**SSIS Package Documentation: Populating a Database from Excel Files**

**1. Introduction**

In this project, I designed and implemented an SSIS (SQL Server Integration Services) package using **Visual Studio** to automate importing data from **20 Excel files** into a SQL Server database.  
The goal was to efficiently migrate structured data into database tables with minimal manual intervention.

**2. Preparation Steps**

**2.1 Tools and Environment**

* **Visual Studio 2019** with **SQL Server Data Tools (SSDT)**.
* **SQL Server** database instance ready for data import.
* **20 Excel Files** prepared with well-structured headers and matching SQL table structures.

**2.2 Excel Files List**

Each Excel file corresponds to a table in the SQL database.  
For example:

* Users.xlsx ➔ dbo.Users
* Students.xlsx ➔ dbo.Students
* Orders.xlsx ➔ dbo.Orders ...and so on.

(See full list at the end in Appendix.)

**3. Building the SSIS Package**

**Step 1: Create a New Integration Services Project**

* Opened **Visual Studio**.
* Created a **New Project** ➔ **Integration Services Project**.
* Named it ExcelToDatabaseImport.

**Why**: Isolating this ETL process into its own SSIS project helps maintain clarity and version control.

**Step 2: Add a Data Flow Task**

* In **Control Flow**, I dragged a **Data Flow Task** onto the canvas.
* Renamed it to **Load Excel Files to Database**.

**Why**: This keeps all actual data movements inside a manageable task, separating control logic and data flow.

**Step 3: Configure the Data Flow**

**3.1 Adding Excel Sources**

* For each Excel file, I added an **Excel Source** component.
* Configured each Excel Source to:
  + Select the appropriate **Excel Connection Manager**.
  + Choose the correct **sheet** (defaulted to the first sheet).
  + Map columns from the file to SSIS outputs.

**Observation**: Some Excel files had large sizes (e.g., Lessons.xlsx 10,225 KB), so ensuring correct data types during import was critical.

**3.2 Adding OLE DB Destinations**

* For each Excel Source, I connected it to an **OLE DB Destination**.
* Configured each destination to:
  + Connect to the **SQL Server database**.
  + Map source columns to the target table columns.
  + Create tables manually in SQL Server beforehand to ensure consistency.

**Important**: I carefully verified column mappings for every file to prevent runtime errors.

**Step 4: Manage Connection Managers**

* Created **one Excel Connection Manager per file** (total 22 connections).
* Created **one OLE DB Connection Manager** for the database.

Here’s a snapshot of the connection managers:

**Why Not Use a Loop?**  
Because each file and table had slightly different structures. Looping dynamically could have introduced complexity unnecessarily.

**Step 5: Execute and Verify**

* Clicked **Start** to execute the package.
* Checked the **Progress tab** for any error messages.
* Once execution completed, I verified the SQL tables to confirm that data was successfully populated.

**4. Challenges and Solutions**

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| --- | --- |
| **Challenge** | **Solution** |
| Different data types in Excel vs SQL | Used Data Conversion transformations if needed. |
| Large Excel files causing slow import | Increased SSIS data flow buffer size settings. |
| Managing many connection managers | Carefully renamed and documented each connection to avoid confusion. |
| Missing or extra columns in Excel | Manually adjusted mappings in SSIS or preprocessed Excel files. |

**5. Appendix: Full Excel Files List**

|  |  |
| --- | --- |
| **Excel File** | **Target SQL Table** |
| Cart.xlsx | dbo.Cart |
| Catagory.xlsx | dbo.Category |
| cources.xlsx | dbo.Courses |
| CourseCart.xlsx | dbo.CourseCart |
| CourseGoals.xlsx | dbo.CourseGoals |
| CourseOrder.xlsx | dbo.CourseOrder |
| CourseRequirments.xlsx | dbo.CourseRequirements |
| Enrollment.xlsx | dbo.Enrollment |
| Instructors.xlsx | dbo.Instructors |
| Lessons.xlsx | dbo.Lessons |
| Orders.xlsx | dbo.Orders |
| progress.xlsx | dbo.Progress |
| QuizQuestions.xlsx | dbo.QuizQuestions |
| Quizes.xlsx | dbo.Quizzes |
| Sections.xlsx | dbo.Sections |
| SocialMedia.xlsx | dbo.SocialMedia |
| StudentGrades.xlsx | dbo.StudentGrades |
| Students.xlsx | dbo.Students |
| SubCatagories.xlsx | dbo.SubCategories |
| Users.xlsx | dbo.Users |

**6. Screen Shot of the Process:**

**A screenshot of a computer

AI-generated content may be incorrect.**