**Technical Design Document**

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**Date Created:** 2/16/2025

**Program Description:** Retrieves user input, the user is first asked for the monthly expense type, then amount of the expense, the user can enter values until “quit” is typed. The program then analyzes the values and displays the total expenses, highest, and lowest.

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

1. **Function Name:** get\_expenses

**Description:** Collects users monthly expense by asking for the type of expense and the amount, stored in lists using tuples

**Variables:**1. expenses: List storing tuples of expense type and amount  
2. expense\_type: type of expense entered   
3. expense\_amount: monthly amount of previous expense type entered

**Logical Steps:**   
1. Create list for expenses to be inputted  
2. Start an infinite loop   
3. Prompts input for expense type  
4. Allows user to enter “quit” during the expense type question to end infinite loop  
5. Asks for monthly amount paid for expense type previously entered   
6. Stores name and amount in a tuple

**Returns:** The list of name and amounts to be called in the future

2.**Function Name:** expense\_analysis

**Description:** Handles calculations of expenses to find total expenses, highest, and lowest.

**Parameters:** expenses (tuple list)

**Variables:**1. total\_expense  
2. highest\_expense  
3. lowest\_expense

**Logical Steps:**1. Use reduce to calculate total expense, sum up all amounts in expense list starting at 0 and adding each amount entered.   
2. Uses reduce and lambda to calculate highest amount, saves the highest amount whenever it is inputted and then compares it with the current amount inputted.  
3. Uses same to calculate lowest amount, same as above but opposite signs.

**Returns:** Tuple holding total expense (float) highest expense (tuple of type and amount) and lowest expense(tuple of type and amount.

3. main

**Description:** plays out program, calls other functions to collect and analyze expenses, and displays results.

**Variables:**1. Expenses: list returned by get\_expenses  
2. Total: total expense returned in previous  
3. Highest  
4. Lowest

**Logical Steps**:   
1. Call get\_expenses to retrieve data  
2. Checks if there are any expenses, if so print message  
3. Call expense\_analysis to calculate total, highest, and lowest expenses  
4. Print values

**Logical Steps:**

1. Calls main()
2. main() calls get\_expenses()
3. main() calls expense\_analysis()
4. expense\_analysis() returns calculations to main()
5. main() prints results.

**Link to your repository:** <https://github.com/awilso70/COP2373-Austin-Wilson-Monthly-Expenses>