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Title of the project

**Expense Tracking**

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**CHAPTER -1**

**INTRODUCTION**

**1.1 Introduction:**

Many of us have goals that involve making more money or managing the money we already have but, no matter what goals you might have for your money, you will probably need some additional information about it. You need to understand where your money goes. Tracking expenses can be relatively simple matter and can provide you so much information about your spending habits. Traditional way of tracking the expenses is as simple as collecting all the receipts and organizing them once in a month. Some people even store the expenses in the spreadsheets then need to sum the expenses. It’s very easy to misplace the receipts. If you are using some software to maintain the income and expense like spreadsheet then you will need to clearly separate income and expenses or place them in different columns. This is very time consuming as well as it won’t give much clarity for user about the expenditure. To analyse the income and expense data, first we need to gather relevant data from the user. After that it is properly analysed and generates reports.

Once we have gathered the information about our expenses, we can use that to make different financial decisions. Also, we can plan our future spending and plan out a budget. After checking the analysed data, one will have clear idea about where he/ she is spending the money most and least. This helps the user to aware of unwanted spending and to reduce the expenditure. Expenses will display in charts to give the user a visual presentation of expenses and this helps to give clarity to the user about the expenditure. As long as we already have information of our expenses in our hand, we can use it to make a long list of decisions much easier. As user, we have faced many difficulties in our daily life. In our daily life money is the most important portion and without it we cannot last one day on earth but if we keep on track all financial data then we can overcome this problem. Most of the people cannot track their expenses one way they face the money crisis and depression. This situation motivates us to track all financial activities. Using the Daily Expense Tracker user can be tracking expenses day to day and making life tension free.

**1.2 Scope:**

Many people today are looking for efficient ways to track their expenses because most of the people want to save their time as well as they need accurate data. Expense tracking is challenging in most circumstances since expense tracking is done in verbally and on paper. Expense tracker will contain a variety of record keeping choices like food, travel, salary and so on. It also required to collect the information about the user’s daily expenses. After collecting the information, expense tracker allows us to clearly understand our expenses and plan better for the next coming month.

Expense tracker is very helpful to the people who seek to handle their spending and plan their expenses and savings efficiently. It helps the people to track their expenses on different category based on daily, weekly and monthly basis.

**1.3 Existing work:**

A daily expense tracking is a one kind of digital dairy that helps to keep an eye on all of our money related expenditure and also provide all financial activities report daily, weekly, monthly and yearly. This helps the user to know his personal spending. New spending will be added so that new reports will be generated and displayed to the user.

**1.4 Proposed Work:**

In this project, user is allowed to check the expenses between the particular dates. All expenses are stored in particular categories, so that user can search for particular spending. Expenses are displayed visually using different charts. User can easily track the expense by viewing in charts. User can check which expense has rapidly increased compared to past expenditure and also check for the highest and also lowest type of expense.

**1.5 Dataset:**

This dataset contains all the information about the expense of the user**.** This data is collected from one’s expenses. This is recorded a daily basis where the user spend is money**.**

**Attribute Information:**

* **Expense Title:** Expense title is used to identify the particular spending by the user.
* **Category:** Particular spending will belong to a category, so it is easy to track the expense in categories
* **Date:** We also have date attribute to know when the spending is made by the user.
* **Amount:** Finally, we have the amount attribute which stores the amount spent by the user for particular expense**.**

**1.6 Objectives:**

Our goal is to create an expense tracking system where user can be tracking all the expenses. Also, user can analysis the expenses and generate the report.

1. User can easily view total expenses of the day, month and year.
2. User can search for particular type of expense and keep track of that.
3. User can view the ups and downs of the expenses though line chart.
4. User can also check for the highest and also lowest type of expense.
5. User can check which expense has rapidly increased compared to past expenditure.

**CHAPTER- 2**

**PROBLEM FORMULATION**

Many organizations have their own system to record their expenses. It is a good habit for a person to record daily expenses. When tracking your spending, spend as you normally would. Tracking isn’t meant to make you feel guilty or to stop you from spending. It’s meant to highlight what your habits are so that you can make some choices and changes later. Once you’ve tracked your spending and created a balanced budget, it’s vital to track your spending for the first few months to make sure you’re able to cover all of your monthly and seasonal expenses. You can use tracking as a way to re-assure yourself that your budget plan is actually working. If you’ve been successfully living on a budget, it’s still important to monitor your spending every once in a while, to make sure your expenses are still the same as they used to be. When gas prices rise, your fuel expenses will likely go up. Your grocery bill will grow with your growing family. Check-in every now and again to ensure your spending plan is still up to date.

There are many ways to track your spending including apps, Excel tracker spreadsheets on your computer or written expense notebooks, sheets and journals. How you decide to track your spending is a personal decision. If the user wants the total expenses, then he should sum all the expenses and it is time consuming process.

**CHAPTER -3**

**LITERATURE REVIEW**

* Expense Tracker helps to maintain the record of daily expenses and monthly income of an users from anywhere and also generates a monthly report of the expenses in pdf format. The Expense Tracker app tracks all the expenses and helps the user to manage his/her expenses so that the user is the path of financial stability. The Tracking of expenses is categorised by week, month and year, it helps to see the more expenses made. To use the Expense Tracker the user has to sign up into such as name, phone no., address, email address, username, password and confirm password of the user. The user can get enlisted just a single time, per user can just one record. The remainder is set if the type future expense. The whole subtleties of the income or expense can be seen or refreshed or can be erased by long pressing the specific rundown thing. The things in

the rundown can be separated by month, year and date. When the month’s end is arrived at the complete pay, all out past expense and all-out future expense are determined and shown for the user.

The “Expense Tracker” is developed by Angular 8 for front end and SQLlitefor back end [1].

* Since the beginning of human civilization, people have exchanged their destiny for one another to buy or sell goods. Since then, it has become an important and irreplaceable part of our daily lives. Most of us have a fixed income and we get it on time (i.e., daily, monthly, annual, etc.). In addition, everyone follows a strict budget of spending. Generally, the budget is assembled according to category. Categories vary, for example, food, entertainment, transportation, education, health, clothing, and so on. However, spending is limited to budget revenue. For this reason, we need to keep track of our expenses so that they do not exceed our budget. In the old days, people would track their expenses manually, which meant that using a pen and paper system would be very laborious and time consuming. These days the availability of electronic devices. Like smartphones and computers has made our lives much easier and faster. We can use computers to track your daily expenses using the available online and offline software. There are some apps that can track daily expenses. These apps use a manual input system from the keyboard, which is laborious and time consuming. To meet the challenge of avoiding manual input, we propose the best way to do the same things in an automated and efficient way that takes less time. Under the proposed approach, users can spend, fill and monitor data. The main future of this app is that you can track by day and category. You can use it according to your category.

A Smart Approach to Track Everyday Expense” developed by using Java (Apache Netbins 11.3) and MySQL Workbench 8.0 CE [2].

* The Daily Expense Tracker System is meant to keep track of a user's income and expenses on a daily basis. The income is divided according to daily costs in this system. If you go over your daily expense limit, the system will deduct it from your earnings and provide you a new daily expense allowance. If the expense for that day is less, the system will save it. At the end of the month, the daily spending tracking system will provide a report that shows the income-expenditure curve. It will allow you to enter the amount of money you have set aside for special occasions such as birthdays or anniversaries. Daily Expense Tracker System is a system that keeps track of a user's income and expenses on a day-to-day basis. This system takes the user's income and divides it into daily expense allowances. If you exceed that day's expense, it will be deducted from your income and replaced with a new daily expense allowance. If the amount is smaller, it will be saved. At the end of the month, the daily spending tracking system will provide a report that shows the income expenditure curve. It will allow you

to enter the amount of money you have set aside for special occasions such as birthdays or anniversaries.

Expense Tracker will be a mobile application that can be used at any time. The first is the database layer, which will hold all of the data and financial information. Second, the programme will be supported by the user interface. The suggested system should allow users to communicate with the system as well as save information. Users should be able to choose from a variety of categories and enter the amount and mode of payment. This system should be capable of analysing data. provide information on the categories the user spent the most money in. The suggested system should have a user interface that allows users to save and track their previous expenses. Track money is an android application which is developed with a concept in mind to help users to easily manage all their income and expenses and keep track of all credits and debits of transaction according to different categories, also users can have a pictorial representation of all the transactions of different categories and can also download excel reports of transaction. App also receives customised tips in the form of push notifications which helps users to manage expenses [3].

* Expense tracker is a web application used to track user expenses and generates periodical reports about the savings and expenditure. In this project, they propose an application known as "Expense Tracker," which is helpful to manage our income and expense daily or periodically or else whenever they want to remind. It also acts as an indicator or reminder example in the fastest world in which they cannot remember what the things they to do for the end of the month are and the payments we have to pay for the particular month. Due to some conflict or other stress, they sometimes forget what the income is, where the money has to come from, or the payments they to pay. If we are a businessman with a multi-business, they do not know from which part of the business income has come and how much income has come for us, but with the help of this application, they can divide and store all of the income and set a reminder for a specific date to remain so that they can manage and finalize the income for us**.**

In proposed system user has a greater number of added features to the existing features like

* Weekly Budget Planner
* Automated message Alert
* UPI linkup
* Weekly and Monthly Analysis
* App Authentication
* Wish list
* Rewards

Weekly Budget Planner to track their expenses. Automated message Alert is generated when they cross their budget. UPI linkup to track their online transactions. Weekly and Monthly Analysis are generated in the form of pie chart. App Authentication for security of the user. Income, Expenses, and Wish List are the three data entry choices available to the user [4].

* With the launch and increase in sales of smartphones over the last few years, people are using mobile applications to get their work done, which makes their lives easier. Mobile applications comprise various different categories such as Entertainment, Sports, Lifestyle, Education, Games, Food and Drink, Health and Fitness, Finance, etc. This Expense Tracker application falls in the Finance Category and serves the important purpose of managing finances which is a very important part of one’s life. The software product went through the design, development, and the testing phase as a part of the Software Development Lifecycle. The application’s interface is designed using custom art elements, the functionality is implemented using iOS SDK, and the phase of testing the product was accomplished successfully. The application is not much user intensive but just comprises of having them enter the expense amount, date, category, merchant and other optional attributes (taking picture of the receipts, entering notes about the expense, adding subcategories to the categories). With this entered information, the user is able to see the expense details daily, weekly, monthly, and yearly in figures, graphs, PDF format, and can print them as well if a printer is detected or scanned nearby. The aim of this thesis is to provide a solution for iPhone users on how to manage finances in any circumstance by keeping track of their expenses every day. Ultimately, this contributes to societal well-being.

Web applications are created by the use of HTML, CSS and JavaScript code. The development environment to build the iOS applications is XCode where we can create, test, debug our apps. The apps are written in Objective C Programming language [5].

* Tracking regular expense is a key factor to maintain a budget. People often track expense using pen and paper method or take notes in a mobile phone or a computer. These processes of storing expense require further computations and processing for these data to be used as a trackable record. In this work, they have proposed an automated system named as expense to store and calculate these data. Expense is an application that runs on Android smartphones. By using this application, users can save their expense by simply scanning the bills or receipt copies. This application extracts the textual information from the receipts and saves the amount and description for further processing. It also monitors user's income by tracking the received SMS's from the user's saving accounts. By calculating income and expense it produces the user's balance in monthly and yearly basis. Overall, this is a smart automated solution for tracking expense [6].
* Income and Expense Tracker will maintain data of daily, weekly, monthly, yearly expenses, Manages your expenses and earnings in a simple and intuitive way. User can select category of expense, enter other information like user can capture photo, add location, select amount of expense etc. And this will save to the local database. User can view and sort expense as per weekly, monthly, yearly. By using this, we can reduce the manual calculations for their expenses and keep the track of the expenditure. In this, user can provide his income to calculate his total expenses per day and these results will stored for unique user. People when usually go for trips or movies with friends they can use this tracker to maintain their expense. It will be easy for them to share the bill in this tracker. This will display graph as per selected view. And user can enter his monthly income or limit of monthly expense. This tracker system provides an integrated set of features to help you to manage your expenses and cash flow [7].
* Spending Tracker is a daily expense management system designed to track day-to-day expenses easily and efficiently. It helps the user to track the daily expenses of unpaid and paid transaction through a computerized system which eliminates the need for hardcopy output. It systematically maintains the record of transactions done and easily helps the user to access data stored. User need to insert paid and unpaid expenses. The data is analysed properly, so that user can track expenses easily.

The language which they use to develop this system are Java (Apache NetBeans 11.3) a MySQL Workbench. This application is a GUI application [8].

**Conclusion:**

It is necessary to manage our personal expenses to reduce the unnecessary expenditures. The above projects in the literature review are built to analyse the expenses by the user to provide proper information about the user’s expenditure. In all the projects, user’s expense data is stored in SQL databases then later it is fetched, analysed and displayed to the user. Few projects display day, week and yearly expenses. Also, it allows user to set the remainder to alert the user if he crosses the expense limit. This helps user to reduce the expense when he crosses the limit. Some projects even have categories while adding the expense, so that expenses can be fetched in categories. It also has some graphs to represent the analysed data, so that the user can understand the analysed data more efficiently.

In our project, we have included almost all the features from the reviewed projects. We have used NOSQL as our database to store all the data related to the expenses. MongoDB provides the tools and APIs that help them build sophisticated analytics queries. Along with analytics-optimized indexing and storage formats, insights and actions are delivered at low latency with high concurrency. Along with displaying daily, monthly and yearly expenses, we have included a feature to display the expenses of the user between particular dates. Expenses of categories will be displayed in graphs and allows user to search for particular category to track the expense of the category.

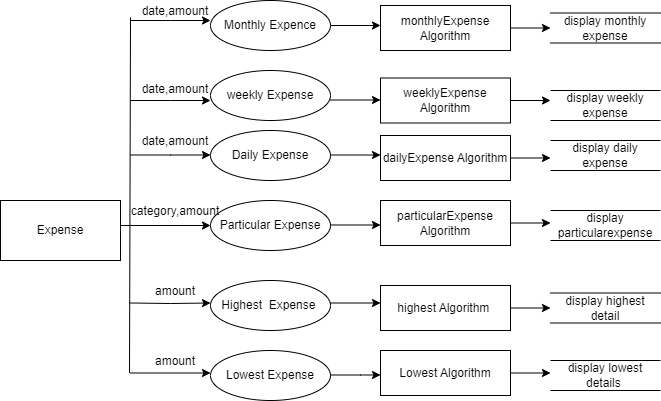
We have also included a graph to compare the expenses by month, it helps user to know depreciation and inclination of the expenditure. This helps the user to properly analysis the data regarding the expenses so that user may have clarity on the analysed data.

**Reference:**

1. KAZI, ATIYA, et al. "Expense Tracker." (2021).
2. Gupta, Hrithik, et al. Expense Tracker: A Smart Approach to Track Everyday Expense. No. 4809. Easy Chair, 2020.
3. Jadhav, Nidhi Jitendra, et al. "EXPENSE TRACKER." 04/April-2022
4. Geetha, V., G. Nikhitha, and H. Sri Lasya3 Dr CK Gomathy. "EXPENDITURE MANAGEMENT SYSTEM."
5. Manchanda, Angad. Expense Tracker Mobile Application. Diss. San Diego State University, 2012.
6. Sabab, Shahed Anzarus, et al. "eExpense: a smart approach to track everyday expense." 2018 4th International Conference on Electrical Engineering and Information & Communication Technology (iCEEiCT). IEEE, 2018.
7. Chandini, S., et al. "Online Income and Expense Tracker." International Research Journal of Engineering and Technology (IRJET) 6.3 (2019): 2395-0056.
8. Singh, Uday Pratap. "Spending Tracker: A Smart Approach to Track Daily Expense." Turkish Journal of Computer and Mathematics Education (TURCOMAT) 12.6 (2021): 5095-5103.

**CHAPTER -4**

**ANALYSIS AND DESIGN**



**ALGORITHMS:**

|  |
| --- |
| **Algorithm 4.1 dailyExpense():** |
| //In this algorithm, we will display the total expense of the user in a day.  Step 1: Here the data is fetched is date and amount from the dataset.  Step 2:We need to sum all the amount of the expenses that are added in the day.  Step 3: Display the final result to the user. |

**Algorithm 4.2 monthlyExpense():**

**//**In this algorithm, we will display the total expense of the user in a month.

Step 1: Here the data is fetched is date and amount from the dataset.

Step 2: We need to sum all the amount of the expenses that are added in the month.

Step 3: Display the final result to the user.

**Algorithm 4.3 yearExpense():**

**//**In this algorithm, we will display the total expense of the user in a month.

Step 1: Here the data is fetched is date and amount from the dataset.

Step 2: We need to sum all the amount of the expenses that are added in the month.

Step 3: Display the final result to the user.

**Algorithm 4.4 particularExpense():**

**//**In this algorithm, we will display the total expense of particular category of the user.

Step 1: First user needs to input the particular category.

Step 2: Here the data is fetched is particular category that user has inputted and amounts from the dataset.

Step 2: We need to sum all the amounts of the expenses that belongs to particular categories.

Step 3: Display the final result to the user.

**Algorithm 4.6 highestExpense():**

//In this algorithm, we will display the highest and lowest expenses when it is grouped as different categories.

Step 1: Here the data is fetched is amounts and categories from the dataset.

Step 2: We need to sum all the expenses by categories. From that lowest amount and highest amount expense is selected as result.

Step 3: Display the final result to the user.

**Algorithm 4.7 lowestExpense():**

//In this algorithm, we will display the lowest expenses when it is grouped as different categories.

Step 1: Here the data is fetched is amounts and categories from the dataset.

Step 2: We need to sum all the expenses by categories. From that lowest amount expense is selected as result.

Step 3: Display the final result to the user

**CHAPTER- 5**

**IMPLEMENTATION**

Pymongo is used to connect the mongo DB database where our data is stored. Using pymongo we are connecting to our expense data collection.

* + 1. **Daily Expense:**
* At first, we are importing datetime module to know the current date.
* After getting the data required, we need to iterate through the data and if the date field of the record satisfies with the current date then the amount will be added to the sum.
* Finally, we will return sum to the main file.
  + 1. **Monthly Expense:**
* At first, we are importing datetime module to know the current date.
* After getting the data required, we need to iterate through the data .
* And if the date field of the record satisfies with the current month, then the amount will be added to the sum.
* Finally, we will return sum to the main file.
  + 1. **Yearly Expense:**
* At first, we are importing datetime module to know the current date.
* After getting the data required, we need to iterate through the data
* And if the date field of the record satisfies with the current month, then the amount will be added to the sum.
* Finally, we will return sum to the main file.
  + 1. **Category Expense:**
* We need panda’s library in this module.
* Data is fetched from the database with the help of pymongo library and added to different lists.
* Then the Data Frame is used to structure the data.
* Group by method of Data Frame is used group the categories of the expense.
* After grouping the expense by categories, we need to plot the graph.
* In order to plot the graph, we make use of matplotlib. pyplot and the graph is displayed using category name and amount field.
  + 1. **Highest Expense:**
* Data is fetched from the database with the help of pymongo library and added to different lists.
* Then the Data Frame is used to structure the data.
* Group by method of Data Frame is used group the categories of the expense.
* Sum method is used along with the group by method to display the sum of amount by categories.
* Then max method is used to access the maximum amount from the data frame.
  + 1. **Lowest Expense:**
* Data is fetched from the database with the help of pymongo library and added to different lists.
* Then the Data Frame is used to structure the data.
* Group by method of Data Frame is used group the categories of the expense.
* Sum method is used along with the group by method to display the sum of amount by categories.
* Then min method is used to access the minimum amount from the data frame.
  + 1. **Particular Expense:**
* In order to fetch the details of particular expense we need to get the expense category name by the user.
* After getting the category name, we need to fetch the data from the database with the help of pymongo library and added to different lists.
* Then the Data Frame is used to structure the data.
* Group by method of Data Frame is used group the categories of the expense. At last we need to plot the graph with date and sum amount.
  1. **Accuracy:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Module** | **Expected Outcome** | **Actual**  **Outcome** | **Accuracy** |
| **dailyExpense** | 1200 | 1200 | 100% |
| **monthlyExpense** | 124084.0 | 124084.0 | 100% |
| **yearExpense** | 60309.0 | 60309.0 | 100% |
| **particularExpense** | [125.0, 4000.0, 74.0, 1500.0, 300.0, 619.0, 266.0, 874.0, 4000.0, 74.0, 1500.0] | [125.0, 4000.0, 74.0, 1500.0, 300.0, 619.0, 266.0, 874.0, 4000.0, 74.0, 1500.0] | 100% |
| **expenseDetails** |  |  |  |
| **highest** | 60916.0 | 60916.0 | 100% |
| **lowest** | 314.0 | 314.0 | 100% |
| **category Expense** | Yearly:[7633.0,60067.0,4876.0,2097.0,3487.0,1000.0,10000.0,314.0,1974.0,3800.0,2077.0,19390.0,20000.0] | Yearly:[7633.0,60067.0,4876.0,2097.0,3487.0,1000.0,10000.0,314.0,1974.0,3800.0,2077.0,19390.0,20000.0] | 100% |

**CHAPTER- 6**

**TESTING**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SL NO** | **Text Description** | **Expected Output** | **Observed Output** | **Result** |
| 1 | Click on the Check category expense. | It should display the monthly and yearly expense chart. | It shows the monthly and yearly expense chart. | Successful |
| 2 | Click on the check most expense. | It should display the total highest expense. | It shows the total highest expense. | Successful |
| 3 | Click on the check least expense. | It should display the total least expense. | It shows the total least expense. | Successful |
| 4 | Click on the particular expense. | It should display the category option click on the option shows the chart. | It displays the category option click on the option shows the chart. | Successful |

**Methodology:**