

## Data Warehouse and Business Intelligence Lab

**DEPARTMENT** Department of Data Science

**COURSE NAME** Data Warehouse and Business Intelligence Lab

**COURSE CODE** DS-306

### MANUAL LAB 8

**Objective: To perform data transformations from basic to advanced, using Microsoft SSIS.**

#### TASK 1: Format conversion.

1. Create the following table **SourceStudent**

Field Name	Data Type
StudentID	VARCHAR(10)
StudentName	VARCHAR(100)

2. Populate the following data

StudentID	StudentName
S1	Khurram Shahzad
S2	Arif Butt
S3	Faisal Bukhari

3. Create the following table **DestinationStudent**

Field Name	Data Type
StudentID	VARCHAR(20)
StudentName	VARCHAR(20)

4. Create ETL package to transfer data from **SourceStudent** to **DestinationStudent**.

StudentID	StudentName
S1	Khurram Shahzad
S2	Arif Butt
S3	Faisal Bukhari

## TASK 2: Splitting/joining of field and format conversion.

1. Create the following table. **Student1**

### Source Table: Students

Field Name	Data Type	Description
Student_ID	INT	Unique identifier for the student
Firstname	VARCHAR(50)	First name of the student
Middlename	VARCHAR(50)	Middle name of the student (nullable)
Lastname	VARCHAR(50)	Last name of the student
Email	VARCHAR(100)	Email address of the student

2. Populate the following data to **Student1**

Student_ID	FirstName	MiddleName	LastName	Email
S1	Muhammad	Khurram	Shahzad	<a href="mailto:khurram@gmail.com">khurram@gmail.com</a>
S2	Muhammad	Arif	Butt	<a href="mailto:arif@gmail.com">arif@gmail.com</a>
S3	Faisal	NULL	Bukhari	<a href="mailto:faisal@gmail.com">faisal@gmail.com</a>

3. Create the following destination table named **DWStudent**

Field Name	Data Type	Description
Student_ID	INT	Unique identifier for the student
StudentName	VARCHAR(150)	Full name of the student (First, Middle, and Last)

4. Create ETL package to transfer the **Student1** data to **DWStudent**.

Student_ID	Name
S1	Muhammad Khurram Shahzad
S2	Muhammad Arif Butt
S3	Faisal Bukhari

### TASK 3: Decoding of fields

1. Create the following table. **Student2**

**Source Table: Encoded Information**

Field Name	Data Type	Description
Student_ID	INT	Unique identifier for the student
Grade_Code	VARCHAR(10)	Encoded grade of the student
Program_Code	VARCHAR(10)	Encoded program the student is enrolled in

2. Populate the following data

StudentID	Grade_Code	Program_Code
S1	A	CS
S2	B	SE
S3	C	DS

3. Create the following destination table. **DWStudent2**

**Destination Table: Decoded Information**

Field Name	Data Type	Description
Student_ID	INT	Unique identifier for the student
Grade	VARCHAR(50)	Decoded grade of the student
Program	VARCHAR(50)	Decoded program the student is enrolled in

4. Perform ETL to decode information from source in such a way that the **DWStudent2** looks like the following.

StudentID	Grade	Program
S1	Excellent	Computer Science
S2	Good	Software Engineering
S3	Average	Data Science

## TASK 4: Data Integrating

1. Create another source **Student3** table.

### Students Table Structure

Field Name	Data Type
StudentID	VARCHAR(10)
SName	VARCHAR(100)
Degree	VARCHAR(100)

2. Populate the following data to **Student3**.

### Students Table (Populated)

StudentID	SName	Degree
S4	Waheed Iqbal	PhD
S5	Adnan Abid	[Degree Missing]
S6	Kamran Malik	[Degree Missing]

3. Create one single ETL that transfers the data this **Student1** (in Task 2) and **Student3** to the destination **DWStudent**.

SID	Sname
S1	Muhammad Khurram Shahzad
S2	Muhammad Arif Butt
S3	Faisal Bukhari
S4	Waheed Iqbal
S5	Adnan Abid
S6	Kamran Malik

## TASK 5: Data Conversion and Derived Attribute.

1. Create the following table. **Orders**

### Source Table: Orders

Field Name	Data Type	Description
OrderID	INT	Unique identifier for the order
OrderDate	DATE	Date when the order was placed
OrderQuantity	INT	Quantity of items ordered

### 2. Populate the following data

OrderID	OrderDate	Qty
O1	2024-01-15	5
O2	2024-03-22	3
O3	2023-11-10	8
O4	2023-07-25	2
O5	2023-06-14	10
O6	2023-09-30	4

### 3. Create the following destination table. **DWOrder**

Field Name	Data Type	Description
Year	INT	Year in which the orders were placed
QuantityOfOrders	INT	Total quantity of orders placed in that year

### 4. Create one ETL to transfer data from **Orders** table to **DWOrder** table.

Year	Qty
2024	8
2023	24