Personal Finance Tracker – Final Written Algorithm

Start

- Display a main menu with choices:
  - "1. Add income"
  - "2. Add expense"
  - "3. View summary report"
  - "4. Exit"
  - Prompt the user: "Please type the number of the option you want to choose."
  - If the user types anything other than 1, 2, 3, or 4, reject the attempt and display:
    - "Invalid choice. You must enter 1, 2, 3, or 4."
    - Then re-display the main menu until a valid choice is made.

- If the user chooses option 1 (Add Income):
  - Prompt the user: "Enter income amount in dollars. Do not include any symbols (like $ or commas). For example, type 500 or 1200.75."
  - Validate input:
    - If the input is not a number, reject it and say: "That was not a number. Please enter a valid number, for example 500."
    - If the number entered is less than or equal to zero, reject it and say: "Income must be a positive number greater than 0. Please try again."
    - Keep re-asking until the user provides a positive number.
  - Prompt the user: "Choose income category. The available categories are:"
    - Salary (regular work pay)
    - Gift (money received as a gift)
    - Investment (money made from investments, such as stocks or dividends)
    - Other (anything that does not fit into the above categories)
  - Validate category input:
    - If the user enters something outside these categories, reject it and say: "That is not a valid income category. Please type exactly one of the options: Salary, Gift, Investment, or Other."
    - Keep asking until a valid category is given.
  - Automatically update the program's **JSON summary file**, which stores income and expense data by category:
    - If the summary file does not exist, create a new file in the same folder as the program named [program_name]_summary.json.
    - Open the JSON file and read its current data.

- ◆ Increase the total stored under the selected income category by the entered amount.
- ◆ Save the updated data back to the JSON file immediately.
  - ○ Display message: "Income added successfully. Returning to main menu."
  - ○ Return to the main menu.

- If the user chooses option 2 (Add Expense):
  - ○ Prompt the user: "Enter expense amount in dollars. Do not include any symbols (like $ or commas). For example, type 35 or 120.99."
  - ○ Validate input:
    - ◆ If the input is not a number, reject it and say: "That was not a number. Please enter a valid number, for example 35."
    - ◆ If the number entered is less than or equal to zero, reject it and say: "Expense must be a positive number greater than 0. Please try again."
    - ◆ Keep re-asking until the user provides a positive number.
  - ○ Prompt the user: "Choose expense category. The available categories are:"
    - ◆ Food (groceries, dining out, snacks)
    - ◆ Housing (rent, mortgage, utilities)
    - ◆ Transportation (gas, bus fare, car payments, ride-sharing)
    - ◆ Entertainment (movies, streaming services, games, hobbies)
    - ◆ Health (doctor visits, medications, insurance)
    - ◆ Education (school supplies, tuition, books)
    - ◆ Other (anything that does not fit into the above categories)
  - ○ Validate category input:
    - ◆ If the user enters something outside these categories, reject it and say: "That is not a valid expense category. Please type exactly one of the options: Food, Housing, Transportation, Entertainment, Health, Education, or Other."
    - ◆ Keep asking until a valid category is given.
  - ○ Automatically update the program's **JSON summary file**, which stores income and expense data by category:
    - ◆ If the summary file does not exist, create a new file in the same folder as the program named [program_name]_summary.json.
    - ◆ Open the JSON file and read its current data.
    - ◆ Increase the total stored under the selected expense category by the entered amount.
    - ◆ Save the updated data back to the JSON file immediately.
  - ○ Display message: "Expense added successfully. Returning to main menu."

- ○ Return to the main menu.

- If the user chooses option 3 (View Summary Report):
  - ○ Check if the JSON summary file exists and contains any data.
    - ◆ If the file does not exist or contains no entries, display:
      - ◇ "No entries exist. Please add at least one entry before viewing a report."
      - ◇ Return to the main menu.
  - ○ If entries exist:
    - ◆ Open and read the JSON summary file.
    - ◆ Calculate and display the following:
      - ◇ Total Income (sum of all income category totals)
      - ◇ Total Expenses (sum of all expense category totals)
      - ◇ Net Balance (total income minus total expenses)
    - ◆ Display a formatted breakdown showing:
      - ◇ Each income category and its total
      - ◇ Each expense category and its total
      - ◇ The total income, total expenses, and net balance at the end
  - ○ Display message: "Returning to main menu."
  - ○ Return to the main menu.

- If the user chooses option 4 (Exit):
  - ○ Ensure that all current income and expense data are saved to the JSON summary file.
  - ○ Display message: "Program ended. Thank you for using the Personal Finance Tracker."
  - ○ Stop the program.

End