**Technical Design Document**

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**Program Description:**

This program asks users to input their expenses along with their categories and then calculates the total, highest, and lowest expenses using the reduce() function from Python’s functools module and lambda.

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

1. **Function Name:** get\_expenses()
   * **Description:** This function collects expense categories and their respective amounts from the user until they enter "done." The expenses are stored as a list of tuples.
   * **Parameters:** None
   * **Variables:**
     + expenses (list) – Stores the expense categories and amounts as tuples.
     + expenses\_type (string) – Holds the category of each expense entered by the user.
     + amount (float) – Stores the monetary value of each expense.
   * **Logical Steps:**
     + Initialize an empty list expenses.
     + Prompt the user to enter an expense category.
     + If the user enters "done," exit the loop.
     + Prompt the user for the amount of the expense.
     + Validate the input to ensure it's a valid number.
     + Append the category and amount as a tuple to expenses.
     + Repeat until the user enters "done."
     + Return the expenses list.

* **Returns:** A list of tuples containing expense categories and amounts.

1. **Function Name:** main()
   * **Description:** This function serves as the main execution point of the program. It calls get\_expenses() to retrieve user input and then uses the reduce() function to calculate total, highest, and lowest expenses.
   * **Parameters:** None
   * **Variables:**
     + expenses (list) – Stores the list returned by get\_expenses().
     + total\_expenses (float) – The sum of all expenses.
     + highest\_expenses (tuple) – The expense category with the highest amount.
     + lowest\_expenses (tuple) – The expense category with the lowest amount.
   * **Logical Steps:**
     + - Call get\_expenses() to retrieve the list of expenses.
       - If no expenses are entered, print a message and exit.
       - Use reduce() to calculate:
         1. The total of all expenses.
         2. The highest expense category.
         3. The lowest expense category.
       - Print the total, highest, and lowest expenses.
   * **Returns:** None

**Logical Steps:**

1. Call the main() function.
2. Inside main(), call get\_expenses() to collect user inputs.
3. Use reduce() to get the total, highest, and lowest expenses.
4. Display the calculated results.

**Link to your repository:** <https://github.com/khoakhi3/COP2373>

Result: A screenshot of a computer

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