Software User Manual

Sales Analytical Mastery: User Manual

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**1. Introduction**

**Sales Analytical Mastery** is a comprehensive data engineering solution designed to streamline data extraction, transformation, and analytics for the AdventureWorks dataset. This project integrates SQL, SSIS, machine learning models built with Python, and Azure cloud services to provide deep insights into sales performance. Key functionalities include customer segmentation, product recommendations, and data visualization via Power BI.

**2. System Requirements**

- **Operating System:** Windows Server 2016 or later, macOS X 10.15 or later

- **Processor**: Intel i7 or higher

- **Memory**: 16 GB RAM minimum, 32 GB recommended

- **Storage**: 2 GB of available space for source and warehouse databases

- **Additional Requirements:**

- SSIS installed

- SQL Server

- Python (version 3.8 or later)

- Power BI Desktop

- Azure Data Factory (optional)

**3. Installation Guide**

1. Install **SQL Server and SSIS.**

2. Set up a Python environment with necessary libraries (pandas, scikit-learn, etc.).

3. Download and configure Power BI Desktop.

4. Connect to the AdventureWorks database.

5. Set up Azure Data Factory for cloud processing, if required.

**4. Getting Started**

1. Open SQL Server and SSIS to configure data extraction from the **AdventureWorks** database.

2. Import data into the **Sales Analytical Mastery** data warehouse.

3. Use Power BI to set up dashboards for visualizing extracted data.

4. Configure ML models in Python for customer segmentation and product recommendations.

**5. Features Overview**

- **Data Extraction**: Use SSIS to automate data extraction from **AdventureWorks** into your data warehouse.

- **Data Warehousing**: Store data in a structured format to optimize analysis and reporting.

- **Machine Learning**: Python-based models for customer segmentation and product recommendations.

- **Analytics and Reporting**: Power BI dashboards provide real-time insights into sales performance, customer behavior, and trends.

- **Azure Integration**: Optional cloud-based data processing via Azure Data Factory.

**6. User Interface Guide**

- **SSIS Package Interface**:

- Navigate to the SSIS Solution Explorer to access data flow tasks.

- Use the Control Flow tab to manage and schedule packages.

- **SQL Server Interface**:

- Query the **AdventureWorks** database and data warehouse using SQL.

- Perform data aggregation and analysis using stored procedures.

- **Python Interface**:

- Run Jupyter notebooks to develop, train, and test ML models.

- Monitor model performance and refine for accuracy.

- **Power BI Interface**:

- The dashboard displays sales, customer segments, and product recommendations.

**7. How to Perform Tasks**

**Task 1: Extracting Data from AdventureWorks**

1. Open SSIS and create a new project.

2. Define the source as the **AdventureWorks** database.

3. Set the destination as your data warehouse.

4. Execute the package to load the data.

**Task 2: Running SSIS Packages**

1. Navigate to the **Solution Explorer** in SSIS.

2. Select the package you want to run.

3. Click **Start** to execute the ETL job.

4. Monitor progress and view logs for any errors.

**Task 3: Deploying ML Models for Customer Segmentation**

1. Open your Python environment and run the ML models for customer segmentation.

2. Train the models on sales and customer data from the warehouse.

3. Use scikit-learn to evaluate model performance.

4. Deploy the model using Azure if cloud services are required.

**Task 4: Performing Analysis using Power BI**

1. Connect Power BI to the data warehouse.

2. Create visualizations like bar charts and line graphs to answer business questions, such as identifying top products.

3. Share the reports with stakeholders for real-time decision-making.

**8. Troubleshooting**

- **Issue**: SSIS package fails during execution.

**Solution**: Verify connection strings and ensure database access permissions are correct.

- **Issue**: Python script crashes when running ML models.

Solution: Check for missing libraries or incorrect model parameters.

**9. FAQ**

- **Q:** How can I update the SSIS package for new data?

**A:** Modify the data source settings and re-run the package to update the data warehouse.

**- Q:** How do I retrain the ML models?

**A:** Update the dataset and re-execute the training scripts in Python.

**10. Contact Support**

For technical assistance with **Sales Analytical Mastery**, please reach out to the support team:

- **Email**: support@salesanalyticalmastery.com

- **Phone**: +1 (800) 987-6543

- **Website**: www.salesanalyticalmastery.com/support