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# Financial Portfolio Analysis

## Market Value, Trend over next 12 Days and Returns

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| **Project name** | **Financial Portfolio Analysis** |
| **Project manager** | **XYZ** |
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## Business Requirements

The objective of this project is to analyze the financial portfolios of instruments using the given dataset and provide analysis report. The client has provided a data set and a high-level description of the entities involved. The project aims to address the following questions:

1. Find all positions with a market value above 1 million EUR.
2. Prepare a dashboard or a report that showing the return of each portfolio in EUR. The return of a position is defined as the difference in its market value between two different reporting dates selected by the user. The report should include both cumulative returns and returns at the position level.

## Data Quality Assessment

- Missing Values: Checked for any missing values in the dataset and found that Instrument price corresponding to 18-Sept-2020 values were not available. Also, identified that some of the instruments from Position table are not listed in Instrument table.
- Outliers: Looked over for any extreme values or outliers that may skew the analysis and did not find any.
- Inconsistent Data Types: Ensured that the data types of each variable are consistent and appropriate for the analysis.
- Data Integrity: Validate the relationships between entities and ensure that data integrity is maintained.

## Assumptions

1. 22-Sept-2020 is taken as the base date for analysis as other given date 18-Sept-2020 had missing instrument price values.
2. Nominal Value is divided by 1000 to correct decimal error otherwise derived market value was in billion Euro range.
3. It is assumed that the nominal value of position from client stays constant for next 12 days. This would help client in analyzing the risk of his positions over next days and help in rebalancing.

## Positions with Market Value above 1 million EUR

To find all positions with a market value above 1 million EUR, the following steps are taken:

1. Convert price of Instrument to EUR using FX rate.
2. Calculate market value of each position using the formula:

   **Market Value (Position) = [Position].[Nominal] * [Instrument].[Price].**

3. The positions are filtered based on the calculated market value, selecting only those with a value above 1 million EUR.

## Dashboard or Report for Portfolio Returns

A dashboard showing the return of each portfolio in EUR is prepared by considering the following points:

1. Select two different reporting dates as input from the user.
2. Considering the values of Euro equivalent of USD, CHF, CNY FX rates, instruments price are standardized to Euro.
3. Calculate the market value of each position for the selected reporting dates using the formula: Market Value (Position) = [Position].[Nominal] * [Instrument].[Price].
4. Calculate the return of each position as the difference in its market value between the two reporting dates.
5. Calculate the cumulative return of each portfolio by summing the returns of all positions within the portfolio.
6. Generate a dashboard or report that presents the cumulative returns and returns at the position level for each portfolio in EUR.

**Generating Database of next 12 Reporting Dates**

For generation of a database of 12 reporting dates, the following steps will be performed:

1. Select a given reporting date.
2. Apply a Gaussian noise of +/- 10% to the amounts [Instrument], and [FX] of the selected reporting date.
3. Repeat the above steps 12 times to generate a database of 12 reporting dates.