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1. Key Differences Between a Data Flow Task and an Execute SQL Task

Feature	Data Flow Task	Execute SQL Task
Purpose	Used for **ETL (Extract, Transform, Load)**	Used for executing **SQL commands**
Processes	Transfers and transforms data between sources	Executes SQL queries (SELECT, INSERT, etc.)
Components	Uses Source, Transformation, and Destination	Uses Connection and SQL Statement

Scenario:

- **Data Flow Task**: Importing customer records from a CSV file, transforming the data, and loading into a SQL Server table.
- **Execute SQL Task**: Running a TRUNCATE TABLE command on a destination table before loading new data.

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2. Why is a Data Conversion Component Needed When Importing from Flat File?

- **Reason**: Flat files typically treat all data as **text (strings)**.
- **Problem Solved**: It resolves **data type mismatches** when loading into a destination that requires strict types (e.g., integers, dates).

Example: A CSV contains a BirthDate column as text, but SQL Server expects datetime. A Data Conversion component converts it properly.

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3. Three Key Properties to Configure in an Execute SQL Task

1. **Connection** – Choose the database connection manager.
2. **SQLStatement** – Provide the actual SQL query or command.
3. **ResultSet** – Specify the result type (None, Single Row, Full Result Set, etc.)

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4. Common .NET Namespaces for File and DB Access in Script Task

- System.IO – For file operations (read/write files).

- System.Data – General data access.
- System.Data.SqlClient – For SQL Server database operations.
- Microsoft.SqlServer.Dts.Runtime – For SSIS-specific operations and variable handling.

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5. Purpose of a Package-Level Variable

- **Definition**: A variable defined at the package scope.
- **Purpose**: To share data between tasks and components across the entire SSIS package.

Example: A variable storing a file path used by both a File System Task and a Data Flow Task.

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6. How UNION ALL Transformation Works in SSIS

- **Purpose**: Combines data from **multiple inputs** into a single output stream.
- **Requirement**:
    - All inputs must have the **same number of columns**.
    - **Data types and column order** must match across inputs.

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7. Error from Mismatched Data Types at UNION ALL Time

- **Common Error**:
  Cannot convert between Unicode and non-Unicode string data types.
- **Cause**: One source might have DT_WSTR (Unicode), and the other DT_STR (non-Unicode).
- **Fix**:
    - Use **Data Conversion** to make data types consistent before the UNION ALL transformation.
    - Example: Convert all string columns to DT_WSTR.

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8. How to Read an SSIS Variable in a Script Task (C#)

```
string fileName = Dts.Variables["User::FileName"].Value.ToString();
```

- Ensure the variable is listed in **ReadOnlyVariables** or **ReadWriteVariables** of the Script Task.

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9. Truncating a Destination Table Before Inserting

a. Why is truncation important?

- Removes all rows quickly before inserting new data.
- Prevents **data duplication** or conflicts.
- **Performance** is better than deleting rows one by one.

b. What happens if you omit the truncate?

- New data will be **appended** to existing rows.
- Could result in **duplicate records** or **stale data** in the destination table.
