Technical Design Document

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Program Description:

Program for logging a user’s monthly expenses. After logging the expenses the program will calculate the user’s total expenses by utilizing the **reduce** method, the highest expense, and the lowest expense. It will also label the highest and lowest expenses.

Functions used in the Program

1. Function Name: obtainExpenses

* Description: This function asks the user to input the type of expense and the value of it and adds it to a dictionary of monthly expenses
* Parameters:
  + dictionary data
* Variables:
  + str expenseType
  + Float expenseCost
* Logical Steps:
  + Takes in user input for expense type and cost then creates a new data point for the monthlyExpenses dictionary and adds it
* Returns:
  + Null

1. Function Name: calculateData

* Description: Using the data in the monthlyExpenses dictionary finds the total spent during the month and the least and greatest expense
* Parameters:
  + Dictionary data
* Variables
  + float totalExpenses - total value of all “Cost” values in the dictionary
  + float greatestExpense - the key that has the greatest “cost” value in the dictionary
  + float greatestValue - the value associated with the greatestExpense
  + float lowestExpense - the key that has the lowest “cost” value in the dictionary
  + float lowestValue - the value associated with the lowestExpense
* Logical Steps:
  + Using a lambda function calculate the total expenses with the “cost” values in the dictionary
  + Using the max() function find the key with the greatest value and using the data obtained assign its value to a variable
  + Using the min() function find the key with the lowest value and using the data obtained assign its value to a variable
  + Display the totalExpense, greatestExpense and value, and the lowestExpense and value at the end of the function
* Returns: Null

1. Function Name: main

* Description: Main function where functions of the program are used and data is displayed
* Parameters: None
* Variables:
  + monthlyExpenses - A dictionary of monthly expenses formatted as Type : Cost. Created as an empty dictionary and is populated during the obtain expenses function
  + Ans - Input from the user that determines how many times the obtainExpenses function is executed
* Logical Steps:
  + Create the monthlyExpenses dictionary and use it as the data parameter for both obtainExpenses and calculateData function
  + Ask user if they are ready to begin logging expenses
  + As long as the user continues to ask yes if they have more expenses to long continue executing the obtainExpenses function
  + Once the user has finished logging expenses display the dictionary in a clear format
  + Pass the dictionary through the calculateData function to display total, greatest, and lowest expense.
* Returns: Null

Link to Repository: https://github.com/DFaustin175/COP2373

Output Screenshot

