**SIMATS SCHOOL OF ENGINEERING**

**SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES**

**CHENNAI-602105**

**Budget Tracker**

**A CAPSTONE PROJECT REPORT**

*Submitted in the partial fulfillment for the award of the degree of*

**BACHELOR OF ENGINEERING**

**IN**

**INFORMATION TECHNOLOGY**

**Submitted by**

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**DECLARATION**

We, **HEMANTN BADANI.R, KUSHAL.M** students of **Bachelor of Engineering in Information Technology**, Department of Computer Science and Engineering, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, hereby declare that the work presented in this Capstone Project Work entitled **BUDGET TRACKER** is the outcome of our own bonafide work and is correct to the best of our knowledge and this work has been undertaken taking care of Engineering Ethics.

(R.HEMANTH BADANI 192111548)

(M.KUSHAL 192110609 )

Date:

Place:

**CERTIFICATE**

This is to certify that the project entitled **“Budget tracker”** submitted by **Hemanth Badani.R, kushal.M** has been carried out under my supervision. The project has been submitted as per the requirements in the current semester of B. Tech Information Technology.

Teacher-in-charge

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Abstract

We present an intelligent online budget tracker (GeniusIOBT.com) to efficiently manage house-

hold budget. Our system will help to plan and track household-budget related issues where mem-

bers of the system can securely access it anytime from anywhere via the Internet. The Intelligent

Online Budget Tracker not only keeps track of the budget but also provides means to analyze data

via charts and graphs as well as intelligently predicting future budgets and issues like bankruptcy.

Keywords: intelligent online budget tracker, household budget, data analys

INTRODUCTION What can be more important than time management? Correct. Money management.And you don't have to be a financial specialist to do that. Because it's not only business people who care about profits and expenses.

The ability to manage your cash flow and track your income and expense is vital. In the world of consumerism, it’s easy to spend a few bucks here and there to suddenly find out that you exceeded your daily, weekly or monthly budget. You don't want to get a negative balance of your credit card, don't you? Moreover, keeping track of your finances can play an important role in the pace you improve your savings account balance and save money for your dream vacation, house or car.

Whatever you may need money for, it’s important that you stick to your budget day in and day out. A budget is a structured list of your personal or household expected income and expenses. It’s to help you plan for how, what for and how much money will be spent or saved during a particular period of time. A great advantage of having a budget is a possibility to track your spending habits over time and adjust them accordingly. When it comes to tools that can help you achieve that, there are plenty of mediums to choose from.

Project description

The developed system is an independent and totally self-contained product which will prove to be beneficial to both the company hosting it as well as its members. Many features will be present in the system that will facilitate money management of the users of the system. On the first instance, the members need to register with the system. They will get unique login information which they can use every time they visit the system. Our Intelligent Online Budget

Tracker will then allow them to:

• Plan their budget

Some days before an expense or an income occurs, the members of the system can input about

what they think they can have as income or expense for the current month or for the next months

of the same financial year.

• Track their budget

As an income or expense occurs, the registered members need to feed it to the system at the same

time respecting about what they have planned initially for that specific category (for example,

entertainment, or groceries).

• Analyse their budget

Based on the data fed to the system, different calculations will be made like profits, deviations,

etc… and also monthly/yearly reports will be auto-generated which the users can download and

keep as reference for what incomes and expenses they have had for different months or budgets.

Budget Analysis is also done by using the built-in graphs and charting controls provided in the

website where again the generated graphs/charts can be downloaded for reference and as a history

for the different comparisons made.

• Predict their future budgets

Our system will also be intelligent where budget prediction will be made easy. This implies that the users can check their future budgets based on previous data fed and new issues they want to define like increase in cost of living or other factors that will affect prediction. At the same time, reports and charts will be generated which will facilitate the comparison and analysis of dataBudget Prediction is a very tedious process since it involves a number of different parameters that can affect the budget. Also, unexpected events may occur that change the picture of the financial situation of the person, for example, winning a lottery or losing a huge amount on the share market.

It has also been observed that budget prediction accuracy decreases as the time difference for the prediction increases (Statistics Office, 2001). One important reason is a change in the stan-dard/style of living. Possible causes of the change of standard/style of living are inflation, change of marital status and a growth in the family. So, a reasonable number of years should be allowed for prediction in our Intelligent Online Budget Tracker

Technical Details

As methodology, the Rational Unified Process (RUP), which is an iterative software development, has been the adopted. The RUP is not a single concrete prescriptive process, but rather anadaptable process framework, intended to be tailored by selecting elements of the process that areappropriate for our system’s needs. This object oriented methodology is better than other functionoriented software methodologies since it is highly customizable according to the system needs inaddition to its iterative nature.

The choice of the methodology to be used also defines the coding methodology to be used, whichinvolves the use of Object Oriented Programming concepts which is very advantageous in theway that it promotes code reuse and encapsulationCSS technology has been used massively which renders the constant display of the design in all the forms. CSS reduces the size of the pages which makes it faster to load than the use of images.

XML Technologies have also been used so as to dynamically configure the server from a client

host by the administrator. XML is platform independent and will also help a lot in later migration

of components of the system if expansion is needed.

Code implementation

#include <iostream>

#include <vector>

#include <string>

#include <map>

#include <iomanip>

#include <fstream>

using namespace std;

// User Registration Module

class User {

private:

string username;

string password;

public:

void registerUser() {

cout << "\nEnter Username: ";

cin >> username;

cout << "Enter Password: ";

cin >> password;

cout << "Registration successful!\n";

}

bool loginUser() {

string inputUsername, inputPassword;

cout << "\nEnter Username: ";

cin >> inputUsername;

cout << "Enter Password: ";

cin >> inputPassword;

if (inputUsername == username && inputPassword == password) {

cout << "Login successful!\n";

return true;

}

cout << "Invalid credentials!\n";

return false;

}

};

// Expense Logging Module

class Expense {

private:

struct Record {

string category;

double amount;

};

vector<Record> expenses;

public:

void logExpense() {

Record r;

cout << "Enter Expense Category: ";

cin >> r.category;

cout << "Enter Expense Amount: ";

cin >> r.amount;

expenses.push\_back(r);

cout << "Expense logged successfully!\n";

}

const vector<Record>& getExpenses() const { return expenses; }

};

// Income Logging Module

class Income {

private:

double totalIncome;

public:

Income() : totalIncome(0.0) {}

void logIncome() {

double income;

cout << "Enter Income Amount: ";

cin >> income;

totalIncome += income;

cout << "Income logged successfully!\n";

}

double getTotalIncome() const { return totalIncome; }

};

// Budget Setting Module

class Budget {

private:

double monthlyBudget;

public:

Budget() : monthlyBudget(0.0) {}

void setBudget() {

cout << "Enter Monthly Budget: ";

cin >> monthlyBudget;

cout << "Budget set successfully!\n";

}

double getBudget() const { return monthlyBudget; }

};

// Analysis and Charts Module

class Analysis {

public:

void displayAnalysis(const Expense& expenses, const Income& income, const Budget& budget) {

double totalExpenses = 0.0;

map<string, double> categoryBreakdown;

for (const auto& exp : expenses.getExpenses()) {

totalExpenses += exp.amount;

categoryBreakdown[exp.category] += exp.amount;

}

cout << "\n===== Analysis =====\n";

cout << "Total Income: $" << fixed << setprecision(2) << income.getTotalIncome() << endl;

cout << "Total Expenses: $" << totalExpenses << endl;

cout << "Remaining Budget: $" << budget.getBudget() - totalExpenses << endl;

cout << "\nCategory Breakdown:\n";

for (const auto& entry : categoryBreakdown) {

cout << entry.first << ": $" << entry.second << endl;

}

}

};

// Notifications and Alerts Module

class Notification {

public:

void sendAlert(const Expense& expenses, const Budget& budget) {

double totalExpenses = 0.0;

for (const auto& exp : expenses.getExpenses()) {

totalExpenses += exp.amount;

}

if (totalExpenses > budget.getBudget()) {

cout << "\nAlert: You have exceeded your budget!\n";

}

}

};

// Report Generation Module

class Report {

public:

void generateReport(const Expense& expenses, const Income& income, const Budget& budget) {

ofstream reportFile("budget\_report.txt");

if (reportFile.is\_open()) {

double totalExpenses = 0.0;

map<string, double> categoryBreakdown;

for (const auto& exp : expenses.getExpenses()) {

totalExpenses += exp.amount;

categoryBreakdown[exp.category] += exp.amount;

}

reportFile << "===== Budget Report =====\n";

reportFile << "Total Income: $" << fixed << setprecision(2) << income.getTotalIncome() << "\n";

reportFile << "Total Expenses: $" << totalExpenses << "\n";

reportFile << "Remaining Budget: $" << budget.getBudget() - totalExpenses << "\n\n";

reportFile << "Category Breakdown:\n";

for (const auto& entry : categoryBreakdown) {

reportFile << entry.first << ": $" << entry.second << "\n";

}

reportFile.close();

cout << "\nReport generated successfully! (budget\_report.txt)\n";

} else {

cout << "\nError: Unable to create report file.\n";

}

}

};

// Main Function

int main() {

User user;

Expense expense;

Income income;

Budget budget;

Analysis analysis;

Notification notification;

Report report;

user.registerUser();

if (!user.loginUser()) {

return 1;

}

int choice;

do {

cout << "\n===== Budget Tracker Menu =====\n";

cout << "1. Log Expense\n";

cout << "2. Log Income\n";

cout << "3. Set Budget\n";

cout << "4. View Analysis\n";

cout << "5. Generate Report\n";

cout << "6. Exit\n";

cout << "Enter your choice: ";

cin >> choice;

switch (choice) {

case 1:

expense.logExpense();

notification.sendAlert(expense, budget);

break;

case 2:

income.logIncome();

break;

case 3:

budget.setBudget();

break;

case 4:

analysis.displayAnalysis(expense, income, budget);

break;

case 5:

report.generateReport(expense, income, budget);

break;

case 6:

cout << "Exiting the application. Goodbye!\n";

break;

default:

cout << "Invalid choice! Please try again.\n";

}

} while (choice != 6);

return 0;

}

conclusion

We have presented a working prototype of an intelligent online budget tracker. The development of this application has been conducted in a stepwise manner using the well defined methodology, RUP, customised according to the requirements of the system. Most of the goals set at the begin-ning of the development phase have been met. Security issues like web security or network security have also been treated in the design and development of the system, thus increasing the reli-ability of the system. Quality management issues have also been handled satisfactorily

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