
AIMMS Tutorial for Professionals - Building User Menus

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Chapter 13

Building User-Menus

In this chapter you will enhance the end-user interface by adding a menubar to your application. *This chapter*

13.1 Menu management

A *menubar* is displayed as a horizontal bar at the top of a page, and contains pop-up menus to activate commands. Menus can be opened using point-and-click actions. *Menubars*

A *toolbar* is an optional horizontal bar positioned just below the menubar, and contains a row of bitmap buttons. These buttons provide easy access to the most frequently used commands. *Toolbars*

A *pop-up menu* consists of a set of menu items and other pop-up menus. Pop-up menus are opened from menubars and right-mouse actions. *Pop-up menus*

Menu items represent the commands that are actually executed. They contain text describing the command plus details of an optional shortcut to activate the command from the keyboard. *Menu items*

Separators are used to structure menu items within a pop-up menu. Separators are visible as horizontal separation lines in pop-up menus or as spaces between buttons on toolbars (see Figure 13.1). *Separators*

By default, an AIMMS page in **User** mode will contain the menubar and toolbar as shown in Figure 13.1. *Default bars*



Figure 13.1: The default page menubar and toolbar

13.2 The Softdrink Planning menubar

In general, you design menubars and toolbars for your end-users to use in **User** mode. Developer-specific commands, such as providing access to the model tree, should not appear on end-user pages.

Designing for end-users

When you structure your menubars, you should try to adhere to acceptable conventions wherever possible. In addition, your end-users will find it easier if menubars are consistent across pages. A typical example of a convention is to include an **Exit** command as the last menu item in the first menu of the menubar.

Using conventions

The menubar structure that you will use in this tutorial contains the following seven menus:

Menubar structure

- the **File** menu for backups, printing and quitting,
- the **Edit** menu for performing common edit manipulations,
- the **Data** menu for storing and retrieving data,
- the **Run** menu to control the rolling horizon process,
- the **Overview** menu to provide easy access to the other pages,
- the **Window** menu to keep track of open windows, and
- the **Help** menu to provide application-specific help.

User menus are created and specified using the AIMMS **Menu Builder**. This tool displays a tree that contains all menubars and toolbars in a hierarchical fashion. The look and feel of this menu tree is similar to the other tree-based AIMMS tools.

The AIMMS Menu Builder

To create the desired menubar structure you should first open the **Menu Builder** by pressing the **Menu Builder** button on the AIMMS toolbar or by pressing the *Ctrl+F9* key, and open the Default Page Menubar in the menu tree. The initial menu tree is shown in Figure 13.2.

Opening the Menu Builder

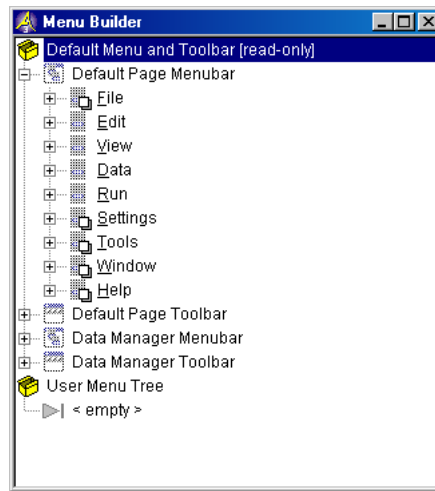



Figure 13.2: The **Menu Builder** with the initial menu tree

The Default Page Menubar and the Default Page Toolbar in the initial menu tree are read-only. This property is indicated by the disabled icons in the menu tree. Nevertheless, these bars can be used as a base construct from which you can start building your own menubars and toolbars. In this tutorial you will be asked to copy and paste several parts of the Default Page Menubar while creating your own Softdrink Planning Menubar.

Default bars can help you

To create your first menubar you should take the following actions:

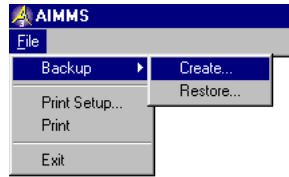
Creating a menubar

- ▶ select the User Menu Tree,
- ▶ press the **New Menubar** button  on the tool bar,
- ▶ specify 'Softdrink Planning Menubar' as its name, and
- ▶ press the *Enter* key to register this name.

13.2.1 The File menu



Figure 13.3 shows the proposed **File** menu containing one submenu and five menu items. The **Backup** submenu relates to the backup of data, while the **Print** menu item prints the contents of the active window. The other menu items are self-explanatory.

Menu contents

Figure 13.3: The proposed **File** menu

To create this **File** menu you need to perform the following actions:

*Creating the
File menu*



- ▶ select the Softdrink Planning Menubar in the tree,
- ▶ double-click on the menubar icon  to open this node,
- ▶ press the **New Menu** button ,
- ▶ specify '&File' as the name of this new menu, and
- ▶ press the *Enter* key to register the name.

The ampersand in the string '&File' will automatically create a shortcut triggered by the *Alt-F* key combination. The letter following the ampersand will be underlined in the actual menu (see Figure 13.3). The ampersand can be placed in front of any character in the string.

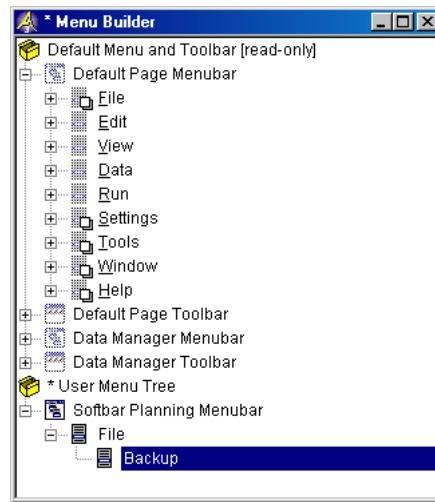
*Ampersand
character*

To create the **Backup** submenu of the **File** menu, you should follow these steps:

*Creating the
Backup menu*

- ▶ select the **File** menu in the menu tree,
- ▶ double-click on the menu icon  to open this node,
- ▶ press the **New Menu** button ,
- ▶ specify 'Backup' as the name of this new menu, and
- ▶ press the *Enter* key to register the name.

The **Menu Builder** on your screen should resemble Figure 13.4.






Figure 13.4: The **File** menu so far


Duplicating existing menus and menu items offers two main advantages. First of all, duplication provides a quick and easy way to construct menus: you do not have to re-enter the corresponding menu actions. Secondly, duplicate menu items are easier to maintain, since an update of one of them is automatically propagated to all the others.

Using duplicate menus

All menu items in the **File** menu will be duplicates of already existing menu items. Please carry out the following groups of steps relating to various menu items:

Duplicating menu items

- ▶ go to the **File-Backups-Data** menu of the Default Page Menubar,
- ▶ select the two menu items 'Create' and 'Restore' simultaneously,
- ▶ press the **Copy** button  on the toolbar,
- ▶ select the **Backup** menu created previously,
- ▶ open it and click on 'Insert Menu item here', and
- ▶ select the **Paste as Duplicate** command from the **Edit** menu.
- ▶ press the minus sign  in front of the **Backup** menu, and
- ▶ press the **Separator** button  on the toolbar.
- ▶ go to the **File** menu of the Default Page Menubar,
- ▶ select the menu items **Print Setup** and **Print** simultaneously,
- ▶ press the **Copy** button  on the toolbar,
- ▶ select the separator you just created, and
- ▶ select the **Paste as Duplicate** command from the **Edit** menu.
- ▶ press the **New Separator** button  on the toolbar.
- ▶ go to the **File** menu of the Default Page Menubar,

- ▶ select the menu item **Exit**,
- ▶ press the **Copy** button  on the toolbar,
- ▶ select the separator you just created, and
- ▶ select the **Paste as Duplicate** command from the **Edit** menu.

The complete **File** menu should be as shown in Figure 13.5.

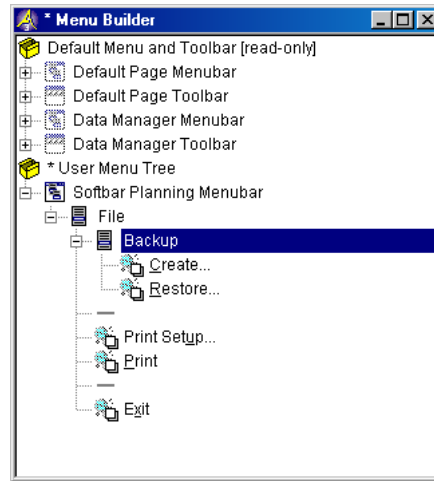


Figure 13.5: The complete **File** menu


13.2.2 The Edit and Data menus

The **Edit** and **Data** menus to be created should be identical to the corresponding menus already in the Default Page Menubar.

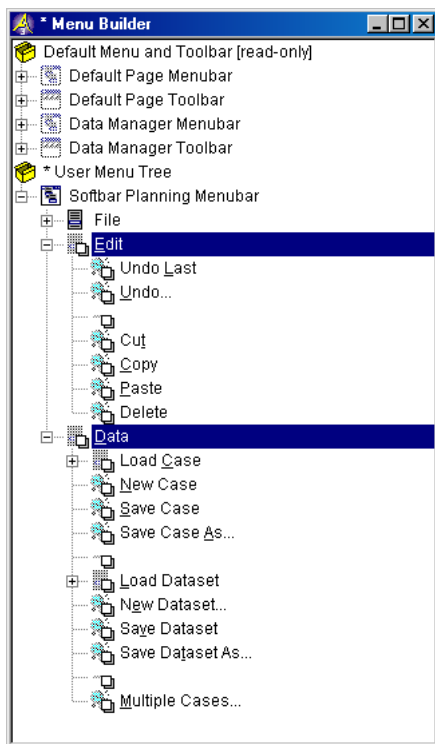
Menu contents

To create the **Edit** and **Data** menus you should follow these steps:

*Creating the
Edit and Data
menus*

- ▶ go to the Default Page Menubar,
- ▶ select the **Edit** and **Data** menus simultaneously,
- ▶ press the **Copy** button  on the toolbar,
- ▶ select the **File** menu from the Softdrink Planning Menubar,
- ▶ make sure it is closed, and
- ▶ select the **Paste as duplicate** command from the **Edit** menu.






The Softdrink Planning Menubar with the new **Edit** and **Data** menus is shown in Figure 13.6.

Figure 13.6: The new **File** and **Data** menu

13.2.3 The Run menu

The **Run** menu will contain commands to control the rolling horizon process. There are no standard actions, and you will have to create the menu items plus their actions explicitly. You should first create the three menu items plus separator, as shown in Figure 13.7 using the following steps:

Menu contents

- ▶ select the **Data** menu from the menu tree,
- ▶ close this menu if it is open,
- ▶ press the **New Menu** button ,
- ▶ specify '&Run' as the name of this new menu,
- ▶ press the *Enter* key to register the name,
- ▶ open it by double clicking on its icon,
- ▶ press the **New Item** button  on the toolbar,
- ▶ enter 'Run Next' (unquoted) as its text,
- ▶ press again the **New Item** button  on the toolbar,
- ▶ enter 'Run All' (unquoted) as its text,
- ▶ press the **New Separator** button  on the toolbar,
- ▶ press once again the **New Item** button  on the toolbar, and

- ▶ enter 'Restart' (unquoted) as its text.

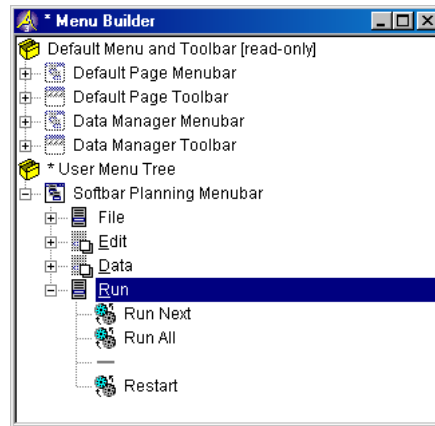




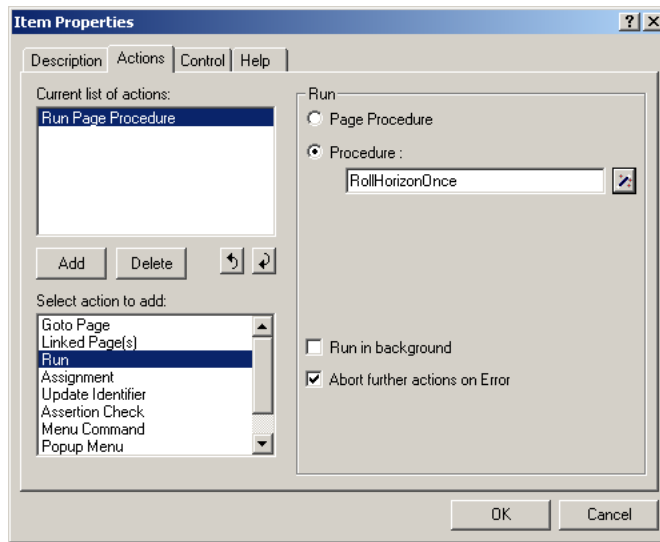
Figure 13.7: The **Run** menu

Having created the three menu items you now have to specify the commands that are executed when these menu items are selected. The following steps specify the command associated with the **Run Next** menu item:

Specifying the first menu action

- ▶ select the **Run Next** menu item,
- ▶ press the **Properties** button  on the toolbar,
- ▶ press the **Actions** tab,
- ▶ select the 'Run' action,
- ▶ press the **Add** button,
- ▶ select the 'Procedure' option (not the 'Page Procedure' option),
- ▶ use the **Wizard** button  to select the procedure RollHorizonOnce,
- ▶ press the *Finish* button, and
- ▶ press the *OK* button.

The completed **Action** tab of the **Menu Properties** dialog box should be as shown in Figure 13.8.

Figure 13.8: The **Action** tab of the **Menu Properties** dialog box


Repeat the above steps to link the procedure `RollHorizonToEnd` to the **Run All** menu item. Then repeat these steps once more to link the procedure `MovePlanningIntervalToStartOfCalendar` to the **Restart** menu item.

Specifying the remaining two menu actions

13.2.4 The Overview menu

The **Overview** menu will provide separate menu items to access each of the five overview pages. You do not need to specify these menu items separately, you can make use of the page structure in the Page Manager.


Menu contents


The **New Navigator** button  allows you to add navigation menus to your application. These navigation menus, with menu items and possibly submenus, all refer to pages. The menus are structured in the same hierarchical fashion as the corresponding pages in the **Page Manager**. As a result, navigation menus are automatically updated in AIMMS whenever the structure of pages in the page tree is modified.

Navigation menus

To create the complete **Overview** menu as a navigation menu you should execute the following steps:

Creating the Overview menu

- ▶ select the **Run** menu from the menu tree,
- ▶ close this menu if it is open,
- ▶ press the **New Menu** button ,
- ▶ specify '&Overview' as the name of the menu,

- ▶ press the *Enter* key to register the name,
- ▶ open the new **Overview** menu,
- ▶ press the **New Navigator** button  on the toolbar,
- ▶ specify 'Overview Pages' as the name of the menu, and
- ▶ press the *Enter* key to register the name.

The menu tree on your screen should look like the one shown in Figure 13.9.

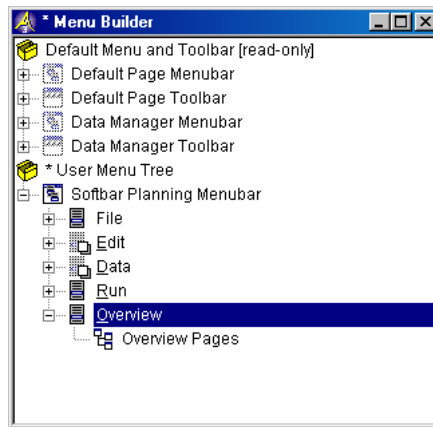



Figure 13.9: The menu tree so far

To specify the pages that are to be displayed through the **Overview** menu you should perform the following actions:

Specifying the navigation properties

- ▶ select the 'Overview Pages' navigation item from the menu tree,
- ▶ press the **Properties** button  button on the toolbar,
- ▶ select the **Navigation** tab,
- ▶ select 'Other Page' as the option within 'Reference Page' (see also Figure 13.10),
- ▶ press the **Wizard** button at the right of the 'Other Page' edit field,
- ▶ select the *Contents* page, and
- ▶ press the **OK** button twice.

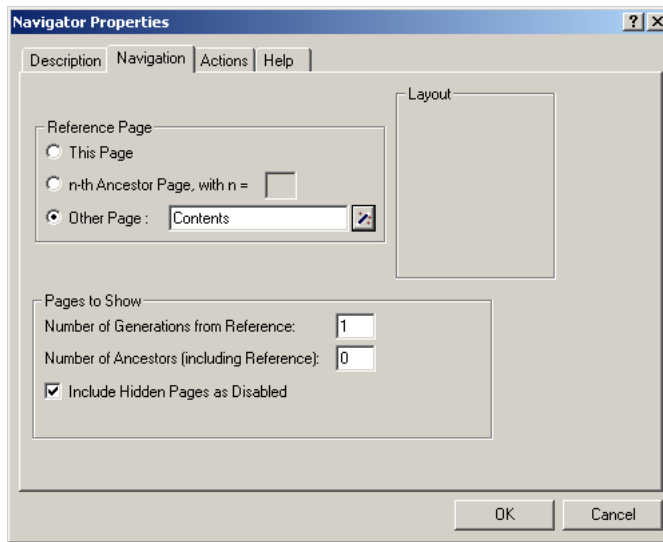


Figure 13.10: The completed **Navigation** tab of the **Menu Properties** dialog box

The resulting **Overview** menu will look like the one shown in Figure 13.11.

Viewing the Overview menu

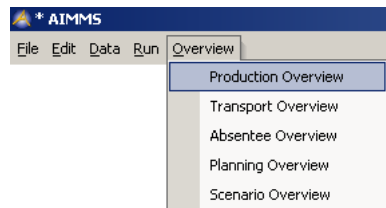


Figure 13.11: The **Overview** menu


13.2.5 The Window menu

The **Window** menu of the Softdrink Planning Menubar will be identical to the **Window** menu of the Default Page Menubar.

Menu contents

To duplicate the **Window** menu from the Default Page Menubar you should perform the following actions:

Duplicating the Window menu

- ▶ select the 'Window' menu from the Default Page Menubar,
- ▶ press the **Copy** button  on the toolbar,
- ▶ select **Overview** menu from the Softdrink Planning Menubar,
- ▶ make sure it is closed, and

- ▶ select the **Paste as Duplicate** command from the **Edit** menu.

13.2.6 The Help menu

The contents of the **Help** menu is shown in Figure 13.12. The first menu item will open the AIMMS Help document. The second menu item will display the model summary in a PDF viewer. The third menu item will open an ‘About’ dialog box with some application-specific information.

Menu contents

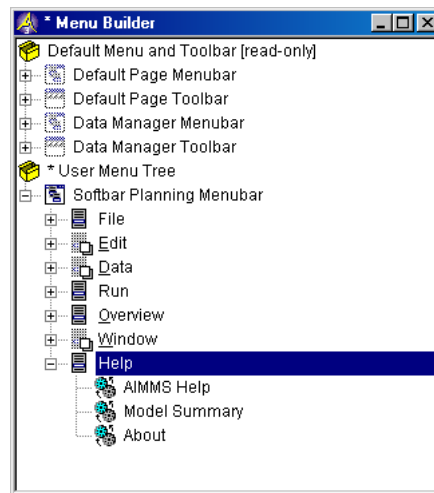




Figure 13.12: The **Help** menu in the Softdrink Planning Menubar

By now, you should be able to create the **Help** menu and its three menu items on your own. Note that the three menu items should be created from scratch using the **New Item** button  on the toolbar.

Creating the Help menu

Rather than duplicating the first menu item, you are asked to specify the menu command directly by executing the following actions:

Specifying the first menu item

- ▶ select the ‘AIMMS Help’ menu item,
- ▶ press the **Properties** button  on the toolbar,
- ▶ press the **Actions** tab,
- ▶ select the ‘Menu Command’ option,
- ▶ press the **Add** button,
- ▶ select the ‘Help-Contents and Index’ entry (see Figure 13.13), and
- ▶ press the **OK** button.

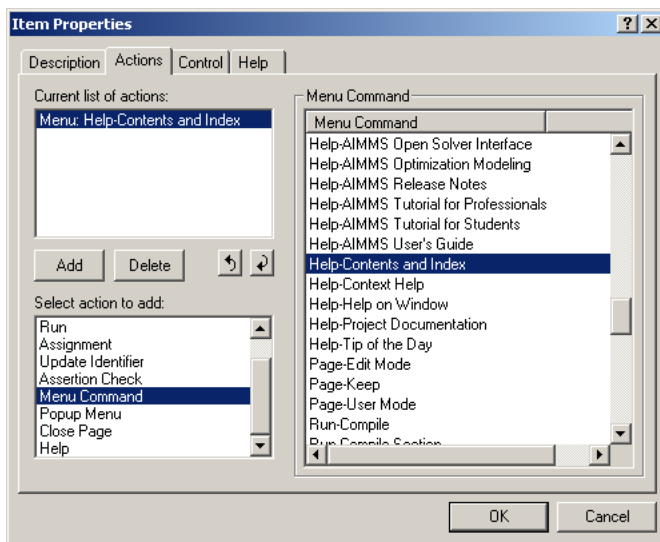


Figure 13.13: The Action tab of the Menu Properties dialog box

To specify the **Model Summary** menu command you need to declare an auxiliary AIMMS procedure. To keep your model tree well-organized you should first create a new model section called Softdrink Planning Menubar underneath the Scenario Overview section, and then create a procedure ShowModelSummary inside this section as shown in Figure 13.14. This procedure should have the following **Body** attribute:

Creating a procedure ...

```
ShowHelpTopic( "section.3.4", "Tutorial/AIMMS_tutorial_for_professionals.pdf" );
```

Note that you might need to change the path of the tutorial file that is passed as the second argument of the function ShowHelpTopic.

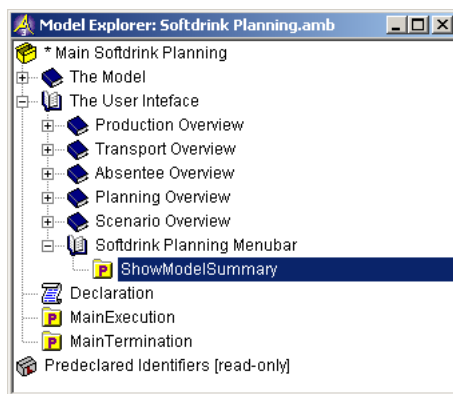




Figure 13.14: The Softdrink Planning Menubar section of the model tree

You are now ready to link the procedure you have just created to the **Model Summary** menu command using the following actions:

- ▶ select the 'Model Summary' menu item,
- ▶ press the **Properties** button  on the toolbar,
- ▶ press the **Actions** tab,
- ▶ select the 'Run' action,
- ▶ press the **Add** button,
- ▶ select the 'Procedure' option,
- ▶ use the **Wizard** button  to select the procedure ShowModelSummary,
- ▶ press the **Finish** button, and
- ▶ press the **OK** button.

... and specifying the second menu item

The last item in the **Help** menu opens an 'About' dialog box providing some application-specific information such as a version number or copyright information. In AIMMS you can create a *dialog page* with the following actions:

- ▶ open the **Page Manager**,
- ▶ create a new page with the name 'About Softdrink Planning' (see Figure 13.15),
- ▶ open the page in **Edit** mode,
- ▶ open the **Page Properties** dialog box
- ▶ check the 'Behaves as Dialog' checkbox underneath 'Style',
- ▶ press the **OK** button, and
- ▶ resize it to give a reasonably sized dialog box.

Creating a dialog page ...

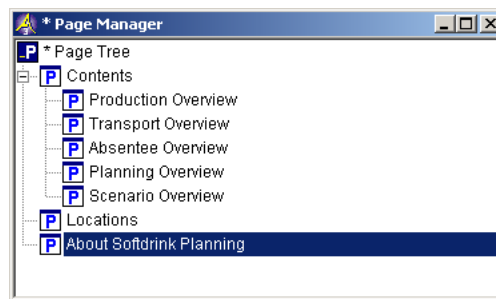
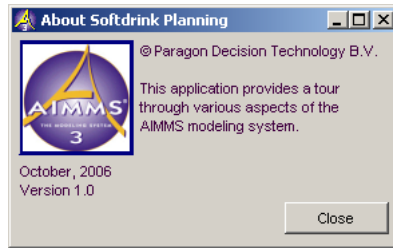




Figure 13.15: The page tree with the new *About Softdrink Planning* dialog page

You can insert whatever contents into the *About Softdrink Planning* dialog page you want. Figure 13.16 serves as an example, and contains a **Close** button, a logo, plus text displaying information about the application. This page is also available for import from the 'Pages' subdirectory. The page import process was described in the last section of the previous chapter.

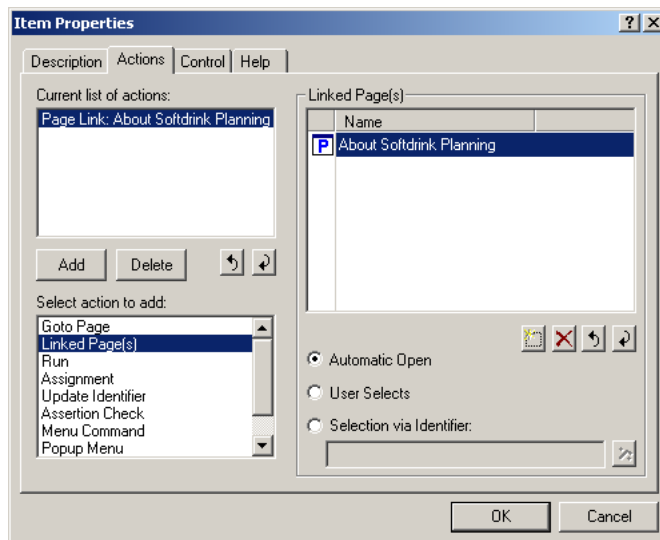
Providing its contents ...

Figure 13.16: The **About Softdrink Planning** dialog box

Please specify the third menu command by performing the following steps:

- ▶ select the **About** menu item,
- ▶ press the **Properties** button  on the toolbar,
- ▶ press the **Actions** tab,
- ▶ select 'Linked Page(s)' as the action to add,
- ▶ press the **Add** button,
- ▶ press the **New Page Link** button ,
- ▶ select the *About Softdrink Planning* page (see Figure 13.17), and
- ▶ press the **OK** button twice in a row.

... and
specifying the
third menu item

Figure 13.17: The **Action** tab of the menu **Item Properties** dialog box


13.2.7 Linking the menubar to pages

You have now completed the specification of the Softdrink Planning Menubar. Instead of linking this menubar to each individual page, it is much more convenient to link it to the *Background Color* template. This template is shared by all pages, and menubars on pages are, by default, inherited from templates.

Instead of linking to pages ...

To link the menu bar to the *Background Color* template the following actions are required:

... link to a single template

- ▶ open the *Background Bitmap* template in **Edit** mode,
- ▶ open its **Page Properties** dialog box,
- ▶ select the **Menu** tab,
- ▶ select 'Other' as the Menu Bar option (see Figure 13.18),
- ▶ press the **Wizard** button  on the right of the 'Other' edit field,
- ▶ select Softdrink Planning Menubar, and
- ▶ press the **OK** button twice.

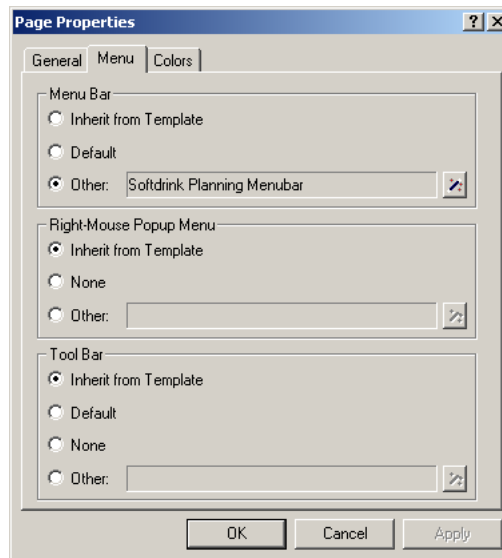



Figure 13.18: The **Menu** tab of the **Page Properties** dialog box

You are now ready to use the newly created menubar. Change the page mode by pressing the **Page User Mode** button  on the toolbar. The Softdrink Planning Menubar created in this chapter should appear on all your pages, and is shown in Figure 13.19.

Viewing the result



Figure 13.19: The complete 'Softdrink Planning Menubar'