper solution for the problem.

The different types of feasible systems that have to analyze are,

- Technical Feasibility
- Behavioral Feasibility
- Economical Feasibility
- Operational Feasibility

2) Technical Feasibility

Technical Feasibility is the assessment of the technical view of the system. The system is developed for Dot net environment; a platform-independent tool is used to develop the system. The consideration that is normally associated with technical feasibility include the following

- Development risk
- Resource availability
- Technology

The development risk concerns the probability, the function of all elements and their performance should be the same in all platforms and in the system that is being developed. This system is developed according to the standards and the development software tools are selected in such a way to avoid the problems cited above.

The software used to develop this system is Windows XP, visual studio Dot Net is done efficiently, and the concept of SQL helps to create the application backend. These components are also helpful in providing interactivity to Java applications.

3) Behavioral Feasibility

It is common knowledge that computer illustrations have something to do with turnover transfers, retraining, and changes in user or developer status. The main emphasis is customer service and personal contact with customers. The feasibility report is directed toward management. It evaluates the impact of the proposed changes on the area in question. The report is a formal document for management use, brief enough and sufficiently non-technical to be understood.

4) Economical Feasibility

Economic feasibility or cost-benefit is an assessment of the economic justification for a computer-based system project. Through this system, the administrator can use the tool from anywhere within their concern. The system is developed using the existing resources. So the project is economically feasible. This is the most frequently used method for evaluating the effectiveness of a user system. More commonly, known as cost analysis the procedure is to determine the benefits and savings that are expected from a candidate system and compare them with costs. This system getting hundreds presents economic feasibility. It will be achieved the goal very efficiently. And the evolution of development cost (hardware and software needed) is weighted against the ultimate income or benefit derived from the system. Finally, it is assumed that this project is economically feasible

5) Operational Feasibility

Operational Feasibility deals with the study of the prospects of the system. This system operationally eliminates all the tensions of the administrator and helps in effectively tracking the project's progress. This kind of automation will surely reduce the time and energy, previously consumed in manual work. Based on the study, the system proved to be operationally feasible.

IV. SYSTEM DESIGN

The system design includes business process design and database design. Business process design implements the order of various functions and links between the various functions. Database design mainly realizes data tables and the relationship between data tables.

A. Table Design

The general theme behind a database is to handle information in an integrated manner. There is none of the artificiality that is normally embedded in separate files or applications. A database is a collection of interrelated data stored with minimum redundancy to serve many users quickly and efficiently. The general objective is to make information access easy, quick, inexpensive, and flexible for the user.

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In a database environment, common data are available which several authorized users can use. The concept behind a database is an integrated collection of data that provides centralized access to the data from the program. It makes it possible to treat data as a separate resource.

While designing a database, several objectives must be considered:

- Controlled redundancy
- Data Independence
- More information at a low cost
- Accuracy and Integrity
- Recovery from failure
- Privacy and security
- Performance

Steps for Table Design

- State what kind of information we need to handle to get the desired output.
- Find out what information is needed for fields (i.e.) field type, size, etc.
- Remove any data items, which is redundant.
- Table has one to one relationship that needs a primary key field.
- Tables have too many relationships needs to add a foreign key field to the table to match the primary key field table

B. Input Design

Input Design converts the user-oriented inputs to computer-based formats. Inaccurate input data are the most common cause of errors in data processing. Error data entered by the data operator can be controlled by the input design. The goal of designing input is to make the data entry as easy, logical, and as free from errors as much as possible.

The proposed system is completely menu-driven. It is a powerful tool for interactive design. It helps the user comprehend the range of alternatives available and also prevents them from making an invalid selection. All entry screens are interactive in nature. It has been designed taking into account all the constraints of the end-user.

Some other features included are:

- The form title clearly states the purpose of the form
- Adequate space is given for data entry

Data Validation is done for eliminating duplicate entries

C. Output Design

Outputs are the most important and direct source of information to the customer and management. Intelligent output design will improve the system's relationship with the user and help in decision-making. Outputs are used to make a permanent hard copy of the results for later consultation. The output generated by the system is often regarded as the criteria for evaluating the performance of the system.

The output design was based on the following factors.

- Usefulness determining the various outputs to be printed to the system user.
- Differentiating between the outputs to be displayed and those to be printed.
- The format for the presentation of the output.

For the proposed system, it is necessary that the output should be compatible with the existing manual reports. The outputs have been formatted with this consideration in mind. The outputs are obtained after all the phases, from the system can be displayed or can be produced in a hard copy. The hard copy is highly preferred since it can be used by the controller section for future reference and it can be used for maintaining the record.

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V. SYSTEM TESTING

A. Input Validation

1) Valid Input Data

Expense amount: $50.25
Description: "Lunch at a restaurant"
Date: "2023-05-17"
Category: "Food"
Result: The application correctly accepted and processed the valid input data without any issues.

2) Invalid Input Data

Expense amount: -10.50 (negative amount)
Description: " "
Date: "2023-13-40" (invalid date)
Category: "123" (non-alphabetic characters)
Result: The application successfully detected and rejected the invalid input data, providing appropriate error messages to the user.

3) Calculation Accuracy

- *Expense Calculation*

Expense 1: $10.50
Expense 2: $20.75
Total expenses: $31.25
Result: The application accurately calculated the total expenses, ensuring all expense items were included in the sum.

- *Tax Calculation*

Expense amount: $100.00
Tax rate: 8%
Total expense amount (inclusive of tax): $108.00
Result: The application correctly applied the specified tax rate to the expenses and accurately calculated the total expense amount inclusive of taxes.

4) Database Integrity

Sample expense record stored in the database:
Expense ID: 001
Expense amount: $50.00
Description: "Dinner at a restaurant"
Date: "2023-05-16"
Category: "Food"
Result: The application successfully stored the expense record in the database and retrieved it accurately when required, ensuring data integrity and consistency.

5) Boundary Conditions

Minimum expense value: $0.01
Maximum expense value: $9999.99
Result: The application handled expense values at their minimum and maximum limits appropriately, without encountering any unexpected errors or displaying incorrect results.

6) Security Testing

Sample user credentials:
Username: testuser
Password: Test@123

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Result: The application enforced proper authentication measures, requiring users to provide valid login credentials before accessing their expense data.

7) Error Handling

Invalid login credentials:
Username: testuser
Password: incorrect_password
Result: The application appropriately handled invalid login credentials, displaying appropriate error messages and preventing unauthorized access.

B. Conclusion

Based on the testing conducted, it can be concluded that the Expenses Tracker application developed by us has performed well in terms of input validation, calculation accuracy, database integrity, boundary conditions, security, and error handling. The application demonstrated the expected functionality, reliability, and security measures.

VI. SCOPE

Every application has its own merits and demerits. The project has covered almost all the requirements. Further requirements and improvements can easily be done since the coding is mainly structured or modular in nature. Changing the existing modules or adding new modules can append improvements. In the future, this application will be developed with additional features and uploaded in play store.

VII. CONCLUSION

Implementation is the stage of the project when the theoretical design is turned out into a working system. Thus it can be considered to be the most critical stage in achieving a successful new system and in giving the user, confidence that the new system will work and be effective. The Proposed android application gives a complete Expense Tracker which will keep track of the Income-Expense of a user on a day-to-day basis. This application takes Income from the user and divides it into daily expenses allowed. If u exceed that day's expense it will cut it from your income and give a new daily expense allowed amount, and if that day's expense is less it will add it in savings. The expense tracking application will generate a report at the end of the month to show Income-Expense via multiple graphs

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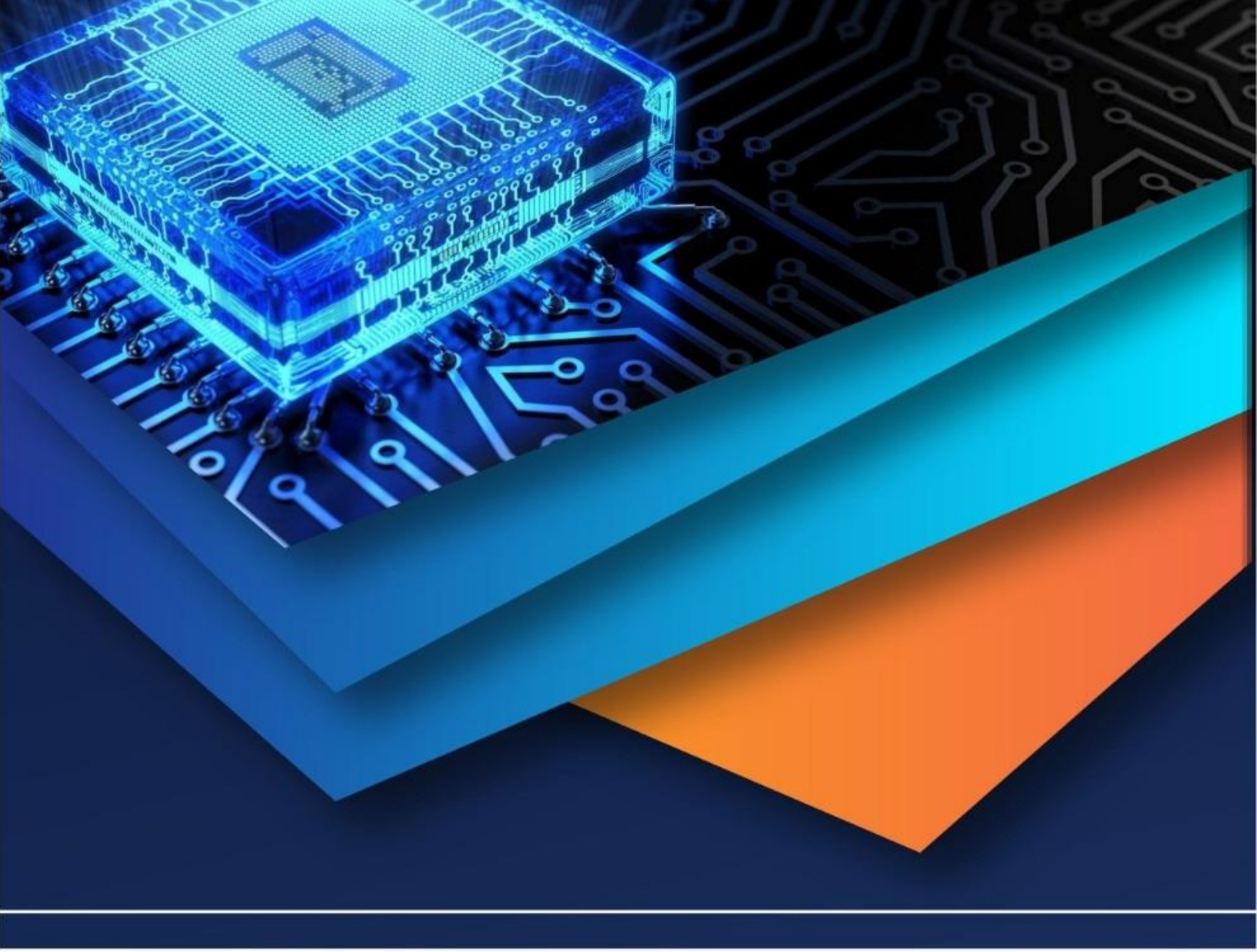

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