4. B. Execute the MDX queries to extract the data from the data warehouse.

MDX (Multidimensional Expressions) is a query language used to extract data from OLAP (Online Analytical Processing) databases. Here's an example of an MDX query to extract data from a sample OLAP cube:

Suppose we have an OLAP cube containing sales data with dimensions for Product, Time, and Geography, and measures for Units Sold and Revenue. We want to extract the total revenue for all products in the year 2022 in the USA. Here are the basic steps and code:

1. Open a new query window in your MDX client (e.g., SQL Server Management Studio).
2. Connect to the OLAP cube data source and select the appropriate database and cube.
3. Write the MDX query to extract the data. In this example, the query would be:

```
SELECT [Measures].[Revenue] ON COLUMNS,
[Product].[All Products].CHILDREN ON ROWS
FROM [SalesCube]
WHERE ([Time].[2022], [Geography].[USA])
```

4. Run the query to extract the data from the OLAP cube. The result will be a table showing the total revenue for each product in the year 2022 in the USA.

In the above query, we selected the measure "Revenue" on the columns and all product children on the rows. We then filtered the data to include only the year 2022 and the USA geography. This will result in the total revenue for each product sold in the USA in the year 2022. You can modify the query to extract different data sets based on your specific requirements.

```
CREATE TABLE [dbo].[Product](
   [ProductID] [int] NOT NULL PRIMARY KEY CLUSTERED,
   [ProductName] [nvarchar](50) NOT NULL)


CREATE TABLE [dbo].[Time](
   [TimeID] [int] NOT NULL PRIMARY KEY CLUSTERED,
   [Year] [int] NOT NULL,
   [Quarter] [int] NOT NULL)


CREATE TABLE [dbo].[Geography](
```

```
    [GeographyID] [int] NOT NULL PRIMARY KEY CLUSTERED,
    [Country] [nvarchar](50) NOT NULL,
    [State] [nvarchar](50) NOT NULL)
GO

CREATE TABLE [dbo].[Sales](
    [SalesID] [int] NOT NULL  PRIMARY KEY CLUSTERED,
    [ProductID] [int] NOT NULL,
    [TimeID] [int] NOT NULL,
    [GeographyID] [int] NOT NULL,
    [UnitsSold] [int] NOT NULL,
    [Revenue] [money] NOT NULL)



INSERT DATA:
INSERT INTO [dbo].[Product] ([ProductID], [ProductName])
VALUES (1, 'Product A'), (2, 'Product B'), (3, 'Product C')

INSERT INTO [dbo].[Time] ([TimeID], [Year], [Quarter])
VALUES (1, 2021, 1), (2, 2021, 2), (3, 2022, 1), (4, 2022, 2)

INSERT INTO [dbo].[Geography] ([GeographyID], [Country], [State])
VALUES (1, 'USA', 'California'), (2, 'USA', 'Texas'), (3, 'Canada', 'Ontario')

INSERT INTO [dbo].[Sales] ([SalesID], [ProductID], [TimeID], [GeographyID], [UnitsSold],
[Revenue])
VALUES (1, 1, 1, 1, 100, 1000), (2, 1, 1, 2, 200, 2000), (3, 1, 2, 1, 150, 1500),
      (4, 2, 2, 2, 300, 3000), (5, 2, 3, 3, 250, 2500), (6, 3, 4, 1, 175, 1750)



EXECUTE THE QUERIES:
SELECT [Measures].[Revenue]
ON COLUMNS,
[Product].[All Products].CHILDREN
ON ROWS
FROM [SalesCube]
WHERE ([Time].[2022], [Geography].[USA])
```

MDX Studio: http://www.mosha.com/msolap/mdxstudio.htm
icCube MDX Editor: https://www.iccube.com/mdx-editor
MDX Query Tool: https://mdxquerytool.com/
Dax Studio: https://daxstudio.org/