DWH PROJECT

ETL (SSIS) Package && SSAS

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TOPICS

1. INTRO
2. Prepare Data Sources
3. ETL Package
4. SSRS (CUBES)
5. Final tables in DWH
6. CODING
7. Final star schema

Introduction

create DWH in SQL server and then Implement an SSIS package solution to perform ETL to the "DW" server.
In My package contain full parameter like control flow , data flow and etc .DWH consists of the fact table to describe the aggregate function and number of dimensions to follow the describe it
AND THEN DOING Some tasks at SSAS(CUBES)

Prepare Data Sources

1. Text File (products.txt)

```
Productid,Name,Category
1,Laptop,Electronics
2,Tablet,Electronics
3,Smartphone,Electronics
4,Headphones,Accessories
5,Charger,Accessories
```

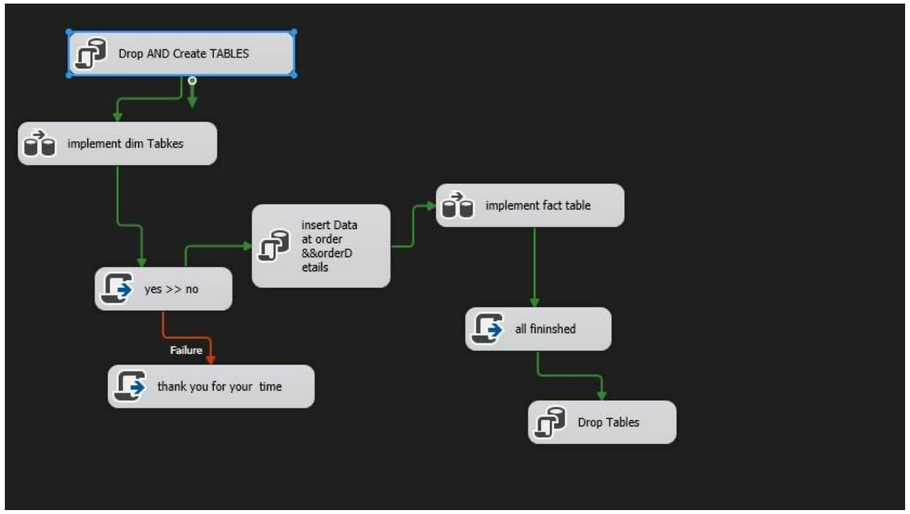
2. Database Dump (orders.sql)

```sql
-- TO MAKE TABLE TIME
use FILLE;
drop table if exists Time_source;
CREATE TABLE Time_source (
   time_id INT PRIMARY KEY ,
   Date DATE ,
    Year INT,
    Quarter CHAR(2),
    Month INT,
    DayOfMonth INT,
    DayOfWeek VARCHAR(10),
    WeekOfYear INT
);
INSERT INTO Time_source ( time_id, Date, Year, Quarter, Month, DayOfMonth, DayOfWeek, WeekOfYear) VALUES
(20230115, '2023-01-15', 2023, 'Q1', 1, 15, 'Sunday', 3),
(20230220, '2023-02-20', 2023, 'Q1', 2, 20, 'Monday', 8),
(20230305, '2023-03-05', 2023, 'Q1', 3, 5, 'Sunday', 10),
(20230410, '2023-04-10', 2023, 'Q2', 4, 10, 'Monday', 15),
(20230515, '2023-05-15', 2023, 'Q2', 5, 15, 'Monday', 20);
```

3. XML File (customers.xml)

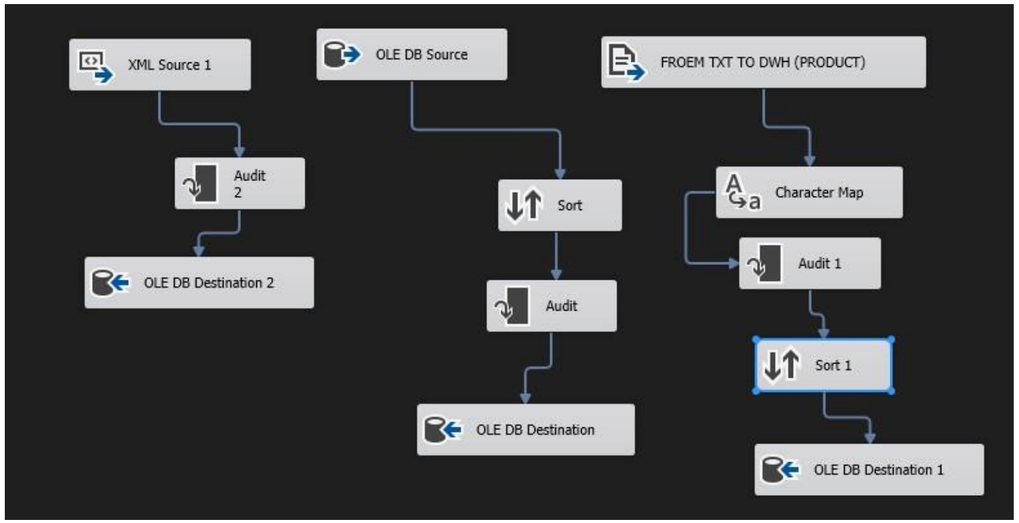
```xml
<?xml version="1.0" encoding="UTF-8"?>
<Customers>
    <Customer>
        <CustomerID>1</CustomerID>
        <Name>John Doe</Name>
        <Address>123 Elm St</Address>
        <Email>john.doe@example.com</Email>
    </Customer>
    <Customer>
        <CustomerID>2</CustomerID>
        <Name>Jane Smith</Name>
        <Address>456 Oak St</Address>
        <Email>jane.smith@example.com</Email>
    </Customer>
    <Customer>
        <CustomerID>3</CustomerID>
        <Name>Jim Brown</Name>
        <Address>789 Pine St</Address>
        <Email>jim.brown@example.com</Email>
    </Customer>
    <Customer>
        <CustomerID>4</CustomerID>
        <Name>Emma Davis</Name>
        <Address>101 Maple St</Address>
        <Email>emma.davis@example.com</Email>
    </Customer>
    <Customer>
        <CustomerID>5</CustomerID>
        <Name>Mary Johnson</Name>
        <Address>234 Birch St</Address>
        <Email>mary.johnson@example.com</Email>
    </Customer>
</Customers>
```

ETL Package



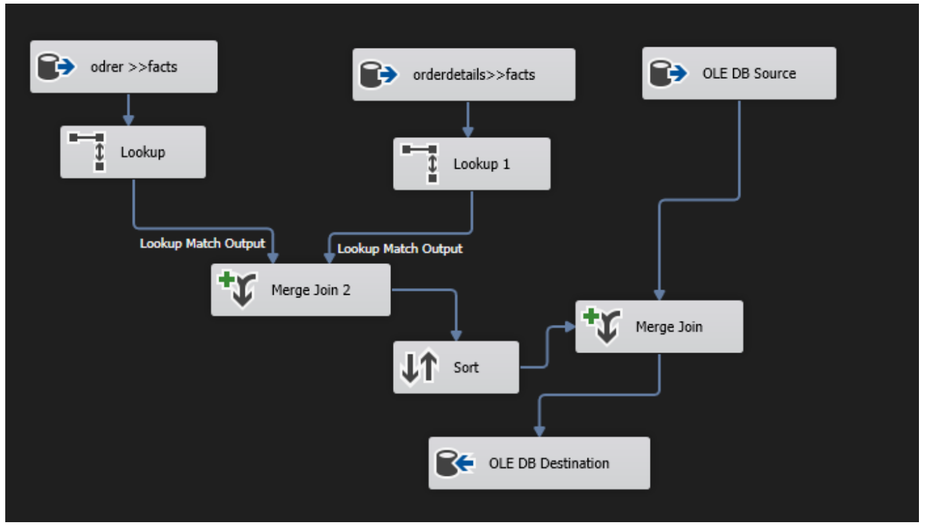
This photo

contain full parameter like control flow , data flow and etc



This photo

contain data flow one is Specialized at implement dimensions table



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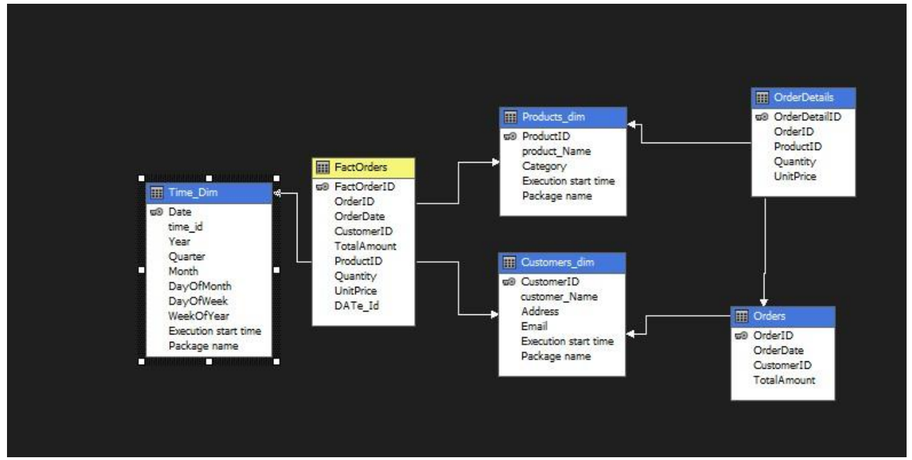
contain data flow two is Specialized at implement Fact table

SSRS (Cubes)



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Contain cubes In SSRS

Year	Month	Quarter	Day Of Month	Day Of Week	Name	Customer ID	Product ID	Order ID	Quantity	Unit Price	Total Amount
2023	1	Q1	15	Sunday	John...	1	1	1	1	999.99	1249.97
2023	1	Q1	15	Sunday	John...	1	4	1	2	124.99	1249.97
2023	2	Q1	20	Monday	Jane...	2	3	2	2	99.98	199.96
2023	3	Q1	5	Sunday	Bob ...	3	2	3	2	89.99	179.98
2023	4	Q2	10	Monday	Alice...	4	5	4	2	999.99	1999.98
2023	5	Q2	15	Monday	Mich...	5	1	5	1	99.99	299.7
2023	5	Q2	15	Monday	Mich...	5	4	5	2	99.99	299.7

This photo

contain some analysis in Cube

This final cubes In Excel

1	Year	All		
2	Month	All		
3	Day Of Week	All		
4				
5	**Row Labels**	**Total Amount**	**Unit Price**	**Quantity**
6	**1**			
7	**john.doe@example.com**			
8	HEADPHONES			
9	**ACCESSORIES**			
10	2023-01-15	2499.94	1124.98	3
11	LAPTOP			
12	**ELECTRONICS**			
13	2023-01-15	2499.94	1124.98	3
14	**2**			
15	**jane.smith@example.com**			
16	SMARTPHONE			
17	**ELECTRONICS**			
18	2023-02-20	199.96	99.98	2
19	**3**			
20	**jim.brown@example.com**			
21	TABLET			
22	**ELECTRONICS**			
23	2023-03-05	179.98	89.99	2
24	**4**			
25	**emma.davis@example.com**			
26	CHARGER			
27	**ACCESSORIES**			
28	2023-04-10	1999.98	999.99	2
29	**5**			
30	**mary.johnson@example.com**			
31	HEADPHONES			
32	**ACCESSORIES**			
33	2023-05-15	599.4	199.98	3
34	LAPTOP			
35	**ELECTRONICS**			
36	2023-05-15	599.4	199.98	3
37	**Grand Total**	**5479.26**	**2514.92**	**12**

Final tables in DWH

OrderDetails

	OrderDetailID	OrderID	ProductID	Quantity	UnitPrice
1	1	1	1	1	999.99
2	2	1	4	2	124.99
3	3	2	3	2	99.98
4	4	3	2	2	89.99
5	5	4	5	2	999.99
6	6	5	1	1	99.99
7	7	5	4	2	99.99

Orders

Results Messages

	OrderID	OrderDate	CustomerID	TotalAmount
1	1	2023-01-15	1	1249.97
2	2	2023-02-20	2	199.96
3	3	2023-03-05	3	179.98
4	4	2023-04-10	4	1999.98
5	5	2023-05-15	5	299.70

Products_Dim

Results Messages

	ProductID	product_Name	Category	Execution start time	Package name
1	1	LAPTOP	ELECTRONICS	2024-08-07 00:59:38.000	Package2
2	2	TABLET	ELECTRONICS	2024-08-07 00:59:38.000	Package2
3	3	SMARTPHONE	ELECTRONICS	2024-08-07 00:59:38.000	Package2
4	4	HEADPHONES	ACCESSORIES	2024-08-07 00:59:38.000	Package2
5	5	CHARGER	ACCESSORIES	2024-08-07 00:59:38.000	Package2

Customers_Dim

Results Messages

	CustomerID	customer_Name	Address	Email	Execution start time	Package name
1	1	John Doe	123 Elm St	john.doe@example.com	2024-08-07 02:40:58.000	Package2
2	2	Jane Smith	456 Oak St	jane.smith@example.com	2024-08-07 02:40:58.000	Package2
3	3	Jim Brown	789 Pine St	jim.brown@example.com	2024-08-07 02:40:58.000	Package2
4	4	Emma Davis	101 Maple St	emma.davis@example.com	2024-08-07 02:40:58.000	Package2
5	5	Mary Johnson	234 Birch St	mary.johnson@example.com	2024-08-07 02:40:58.000	Package2

Fact_Table

Results Messages

	FactOrderID	OrderID	OrderDate	CustomerID	TotalAmount	ProductID	Quantity	UnitPrice	DATe_Id
1	1	1	2023-01-15	1	1249.97	1	1	999.99	2023-01-15
2	2	1	2023-01-15	1	1249.97	4	2	124.99	2023-01-15
3	3	2	2023-02-20	2	199.96	3	2	99.98	2023-02-20
4	4	3	2023-03-05	3	179.98	2	2	89.99	2023-03-05
5	5	4	2023-04-10	4	1999.98	5	2	999.99	2023-04-10
6	6	5	2023-05-15	5	299.70	1	1	99.99	2023-05-15
7	7	5	2023-05-15	5	299.70	4	2	99.99	2023-05-15

Time_Dim

Results Messages

	time_id	Date	Year	Quarter	Month	DayOfMonth	DayOfWeek	WeekOfYear	Execution start time	Package name
1	20230115	2023-01-15	2023	Q1	1	15	Sunday	3	2024-08-07 00:59:38.000	Package2
2	20230220	2023-02-20	2023	Q1	2	20	Monday	8	2024-08-07 00:59:38.000	Package2
3	20230305	2023-03-05	2023	Q1	3	5	Sunday	10	2024-08-07 00:59:38.000	Package2
4	20230410	2023-04-10	2023	Q2	4	10	Monday	15	2024-08-07 00:59:38.000	Package2
5	20230515	2023-05-15	2023	Q2	5	15	Monday	20	2024-08-07 00:59:38.000	Package2

CODING

First C#

```
public void Main()
{
    // Display a message box to the user
    DialogResult result = MessageBox.Show("Finishing ETL FOR Dimension Tables:. Do you want to continue to the next task?", "Continue?", MessageBoxButtons.YesNo);

    // Check the user's response
    if (result == DialogResult.Yes)
    {
        // User chose Yes; continue to the next task
        Dts.TaskResult = (int)ScriptResults.Success;
    }
    else
    {
        // User chose No; stop the package
        Dts.TaskResult = (int)ScriptResults.Failure;
    }
}
```

```
public void Main()
{
    // TODO: Add your code here
    MessageBox.Show("thanks for your time ");
    Dts.TaskResult = (int)ScriptResults.Success;
}
```

```
public void Main()
{
    // TODO: Add your code here
    MessageBox.Show("Here>> I FINISH MY DWH Project ");
    Dts.TaskResult = (int)ScriptResults.Success;
}
```

CODING

Second SQL

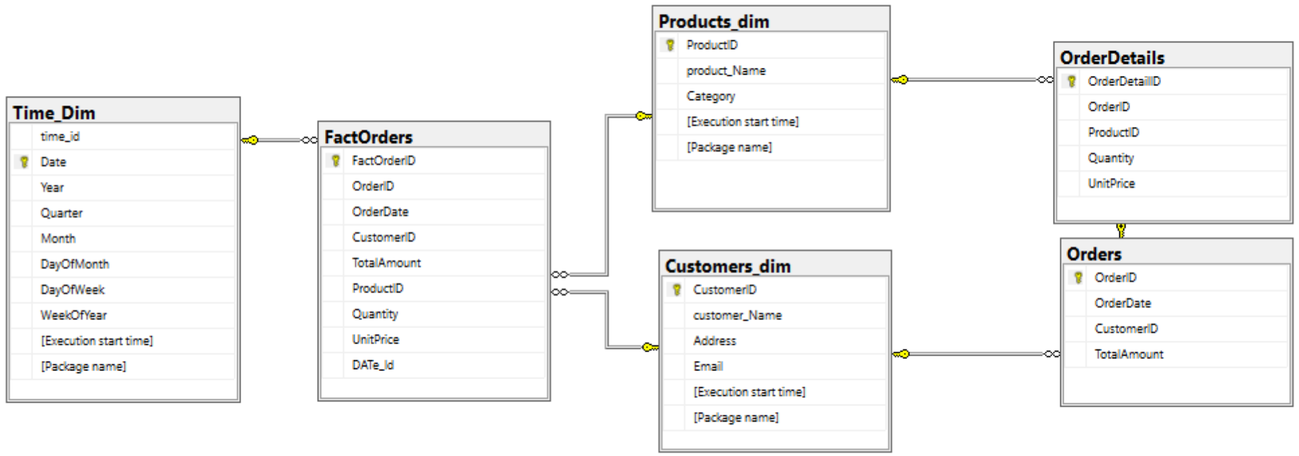
```sql
-- COME FROM XML FILE
CREATE TABLE Customers_dim (
    CustomerID INT PRIMARY KEY,
    customer_Name NVARCHAR(255),
    Address NVARCHAR(255),
    Email NVARCHAR(255),
    [Execution start time] DATETIME,
    [Package name] NVARCHAR(64)
);
--COME FROM TXT FILE
CREATE TABLE Products_dim (
    ProductID INT PRIMARY KEY,
    product_Name VARCHAR(255),
    Category VARCHAR(255),
      [Execution start time] datetime,
    [Package name] nvarchar(64)
);
```

```sql
-- COME FROM DB >>FILLE>>tABLE>>TIM ()WHICH I CREATED THIS )
CREATE TABLE Time_Dim(
   time_id INT ,
    Date DATE PRIMARY KEY ,
    Year INT,
    Quarter CHAR(2),
    Month INT,
    DayOfMonth INT,
    DayOfWeek VARCHAR(10),
    WeekOfYear INT,
      [Execution start time] datetime,
    [Package name] nvarchar(64)
);
```

```sql
-- fact table
CREATE TABLE FactOrders (
    FactOrderID INT IDentity(1,1) PRIMARY KEY,
    OrderID INT,
    OrderDate DATE,
    CustomerID INT,
    TotalAmount DECIMAL(10, 2),
    ProductID INT,
    Quantity INT,
    UnitPrice DECIMAL(10, 2),
    DATe_Id Date,
      FOREIGN KEY (DATe_Id) REFERENCES Time_Dim ( Date),
    FOREIGN KEY (CustomerID) REFERENCES Customers_dim(CustomerID),
    FOREIGN KEY (ProductID) REFERENCES Products_dim (ProductID),

);
```

Final schema



DotPy

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