# CHAPTER 7: STATISTICS

## Objectives

The objectives are:

- Create a form that calculates price sums efficiently.
- Make the form available from the seminar forms.

## Introduction

In this chapter statistics are added to the solution. This is done using FlowFilters and FlowFields. FlowFilters are useful for limiting calculations so that they include only the values in a column that have specific properties. For example, on the **Seminar Statistics** form, users may want to sum the total price of a seminar four different times, for four different time periods. This is possible if the application has been designed to take advantage of **SumIndexField** Technology (SIFT) using FlowFilter fields in connection with the FlowFields. FlowFilters are used to determine how much information the system includes when it calculates the contents of FlowFields.

# Using FlowFilters and FlowFields

When defining a FlowField, create a calculation formula that can consist of constants -- values from ordinary fields and of filters given as parameters in FlowFilter fields. FlowFilter fields are fields where the user can enter a filter value that affects the calculation of a FlowField.

For an example of how to implement a statistics form using the FlowFields and FlowFilter fields in a master table, look at Table 18 Customer and Form 151 Customer Statistics. The first line of the **Customer Statistics Sales** tab shows the Sales (LCY) for four different time periods:

- The current month
- This Year
- Last Year
- To Date

The data shown in these fields is generated by means of a FlowField – Sales (LCY) –and a number of FlowFilters in the Customer table. The CalcFormula shown in the Sales (LCY) field properties uses a number of FlowFilters, but to simplify, just consider the Date Filter.

In the **OnAfterGetRecord** trigger of the Customer Statistics form, the Date Filter is set for each of the desired time periods using the Date Filter-Calc codeunit. The **CALCFIELDS** function is then used for each Date Filter to calculate a value for the Sales (LCY). Use similar logic when creating the **Seminar Statistics** form.

For more information on SIFT, FlowFields, and FlowFilters, refer to the Application Designer's Guide.

# Using FlowFilters in Calculation Formulas

FlowFields and FlowFilters can be used on the customer solution in order to provide statistics described in the functional requirements in Chapter 1, Business Case Daignosis & Analysis.

## Solution Analysis

The purpose of the seminar statistics feature is to allow the user to quickly and easily get an overview of the price statistics for a specific seminar.

The client's functional requirements provide the following regarding statistical requirements:

*Statistics for different time periods, for example, for a month, for last year, for this year, and up to the current date.*

This description indicates that the client wants to be able to open a statistics form from a seminar form. The form should calculate the statistics for the total price and show it for the four time periods listed.

Seminar managers will have access to the seminar statistics from a Seminar Detail form. This form calculates the total price statistics for the seminar for the time periods indicated in the function requirements.

## Solution Design

The **Seminar Statistics** form will be accessible from the **Seminar Card** and **Seminar List** forms, and will automatically calculate the statistics for the selected seminar using the information from the **Seminar Ledger Entry**.

The **Seminar Statistics** form displays statistical information for one seminar, as shown in Figure 7–1.

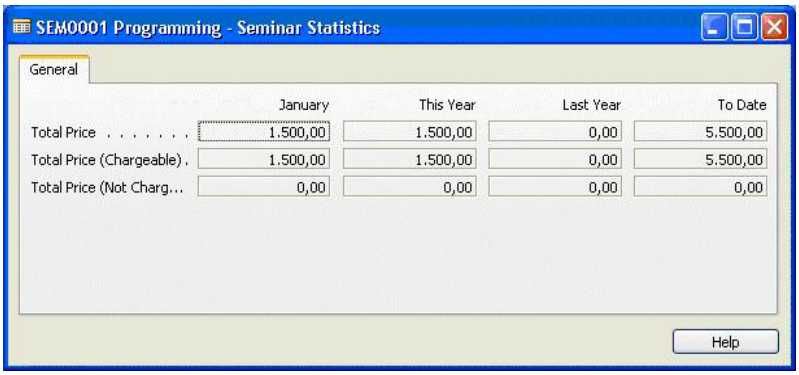


FIGURE 7–1: THE SEMINAR STATISTICS FORM (123456714)

**Seminar Card (Form 123456700)**: The Seminar menu button on this form will be modified to include a new menu item for seminar statistics.

**Seminar List (Form 123456701)**: The Seminar menu button on this form is modified to include a new menu item for seminar statistics.

The solution will require that FlowFields and FlowFilters are added to the table that contains seminar information **Seminar** table (123456700). Also, a key of **Seminar No.**, **Posting Date**, **Charge Type**, **Chargeable** will be added to the **Seminar Ledger Entry** table 123456732.

The **Total Price**, **Total Price (Chargeable)** and **Total Price (Not Chargeable)** in the **Seminar** table will be calculated using values from the **Seminar Ledger Entry**, for four different time periods. An array of four dimensions will be used to store the totals for each of these three prices. The standard DateFilter-Calc codeunit will be used to calculate date filters for the time periods. With the date filters, the **Seminar** table can be filtered and used to calculate the price fields to be shown on the form for each of the four time periods.

# Lab 7.1 - Creating FlowFields for Sums

Follow these steps to implement FlowFields for sums in this solution

1. Add a secondary key of **Seminar No**., **Posting Date**, **Charge Type**, **Chargeable** to the **Seminar Ledger Entry** table (123456732). Set the property for the key so that the **Total Price** field is the sum index field.

2. Add fields to the **Seminar** table (123456700) as shown in the following table.

| No. | Field Name | Type | Length | Comment |
|---|---|---|---|---|
| 20 | **Date Filter** | Date | | FlowFilter |
| 21 | **Charge Type Filter** | Option | | FlowFilter; Options: Instructor,Room, Participant,Charge |
| 25 | **Total Price** | Decimal | | FlowField; see step 3 below for the CalcFormula. Must not be editable.<br>AutoFormatType=1 |
| 26 | **Total Price (Not Chargeable)** | Decimal | | FlowField; see step 4 below for the CalcFormula. Must not be editable.<br>AutoFormatType=1 |
| 27 | **Total Price (Chargeable)** | Decimal | | FlowField; see step 5 below for the CalcFormula. Must not be editable.<br>AutoFormatType=1 |

3. Set the CalcFormula for the **Total Price** field so that it calculates the sum of the **Total Price** field on the Seminar Ledger Entry table for the records where the **Seminar No.** corresponds to the **No.** field, where the **Posting Date** corresponds to the Date Filter, and where the **Charge Type** corresponds to the Charge Type Filter.

4. Set the CalcFormula for the **Total Price (Not Chargeable)** field so that it calculates the sum of the **Total Price** field on the Seminar Ledger Entry table for the records where the **Seminar No**. corresponds to the **No.** field, where the **Posting Date** corresponds to the Date Filter, where the **Charge Type** corresponds to the Charge Type Filter, and where the records are not Chargeable.

5. Set the CalcFormula for the **Total Price (Chargeable)** field so that it calculates the sum of the **Total Price** field on the Seminar Ledger Entry table for the records where the **Seminar No.** corresponds to the **No.** field, where the **Posting Date** corresponds to the Date Filter, where the **Charge Type** corresponds to the Charge Type Filter, and where the records are Chargeable.

# Lab 7.2 - Creating the Seminar Statistics Form

Follow these steops to implement the statistics form:

1. Create the **Seminar Statistics** form (123456714), based on the **Seminar** table. Do not add any fields to this form yet.
2. Define the following global variables for the form:

| Name | DataType | Subtype | Length |
|---|---|---|---|
| DateFilterCalc | Codeunit | DateFilter-Calc | |
| SemDateFilter | Text | | 30 |
| SemDateName | Text | | 30 |
| CurrentDate | Date | | |
| TotalPrice | Decimal | | |
| TotalPriceNotChargeable | Decimal | | |
| TotalPriceChargeable | Decimal | | |
| I | Integer | | |

3. Set the property for all the variables except **DateFilterCalc** and **CurrentDate** so that each variable is an array of four dimensions.
4. Set the property for the form so that it is not editable.
5. Enter code in the appropriate trigger so that after the form gets the record, the program performs the following tasks:
   - Filters the table to the selected seminar.
   - If the **CurrentDate** is not the work date, the program sets the **CurrentDate** variable to the work date. The program runs the **CreateAccountingPeriodFilter** function of the **DateFilter-Calc** codeunit with parameters of the first dimensions of the **SemDateFilter** and **SemDateName**, the **CurrentDate**, and 0. It runs the **CreateFiscalYearFilter** function of the **DateFilter-Calc** codeunit with parameters of the second dimensions of the **SemDateFilter** and **SemDateName**, the **CurrentDate**, and 0. The program then runs the **CreateFiscalYearFilter** function of the **DateFilter-Calc** codeunit with parameters of the third dimensions of the **SemDateFilter** and **SemDateName**, the **CurrentDate**, and the variable **I**.

***HINT:*** *There is similar code on the Customer Statistics form.*

- For each of the dimensions, the program filters the table to records where the Date Filter corresponds to the value in the appropriate dimension of the SemDateFilter and calculates the **Total Price**, **Total Price (Not Chargeable)**, and **Total Price (Chargeable)** fields. The program then sets the value for the appropriate dimension of the TotalPrice, TotalPriceNotChargeable, and TotalPriceChargeable to the values in the corresponding fields.
- Filters the table to those records where the Date Filter is before the CurrentDate.

6. Place the text labels for the **Total Price**, **Total Price (Chargeable)**, **Total Price (Not Chargeable)**, **This Year**, **Last Year**, and **To Date** on the form as shown in the Solution Design section of this chapter.
7. Place a text box for the "month" label as shown in the Solution Design section of this chapter.. Set the property to specify that the source of the text box is the first dimension of the SemDateName variable. Set the Border and Focusable properties to No.
8. Place four text boxes in the Total Price row. Set the properties to specify that the sources of the text boxes are the respective dimensions of the TotalPrice variable.
9. Place four text boxes in the **Total Price (Chargeable)** row. Set the properties to specify that the sources of the text boxes are the respective dimensions of the TotalPriceChargeable variable.
10. Place four text boxes in the **Total Price (Not Chargeable)** row. Set the properties to specify that the sources of the text boxes are the respective dimensions of the **TotalPriceNotChargeable** variable.
11. The last tasks are to make the form accessible from the two seminar forms. First, add the menu described in the table to the **Seminar Card** form (123456700) between the **Comments** and the **Extended Texts** menu items.

| Menu Button | Options | Comment |
|---|---|---|
| | <Separator> | |
| | Statistics (F9) | Opens form 123456714 Seminar Statistics for the selected seminar. The link should be run whenever the form is updated. |
| | <Separator> | |

12. Add the same Statistics menu item to the **Seminar List** form (123456701) that is described in step 11.

## Solution Testing

To test the statistics form, it is necessary to have entries in the **Seminar Ledger Entry** table with the related posted seminar registrations. Follow these steps to verify the solution implementation:

1. Open the **Seminar Card** and view a seminar that has some posted registrations. Verify that the seminar has ledger entries by selecting SEMINAR→ENTRIES→LEDGER ENTRIES from the **Seminar Card**.
2. Select SEMINAR→STATISTICS to open the **Seminar Statistics** window. Verify that the totals shown are correct for the different rows and columns. It may be convenient to apply a table filter to the **Seminar Ledger Entries** window and compare the results with the amounts shown in the **Seminar Statistics** window.

## Conclusion

In this chapter a statistics form for seminars was created that sums up the total price in four different time periods. This form was made available from the seminar forms. This functionality was added though the use of FlowFields and FlowFilters, which use SIFT technology to provide filtered staticstics quickly and easily.

# Test Your Knowledge

## Review Questions

1. What is the purpose of a **FlowFilter** field?

2. How are FlowFilters used in calculations of FlowFields?

3. What are the advantages of using FlowFields to make calculations?

4. What is the Microsoft Dynamics™ NAV standard shortcut for opening a Statistics form?

## Quick Interaction: Lessons Learned

Take a moment to note three key points you have learned from this chapter:

1.

2.

3.