System Requirements Specification Index

For

Data Analysis System Console Application

Version 1.0

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1 Project Abstract

Retelecom Analytics Ltd, a data analytics company in Bangalore, requires a data analysis system for processing daily sales and customer information. The company handles large sets of sales, customer, and inventory data that need to be processed and analyzed in specific ways. This Python console application will process transaction records, analyze customer behaviour, manage product data, and generate analytical reports. The system needs to employ specific processing methods for different types of data analysis to ensure accuracy and efficiency in handling large datasets.

2 Business Requirements:

Screen Name	Console input screen
Problem Statement	1. Application must process sales transactions and generate customer spending reports 2. System must track high-value customers and their purchasing patterns 3. Program must filter and categorize transaction data based on status 4. System must handle data validation and incomplete record processing 5. Program must generate summary reports with statistics

3 CONSTRAINTS

3.1 INPUT REQUIREMENTS

1. Sales Records:
   - Must be stored as list of dictionaries in variable sales_data
   - Each record has: order_id, customer_id, amount, status
   - Example: [{"order_id": "A1", "customer_id": "C1", "amount": 100, "status": "completed"}]
2. Customer Records:
   - Must be stored as dictionary in variable customer_records
   - Each record has: name, tier, total_spent, active
   - Example: {"C1": {"name": "John", "tier": "gold", "total_spent": 1500, "active": True}}
3. Product Inventory:
   - Must be stored as list of dictionaries in variable product_inventory
   - Each record has: id, name, stock, defective
   - Example: [{"id": "P1", "name": "Laptop", "stock": 5, "defective": 1}]

3.2 CALCULATION CONSTRAINTS

1. Sales Processing:
   - Must use for loop for batch transaction processing
   - Must calculate per-customer sales totals
   - Return dictionary with customer sales data
   - Example: {"C1": {"total": 1500, "orders": 3}}
2. Customer Analysis:
   - Must use while loop for iterative customer tier updates
   - Must process customers until specified criteria met
   - Required for real-time tier adjustments
   - Example: Update tiers until all customers processed
3. Transaction Filtering:
   - Must use continue for handling status-based exclusions
   - Must skip processing of pending/cancelled orders

- Required for accurate sales calculations
- Example: Skip non-completed transactions

4. Data Validation:

   - Table columns: Status Type, Count, Percentage
   - Include only valid transactions
   - Show processing completion status

3.3 Output Constraints

1. Display Format:

   - Show "Data Analysis System"
   - Show "Report Type: {report_name}"
   - Show results in tabular format

2. Sales Summary:
   - Table columns: Customer ID, Orders, Total Amount
   - Sort by Total Amount (descending)
   - Show currency symbol ($) for amounts
3. Customer Report:
   - Table columns: Name, Tier, Status, Total Spent
   - Filter based on tier and status
   - Show tier upgrade recommendations
4. Status Report:
   - Table columns: Status Type, Count, Percentage
   - Include only valid transactions
   - Show processing completion status

4. Template code Structure:

1. Processing Functions:

   - process_sales_data(sales_data)
   - analyze_customer_tiers(customer_records)
   - filter_transactions(sales_data)
   - validate_customer_data(customer_records)
   - generate_reports(processed_data)

2. Input Section:

   - Load data structures
   - Validate input data
   - Set processing parameters

3. Processing Section:

- Execute batch processing
- Update customer records
- Generate analysis results

4. Output Section:

- Format report data
- Display summary tables
- Show processing statistics

5. EXECUTION STEPS TO FOLLOW:

1. Run the program
2. Load data structures
3. Process transactions
4. Update customer records
5. Generate reports
6. Display results