**Report: Transportation Cost Calculator**

**Overview**

The Transportation Cost Calculator is a Java program designed to calculate the daily and weekly transportation costs based on user inputs. The program is interactive, using a menu-driven system to guide users through their cost calculations. It accommodates both public transport and private car options, making it versatile for different transportation modes.

**Features**

1. **Menu System**:
   * The program displays a menu with three options:
     + Calculate daily transport cost.
     + Calculate weekly transport cost.
     + Exit the program.
   * The user can repeatedly interact with the menu until they choose to exit.
2. **Daily Transport Cost Calculation**:
   * Prompts the user for inputs:
     + Distance traveled in kilometers.
     + Type of transport:
       - **Public Transport**: Requires the fare per kilometer.
       - **Private Car**: Requires fuel price per liter and fuel efficiency (km per liter).
   * Computes the daily cost based on the inputs.
   * Outputs the result in a formatted way (e.g., $10.50).
3. **Weekly Transport Cost Calculation**:
   * Prompts the user for the number of commuting days in a week.
   * Calls the daily cost calculation method to compute costs based on user inputs.
   * Suggests multiplying the daily cost by the number of days to derive the weekly cost.
   * (Note: Current implementation leaves the multiplication to the user rather than automating it.)
4. **Exit Option**:
   * Provides a clean exit message when the user chooses to end the program.

**How the Code Works**

* **Menu Display**: A while loop ensures the menu continues to display until the user chooses to exit.
* **Input Handling**:
  + Uses Scanner to read user inputs.
  + Guides the user through step-by-step prompts for each required value.
* **Cost Calculation**:
  + For **public transport**: Multiplies distance by fare per kilometer.
  + For **private cars**: Computes cost using the formula: Cost=Distance×(Fuel PriceFuel Efficiency)\text{Cost} = \text{Distance} \times \left( \frac{\text{Fuel Price}}{\text{Fuel Efficiency}} \right)Cost=Distance×(Fuel EfficiencyFuel Price​)
* **Output**:
  + Prints costs in a clear and formatted manner.

**Strengths**

1. **User-Friendly Interface**:
   * The program’s menu system is intuitive and easy to navigate.
2. **Versatile Calculation**:
   * Supports multiple transport types with distinct input requirements.
3. **Reusability**:
   * Modular methods (calculateDailyCost and calculateWeeklyCost) promote code reuse and clarity.

**Limitations**

1. **Weekly Cost Automation**:
   * The program does not fully automate the calculation of weekly costs, leaving the user to perform the multiplication manually.
2. **Input Validation**:
   * Lacks robust checks for invalid inputs (e.g., negative numbers, invalid transport types).
3. **Duplication of Prompts**:
   * Weekly cost calculation re-prompts for inputs already entered during daily cost calculation, which may inconvenience users.

**Potential Improvements**

1. Automate weekly cost calculation by multiplying the daily cost directly within the program.
2. Add input validation to handle edge cases and ensure data integrity.
3. Refactor code to avoid duplicate prompts by reusing the daily cost once computed.
4. Enhance user experience by offering default values or example inputs for guidance.

**Conclusion**

The Transportation cost calculator provides a simple yet effective tool for estimating transportation expenses. With minor enhancements, it can become a robust and user-friendly utility for budgeting transportation costs.