Technical Design Document Programming Exercise 3

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Program Description: This program collects a list of the user's monthly expenses, calculates the total expense, identifies the highest and lowest expenses, and labels them appropriately. The user inputs expense types and corresponding amounts, and the program uses the reduce method to perform calculations and analyze the expenses.

Functions used in the Program (listed in order as they are called):

1. Function Name: get\_expenses()
   * Description: This function prompts the user to enter their expenses, consisting of an expense type and amount.
   * Parameters: None.
   * Variables:
     + expenses (list): A list storing tuples of expense types and their corresponding amounts.
   * Logical Steps:
     + Continuously prompt the user to enter an expense type and amount.
     + Stop collecting inputs when the user enters 'done'.
     + Validate numeric inputs for the amount and store the entries.
     + Return the list of expenses.
   * Returns:
     + expenses (list): A list of expense type and amount pairs.
2. Function Name: analyze\_expenses(expenses)
   1. Description: This function calculates the total, highest, and lowest expenses from the user's list.
   2. Parameters:
      1. expenses (list): A list of expense tuples entered by the user.
   3. Variables:
      1. total\_expense (float): The total sum of all expenses.
      2. highest\_expense (tuple): The expense type and amount of the highest expense.
      3. lowest\_expense (tuple): The expense type and amount of the lowest expense.
   4. Logical Steps:
      * If the expense list is empty, print a message and return.
      * Use the reduce function to calculate the total expense.
      * Use the reduce function to determine the highest expense.
      * Use the reduce function to determine the lowest expense.
      * Display the total, highest, and lowest expenses with labels.
   5. Returns: None.

Logical Steps of the Program:

1. Prompt the user to enter their monthly expenses.
2. Call get\_expenses() to collect and store the user's expenses.
3. Call analyze\_expenses() to process the expense list.
4. Display the total expense, highest expense, and lowest expense with proper labels.

**Link to repository:** https://github.com/CarsonHarbin/COP2373