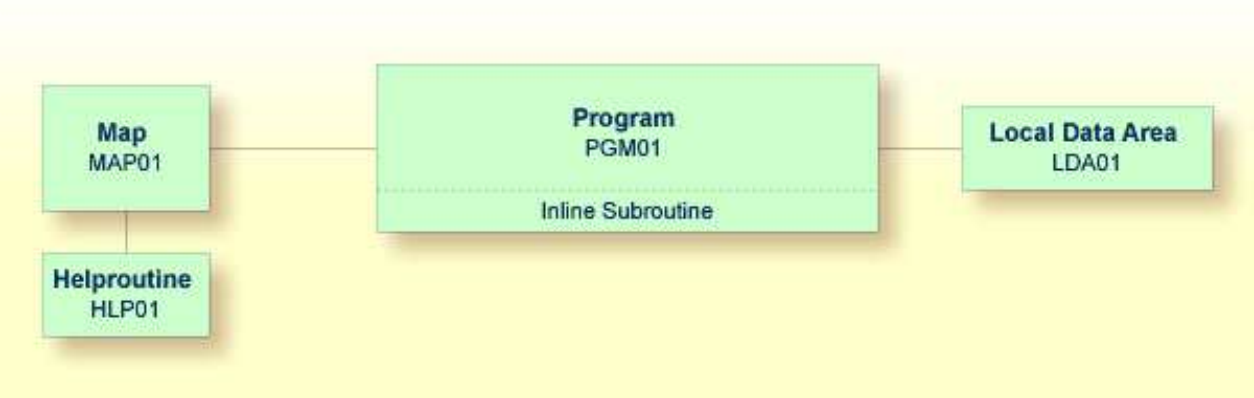
Local Data Areas

Currently, the fields used by your program are defined within the `DEFINE DATA` statement in the program itself. It is also possible, however, to place the field definitions in a local data area (LDA) outside the program, with the program's `DEFINE DATA` statement referencing this local data area by name. For reusability and for a clear application structure, it is usually better to define fields in data areas outside the programs.

You will now relocate the information from the `DEFINE DATA` statement to a local data area. When you have completed the exercises below, your sample application will consist of the following modules:



This chapter contains the following exercises:

- Creating a Local Data Area
- Defining Data Fields
- Importing the Required Data Fields from a DDM
- Referencing the Local Data Area from Your Program

Creating a Local Data Area

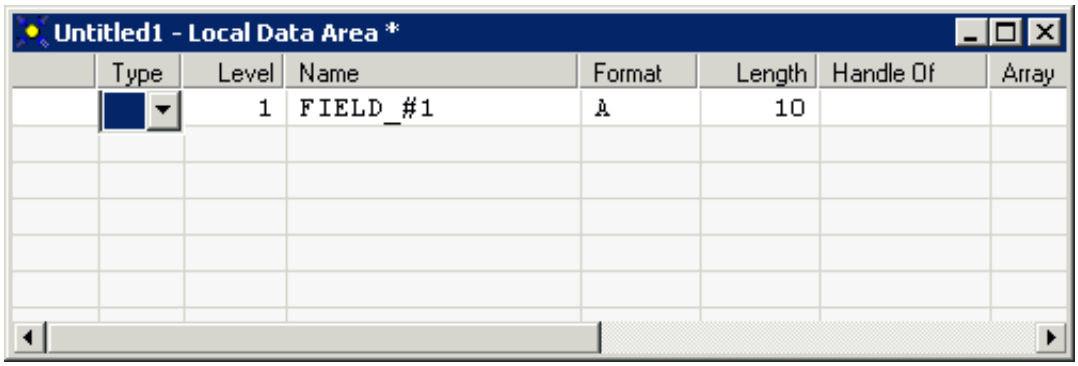
You will now invoke the data area editor in which you will specify the required fields.

To create a local data area

1. In the library workspace, select the library which also contains your program (that is: select the **TUTORIAL** node).
2. From the context menu, choose **New Source > Local Data Area**.

   Or:
   Choose the following toolbar button:

An editor window appears.



Level, name, format and length are automatically preset in the first row.

Defining Data Fields

You will now define the following fields:

Level	Name	Format	Length
1	#NAME-START	A	20
1	#NAME-END	A	20
1	#MARK	A	1

These are the user-defined variables which you have previously defined in the `DEFINE DATA` statement.

You can define the data fields in two different ways: manually in the editor window where it is your responsibility to define the correct format and length of the data field, or with the **Import** command where you simply select the data fields from a list and where the correct format and length is automatically used. These two ways are described below.

The setting of the following toolbar button in the Data Area Editor Insert toolbar indicates the insert position. When the toolbar button appears pressed, the new field is inserted after the selected field (this state is assumed in this tutorial); otherwise, the new field is inserted before the selected field.

To define a data field manually in the editor window

1. Make sure that the **Level** column in the first row contains the preset value "1".
2. Change the preset value in the **Name** column of the first row to "#NAME-START".
3. Make sure that the **Format** column in the first row contains the preset value "A".

4. Change the preset value in the **Length** column of the first row to "20".

To import data fields from a program

1. In the editor, select the row which has been created for `#NAME-START`.

   Note:
   If required, press ENTER or ESC to switch from single-cell selection to full-row selection mode.

2. From the context menu, choose **Import**.

   Or:
   Choose the following toolbar button:

   The **Import Data Field** dialog box appears.

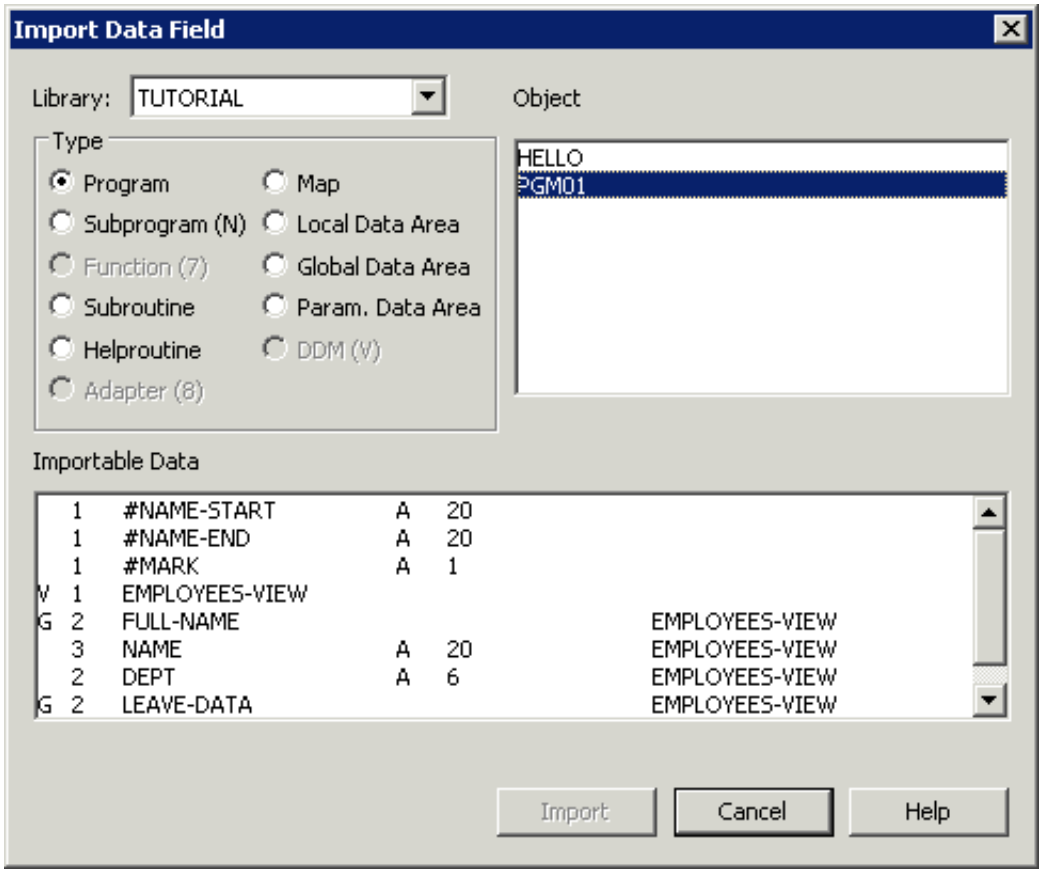
3. Make sure that **TUTORIAL** is selected in the **Library** drop-down list box.

4. Select the **Program** check box.

   All programs that are currently defined in your library are now shown in the **Object** list box.

5. Select the program with the name `PGM01`.

   The importable data fields are now shown at the bottom of the dialog box.



6. Press CTRL and select the following fields in the **Importable Data** list box:

   ```
   #NAME-END
   #MARK
   ```

7. Choose the **Import** button.

   The **Cancel** button in the **Import Data Field** dialog box is now labeled **Quit**.

8. Choose the **Quit** button to close the **Import Data Field** dialog box.

   The fields `#NAME-END` and `#MARK` are now shown below the `#NAME-START` field in the editor window.

Importing the Required Data Fields from a DDM

You will now import the same data fields which you have previously defined in the program's `DEFINE DATA` statement. The fields are read directly from a Natural data view into the data area editor. A data view references database fields defined in a data definition module (DDM).

In the data area editor, the imported data fields will be inserted below the currently selected data field.

To import data fields from a DDM

1. In the editor, select the row containing `#MARK`.
2. From the context menu, choose **Import**.

   The **Import Data Field** dialog box appears.

3. From the **Library** drop-down list box, select **SYSEXDDM**.

   The **DDM** option button is selected.

4. In the **Object** list box, select the sample DDM with the name **EMPLOYEES**.
5. Press CTRL and select the following fields in the **Importable Data** list box:

   ```
   PERSONNEL-ID
   FULL-NAME
   NAME
   DEPT
   LEAVE-DATA
   LEAVE-DUE
   ```

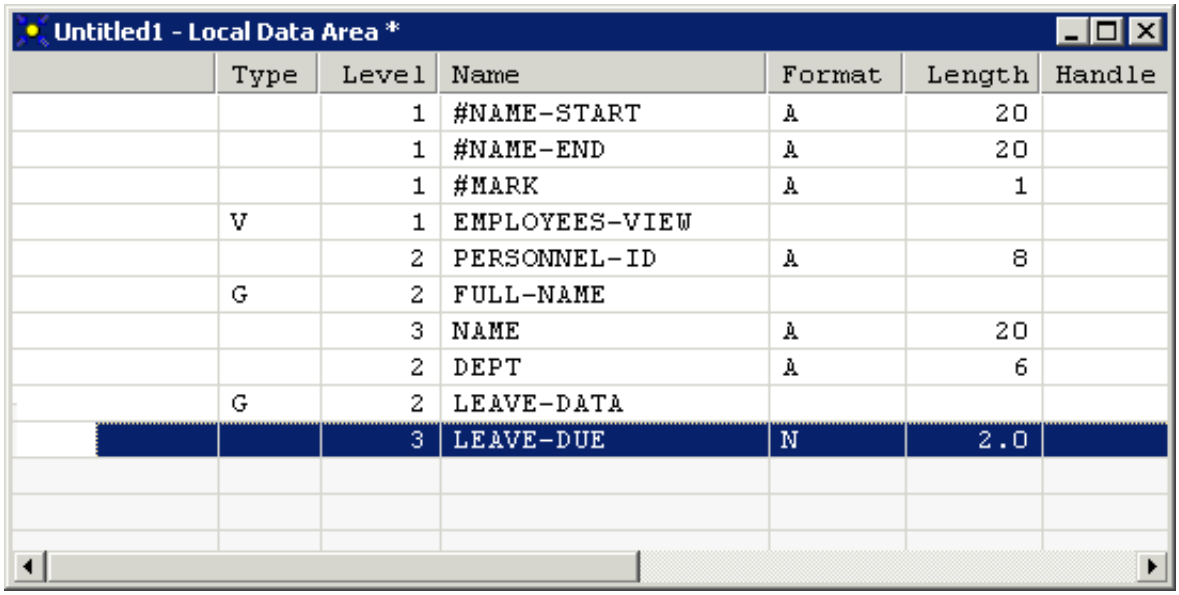
   Note:
   The field `PERSONNEL-ID` will be used later when you create the subprogram.

6. Choose the **Import** button.

   The **View Definition** dialog box appears.

7. Specify the same name that you have previously defined for your view (that is: `EMPLOYEES-VIEW`).
8. Choose the **OK** button.
9. Choose the **Quit** button to close the **Import Data Field** dialog box.

   The local data area should now look as follows:



	Type	Level	Name	Format	Length	Handle
		1	#NAME-START	A	20	
		1	#NAME-END	A	20	
		1	#MARK	A	1	
	V	1	EMPLOYEES-VIEW			
		2	PERSONNEL-ID	A	8	
	G	2	FULL-NAME			
		3	NAME	A	20	
		2	DEPT	A	6	
	G	2	LEAVE-DATA			
		3	LEAVE-DUE	N	2.0	

   The Type column indicates the type of the variable. The view is indicated by a "V" and each group is indicated by a "G".

   Note:
   When the **Expand/Collapse** check box has been selected in the data area editor options, expand/collapse toggles are shown in the first column (for the view and each group).

10. Stow the local data area.
11. When you are asked to specify a name for the local data area, enter "LDA01".

    In the library workspace, a new node named **Local Data Areas** appears below the **TUTORIAL** node. This node contains the local data area you have just stowed.

Referencing the Local Data Area from Your Program

Once a local data area has been stowed, it can be referenced by a Natural program.

You will now change the `DEFINE DATA` statement your program so that it uses the local data area that you have just defined.

Leave the data area editor open in the background.

To use the local data area in your program

1. Return to the program editor.
2. In the `DEFINE DATA` statement, delete all variables between `LOCAL` and `END-DEFINE`.
3. Add a reference to your local data area by modifying the `LOCAL` line as follows:

   ```
   LOCAL USING LDA01
   ```

   Your program should now look as follows:

   ```
   DEFINE DATA
     LOCAL USING LDA01
   END-DEFINE
   *
   RP1. REPEAT
   *
     INPUT USING MAP 'MAP01'
   *
     IF #NAME-START = '.' THEN
       ESCAPE BOTTOM (RP1.)
     END-IF
   *
     IF #NAME-END = ' ' THEN
       MOVE #NAME-START TO #NAME-END
     END-IF
   *
     RD1. READ EMPLOYEES-VIEW BY NAME
       STARTING FROM #NAME-START
       ENDING AT #NAME-END
   *
       IF LEAVE-DUE >= 20 THEN
         PERFORM MARK-SPECIAL-EMPLOYEES
       ELSE
         RESET #MARK
       END-IF
   *
       DISPLAY NAME 3X DEPT 3X LEAVE-DUE 3X '>=20' #MARK
   *
     END-READ
   *
     IF *COUNTER (RD1.) = 0 THEN
       REINPUT 'No employees meet your criteria.'
     END-IF
   *
   END-REPEAT
   *
   DEFINE SUBROUTINE MARK-SPECIAL-EMPLOYEES
     MOVE '*' TO #MARK
   END-SUBROUTINE
   *
   END
   ```

4. Run the program.
5. To confirm that the results are the same as before (when the `DEFINE DATA` statement did not reference a local data area), enter "JONES" as the starting name and press ENTER.

6. Press ESC to close the output window.
7. Stow the program.

You can now proceed with the next exercises: *Global Data Areas*.