**Technical Design Document**

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**Description:**

This application calculates and applies discounts on products. It processes a list of items, each with a price and discount rate, and computes the final price after applying the discount. The system includes error handling to gracefully manage invalid data types and prevent program crashes.

**Functions:**

* **calculate\_discount(price, discount\_rate)**  
  Calculates the discount amount by multiplying the price and discount rate. Includes error handling to catch type-related issues and prevents invalid operations.
* **apply\_discount(price, discount\_amount)**  
  Applies the computed discount amount to the original price to determine the final cost. Handles exceptions that arise from incorrect types.
* **main()**  
  Initializes a list of products with their names, prices, and discount rates. Iterates through each product to calculate the discount and final price, and prints detailed output.

**Logical Steps:**

* Initialize a product list containing dictionaries with product details.
* For each product in the list:
  + Extract the price and discount\_rate.
  + Call calculate\_discount() to determine the discount amount.
  + Call apply\_discount() to get the final price.
  + Print product name, original price, discount amount, and final price.
* Catch and handle any exceptions during calculations (e.g., if price is a string).
* Ensure the application completes all iterations without crashing due to bad input.

**Debugging & Error Handling Improvements:**

* **Indentation errors**
* **Bug Identified:** TypeError – price was created as a string while discount\_rate was defined as a float.
* **Fix:** Changed data types so that both variables were set to float().
* Wrapped computations in try-except blocks inside both calculate\_discount() and apply\_discount() functions to catch ValueError and TypeError.
* **Message:** "Cant perform operation with strings and float." alerts the user to problematic data types.
* **Fallback Behavior:** If an error occurs, the discount or final price is set to 0.0 and processing continues.

**Repository Link:**

[CampsPA/Debugging\_Exercise](https://github.com/CampsPA/Debugging_Exercise)

**Testing Output Screenshot:**

**A screenshot of a computer

AI-generated content may be incorrect.**