



POPKIN
S O F T W A R E

System Architect
FSA-EAF
Drawing Techniques

WORLD CLASS TRAINING

Drawing Techniques

System Architect supports a number of different diagram types. The drawing techniques used for creating many of these diagrams are the same.

Symbol Types

There are two groups of symbols; the **Node Symbols** and the **Line Symbols**. They are enhanced by the addition of **Annotation** and **Graphics**.

Node Symbols are normally connected together using Line Symbols.

 *Node symbol definitions are available for Drag & Drop through the Choices option of a diagram's floating menu, Line symbols are not*

The Draw Toolbar

The Draw Toolbar will *normally* appear docked under the other Toolbars, and display the symbols that are available to the diagram. These symbols represent those specific to the diagram and more general **Annotation** symbols. They may also be selected from the Draw menu.

 *Pointing to each of the Tools will display its name.*

The Draw Toolbar may be toggled on and off by right-clicking over the Menu Bar or any Toolbar and Clicking on the **Draw** option.

The Conceptual Information Model Toolbar

The Data Class Relation is an example of a Line symbol.

The Data Class is the only Rectangular symbol apart from Annotation symbols.

Text, Rectangle and Doc Block are all examples of Annotation symbols.

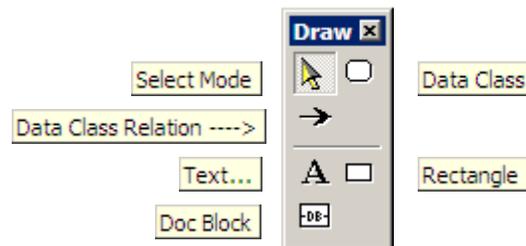


Figure 1 The Conceptual Information Model Draw Toolbar

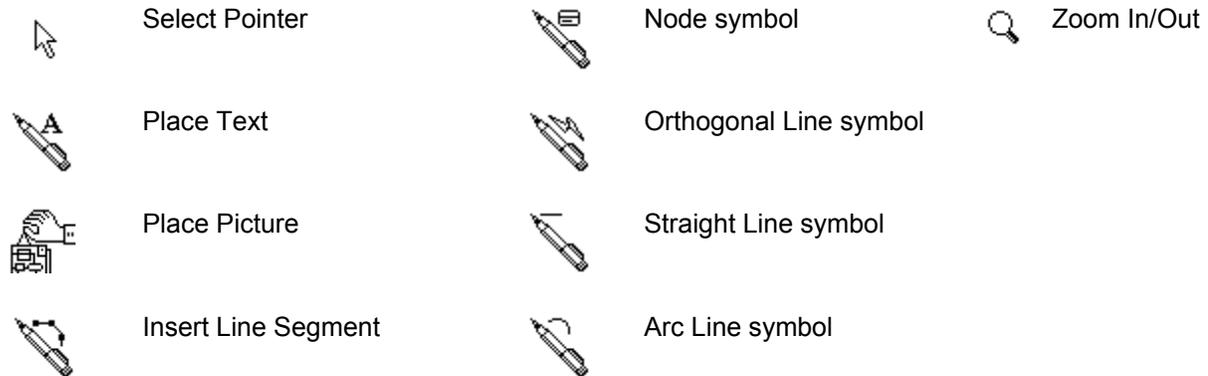
Deselecting Symbol Drawing

Once a symbol has been selected, it will normally remain selected until you either deselect it or select a different symbol. To deselect symbol drawing;

- Click on the **Select Mode** button in the **Toolbar**.
- Click on the **Select Mode** option in the **Draw** menu.
- Press **Escape** on the keyboard *ensuring you have committed the symbol by pressing Enter*.

Cursor Shapes

Once a symbol has been selected, the cursor will change from an Arrow to a Pen with a shape attached. The shape reflects the type of symbol to be drawn:



Placing Node Symbols

The technique used to place symbols is determined by the current setting of the *Simultaneous Select/Draw* option in *Preferences*. If this option is disabled then simply clicking, whilst in Node Symbol Draw Mode, will place the symbol on the diagram. If the option is enabled then the left mouse button must be held down until a rectangular outline appears.

Naming the Symbol

Once a symbol has been placed on the diagram it is likely that a name will be required.

A default name will be provided depending upon the symbol being drawn.

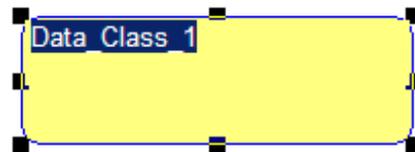


Figure 2 Entering a Symbol Name

- ☞ *The **Enter** key must be pressed to end the symbol naming mode.*
- ☞ *The **Symbol** dialog will be displayed if the symbol is too small to support text and a default name will not be provided.*
- ☞ *The Name will only be requested if the **Auto Name** option in the **Preferences** dialog is enabled, and the **Allow Auto Name** option in the **Symbol Style** dialog is also enabled.*

The name of any symbol must have between 1 and 80 characters. Spaces can be included, but non-alphabetic characters, other than the underscore, should be avoided.

- ☞ *Names are Case-Sensitive and must be unique for a given type of symbol. However some symbols will be **Keyed** by other definition names to make them unique.*
- ☞ *The **Choices...** button can be used to name symbols from existing definitions in the Data Dictionary, if the Symbol dialog is displayed. The Browser will also allow existing symbol definitions to be dragged onto appropriate diagrams to create symbols.*

Exercise

- 👉 Create a new **Conceptual Information Model** Diagram, named **FFEL Loan** linked to a Data Area named **Student & Partner Eligibility**.
- 👉 Place three **Data Class** symbols on the diagram; **SCHOOL**, **COLLECTION AGENCY** and **FFEL LOAN**.

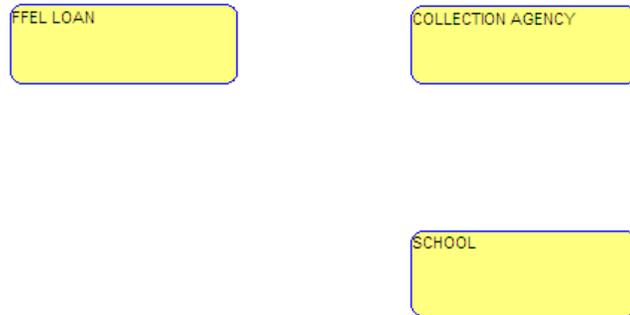


Figure 3 Placed Symbols

Drawing Line Symbols

The technique used to draw Line symbols is determined by the current setting of the Simultaneous Select/Draw option in Preferences. It is perhaps simpler to disable this option when drawing Line symbols.

To draw a line simply click over one symbol, whilst in Line Symbol Draw Mode, and then point and click on another symbol. (**Don't Drag.**)

- 👉 *If the Simultaneous Select/Draw option is enabled then the left mouse button must be held down over the first symbol until an Attachment Handle appears.*

The Name of the Line Symbol will normally be requested. The Associative properties will be determined by the type of Line Symbol used to draw the line.

- 👉 Draw a **Data Class Relation** line named **Collects**, from **COLLECTION AGENCY** to **FFEL LOAN**.

Changing Line Styles

Select the **Symbol Style** submenu from the **Format** menu, and select the **Line...** option to display the **Line Style** dialog.

When an option button is chosen, it will force any selected lines to that style. Any new lines will also have the selected style.

The **Save** box allows a Line Style to be saved as the new default for subsequent diagrams.

- 👉 *The **Round Corners** option affects only the **Straight - orthogonal** line style.*

- 👉 Change the Line Style to **Straight - any orientation**.

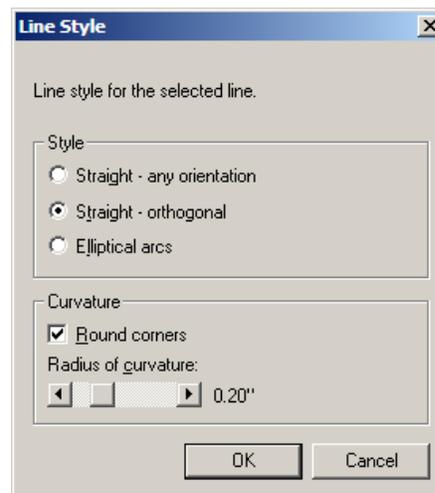


Figure 4 The Line Style dialog

Line Routing

The route of a Line can be controlled by introducing bendpoints. This can be achieved by clicking before the line reaches a symbol.

 Draw a **Data Class Relation** line named **Applies for**, from SCHOOL to FFEL LOAN, including at least one bendpoint.

 A **Double-click** will cause a line symbol to terminate. This is not permitted within some diagrams.

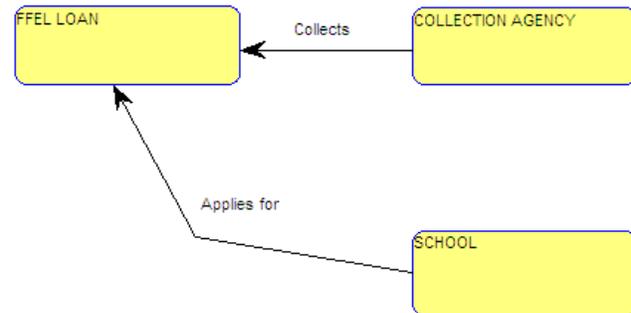


Figure 5 Drawn Lines

Inserting Bendpoints

Lines can have additional bendpoints inserted, to allow the line to be manually re-routed.

To insert a bendpoint select the **Insert Line Segment** option from either the Line's Floating Menu, or the **Format** menu.

 Insert a bendpoint into the **Applies for** Relation line.

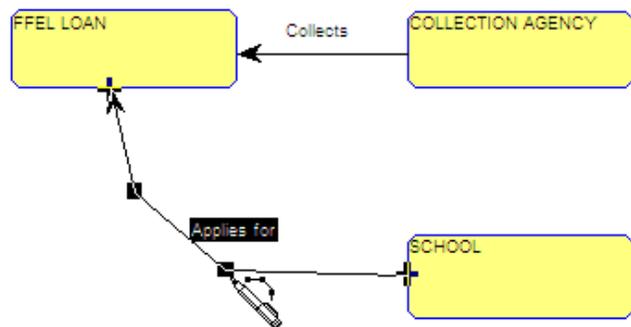


Figure 6 Inserting Bendpoint

Selecting Symbols

Symbols are selected by clicking over the symbol. This will cause a set of **Handles** to appear around the symbol.

A Node symbol has four corner handles that can be dragged to alter its **size** and four handles along its sides to alter its **shape**.

 The symbol may automatically re-size when the View is changed!

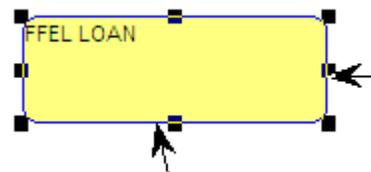


Figure 7 Selected Node Symbol

A Line symbol has handles at the endpoints of the line and at any bendpoints.

If the line is connected to a symbol then an **Attachment Handle** is displayed at its endpoint. This appears as a black cross instead of a black square.

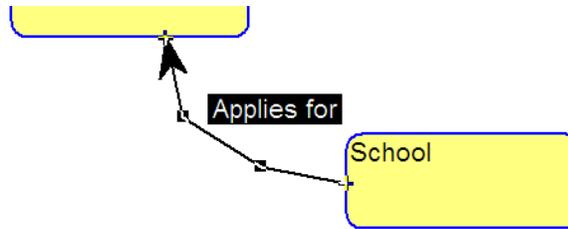


Figure 8 Selected Line Symbol

Finding Symbols

In the middle of the Diagram Toolbar is the **Find Symbol** button (binoculars).



If pressed it will provide an alphabetic listing of all the symbols in the diagram. This list may be scrolled, or by starting to type the name go directly to a section of the list.

Once a symbol name has been selected the **Find** button can be used to display the symbol.

This is particularly useful for navigating around large diagrams, without the need to scroll the window or use the Zoom feature.

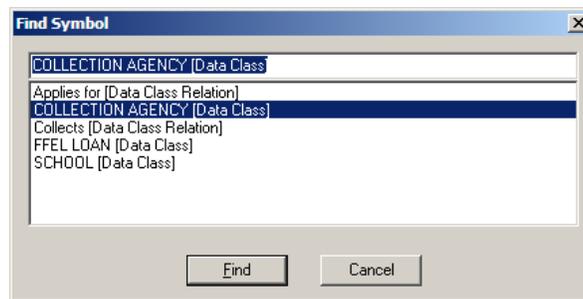


Figure 9 Find Symbol dialog

Selecting Multiple Symbols

A number of methods can be employed in selecting more than one symbol;

- Hold down the **Shift** key and simultaneously click on the required symbols. Symbols may be selected and deselected using this method.
- Press and hold down the right mouse button while simultaneously clicking the left button. Symbols may be selected and deselected using this method.
- Pull down the **Edit** menu and click on **Select All**. This selects all symbols on the diagram. Individual symbols may then be deselected where necessary. (**F8**).
- A **Click and Drag** will create a dashed rectangular area. All symbols contained within the area will be selected. This option will cause any previously selected symbols to be deselected, and therefore can only be used once at a time.

 Pressing the **<Ctrl>** key before using the **Click and Drag** option, prevents the accidental selection of an individual symbol or embedding symbol.

Clicking in White Space on the diagram will deselect all symbols.

Moving Node Symbols

Node symbols can be moved by dragging them while in Select Mode. The cursor will then change to a **hand** shape. During the move the symbol will be shown as a dashed rectangle and is only redrawn when dropped.



Any lines connected to the symbol will obviously remain connected.

-  Move the **FFEL LOAN** symbol to a position below the **SCHOOL** symbol.

Moving Line Symbols

Any of the handles that appear when a line is selected can be dragged to a new location.

The Attachment Handles can be dragged to a new position on the boundary of a symbol, or away from the boundary of one symbol and attached to another.

-  Tidy up the **Applies for** Relation line by adjusting the position of its handles.
-  *The Format menu contains other options that will automatically re-route line symbols.*

Moving a Symbol Name

When a line is selected, its name will also be highlighted. The name can be dragged independently of the line, to a new location.

-  Reposition the **Collects** text.

If the name is moved to a location that exceeds a given distance then a Remote Line can be drawn to the line to which it relates. This also applies to a Node symbol when its name is positioned outside.

To enable the Remote Line option and to change its pen settings, select the **Format** menu, **Diagram Style** submenu then the **Notation** option.

-  Enable the **Remote Line** option and move the **Applies for** text away from its Relation line.

-  *The Auto Preference **Reposition Name** only applies to **manual** repositioning of a line symbol.*

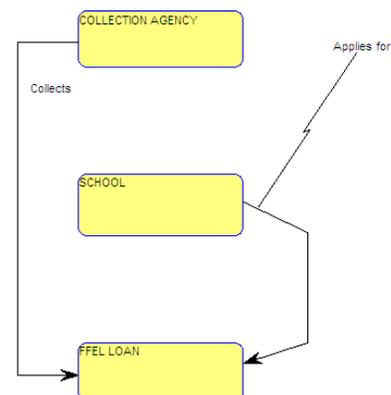


Figure 10 Remote Name

Block Move

When multiple symbols are selected, they can then be moved as a group, using the same procedure as for moving a single symbol. When dragging the selected symbols the cursor will change to a hand with a rectangle, and the dashed rectangle will represent the outline of all the symbols being moved.

-  *Symbols that are contained within other symbols will move when the larger symbol is moved.*

Deleting Symbols

While a symbol is selected it can be deleted by the use of the key, or by selecting the **Delete** option from the **Edit** menu. If multiple symbols are to be deleted then a prompt for confirmation will be displayed.

If the last Symbol to use a Definition is deleted then the definition will also be deleted. Deleted Entities will have their Attribute definitions, and Relation Line symbols and definitions deleted.

Cut, Copy and Paste

The **Edit** menu supports the standard **Cut**, **Copy** and **Paste** options, and the Edit Toolbar contains familiar cut, copy and paste icons;

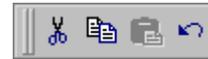


Figure 11 Cut, Copy, Paste & Undo

System Architect also supports the standard <Ctrl> key shortcuts.

Diagram Glossary

In addition to Copy and Paste you may **save** a group of selected symbols to a Diagram Glossary file. This file can then be opened with another diagram active and the saved symbols copied into that diagram.

To save a group of selected symbols access the **Tools** menu and the **Diagram Glossary** submenu. Select the **Save As...** option. The saved file will have a .dgc extension.

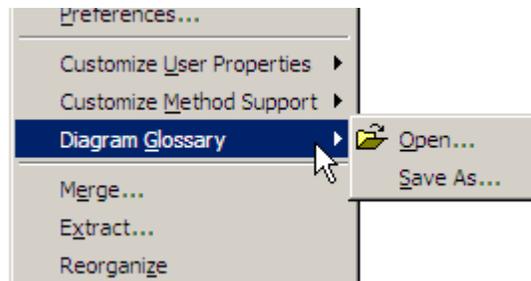


Figure 12 Diagram Glossary submenu

To place the saved set of symbols in another diagram access the same menu – Tools, Diagram Glossary – but this time select the **Open...** option.

An outline of the symbols will appear and you may position them anywhere on the diagram.

Symbol Style Options

System Architect provides a number of features that allow changes to be made to the appearance of symbols.

To gain access to these features open the **Symbol Format** submenu from the **Format** menu.

If a symbol has not been selected then some options may be 'greyed out'. (Symbol Style... will also be greyed out if multiple symbols have been selected.)

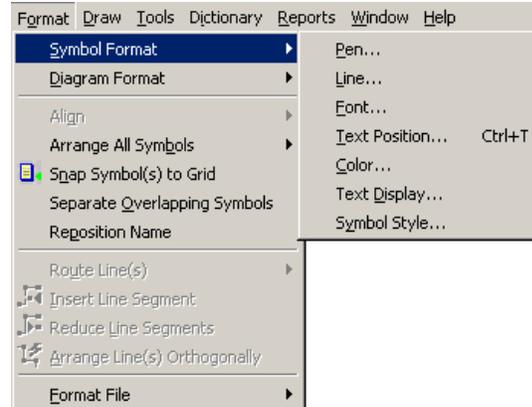


Figure 13 Symbol Style submenu

Text formatting and symbol color can also be adjusted using the Symbol Style Toolbar.



Figure 14 Symbol Style Toolbar

- | | |
|--------------------------|--|
| <u>P</u> en... | The thickness and color of the line used to draw a symbol may be changed. |
| <u>L</u> ine... | This alters the style of any Line symbol that is subsequently drawn. If any lines are currently selected then they too are altered. |
| <u>F</u> ont... | This changes the text supported by the selected symbol. If no symbol is selected then the default font for the session is changed. All symbols using the default font will be redrawn using the new values. |
| <u>T</u> ext Position... | This allows the justification of the text within a symbol to be changed.
The position of a Node symbol's Name and Graphic Comment can also be adjusted. |
| <u>C</u> olor... | Color can be used to Fill selected symbols. Color can also be applied to the Font and Pen used by selected symbols; these options are also available from Font Style and Pen Style dialogs. |
| Text <u>D</u> isplay... | This option affects all symbols on the diagram, and may be used to remove certain elements of the textual information. |
| Symbol <u>S</u> tyl... | This option can be used to set a symbol's default style, and its acceptance of some of the automatic features enabled in the Preferences dialog.
Command buttons are provided that give direct access to many of the other options mentioned above. |

*Change the Symbol Style for the **FFEL LOAN** Data Class to; a slightly thicker dark green Pen, a Bold 12pt Times New Roman dark green Font, Centered text and Fill with pale blue.*

Symbol Style Dialog

When a symbol is first drawn it will have its style determined by the default settings associated with that particular symbol.

The style for every symbol can be different, but only one default style may exist for each type of symbol.

It is possible to take elements of a symbol and **Set** them, to modify the current default style.

 Set the Pen, Font, Text and Color Styles from the FFEL LOAN Data Class.

 Place a new Data Class symbol named **LENDER** onto the diagram.

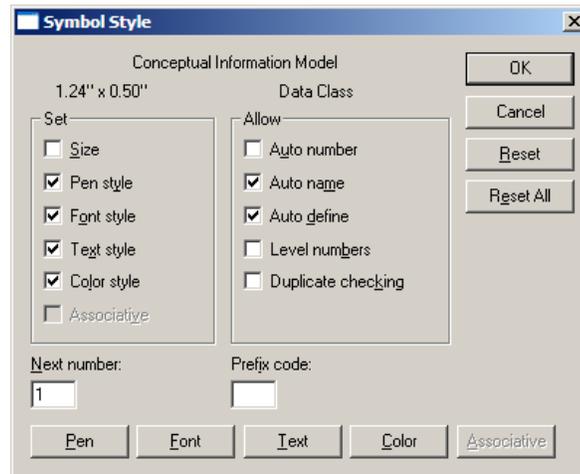


Figure 15 Symbol Style dialog

Style Sheets

Any alterations made to the default Style Settings will be lost when the encyclopedia is closed, unless they are saved to a Format File, known as a Style Sheet. System Architect will prompt to save the Style Settings, whilst the encyclopedia is closing, whenever changes have been made.

Style Sheet options may be accessed by opening the **Format File** submenu from the **Format** menu.

 To see the effect of the Impose option; modify the fill color of the SCHOOL symbol to light green and **set** it as the default color.

Select the COLLECTION AGENCY symbol and then use the **Impose** option from the Format File submenu.



Figure 16 Format File submenu

Open... Any saved Style Sheet, from any encyclopedia, may be opened and the styles Imposed upon selected symbols. If the Save checkbox is enabled, then this Style Sheet will be stored in the SA2001.ini file and opened as the default Style Sheet for all encyclopedias that do not contain an Autoexec.sty file.

Save If a Style Sheet is currently open, then it is possible to **Save** changes to it.

Save As... The **Save As...** option is used to save the Style Settings into a new file. The default extension **.sty** will be appended to the filename. If the default filename **Autoexec** is used then this will apply automatically to all users.

Reset This option will reset the style settings back to the System Architect defaults, or back to the initial settings of the open Style Sheet.

 Save the current Style Settings to a Format File named **MyStyle.sty** in the Course Encyclopedia folder.

Diagram Style Options

System Architect provides a number of settings that allow changes to be made to the appearance of the current diagram.

To gain access to these settings open the **Diagram Style** submenu from the **Format** menu.

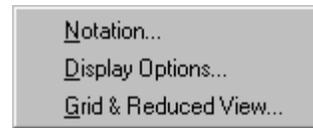


Figure 17 Diagram Style submenu

Notation...

The Notation dialog is primarily concerned with the display of Associative properties, but covers other features such as **Notation Font** and, as already seen, the **Line to Remote Text** option.

Display Options...

The Display Options dialog contains settings that switch diagram features on and off.

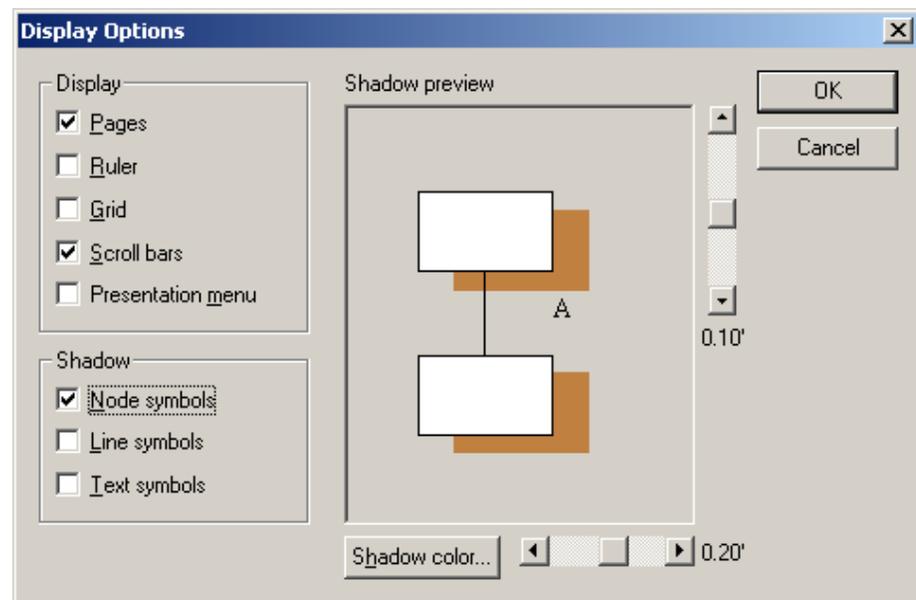


Figure 18 Display Options dialog

Grid &
Reduced View...

Changes can be made to the Symbol Grid and Line Grid settings as well as altering the Reduced View default scaling value.

The Symbol Grid and Line Grid settings are independent of the Show Grid in the Display Options.

Set the Display Options as shown in Figure 18.

Scaling the Display

The **View** menu provides several options for altering the diagram's scale.

☞ *Most of the Scaling options are also available from the diagram's Floating Menu.*

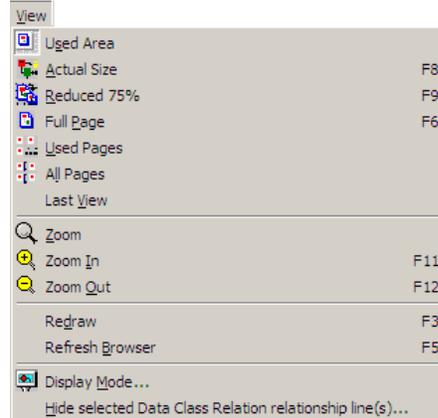


Figure 19 The View menu

Used Area	Displays the entire diagram, scaled to fit the Diagram Window.
Actual Size	Displays the diagram as it will appear when printed (without scaling). It is important to realise that scaling may cause subtle differences between viewed and printed output.
Reduced 69%	This reduces the screen display by the percentage shown on the menu. (The default value is 75% but may be altered in the Grid & Reduced View Settings dialog).
Full Page	Scales to display a <i>Full Page</i> of the diagram on the screen. This will depend on the current page size and orientation.
Used Pages	Displays all Pages that contain symbols. Similar to Used Area , except that blank areas of pages will be included.
All Pages	Displays the entire drawing area; approximately 150 cms * 160 cms.
	☞ <i>The Maximum Drawing Area can be altered within SA2001.ini</i>
Last View	Toggles between the last two selected views.

Zoom

Also available on the Toolbar, the pointer will change to a Magnifying Glass, indicating zoom mode. To Zoom In on a section of your diagram; press the left mouse button, to Zoom Out press the right mouse button. You may also select an area to zoom in on by holding down the left mouse button and dragging the magnifying glass over the desired area.



The Toolbar buttons **Zoom In** and **Zoom Out** may also be used to make slight adjustments to the scale.



Redraw

Occasionally it is useful to redraw the diagram!

Exercise

- ✎ Set the Pen, Font, Text and Color styles for the all data class symbols, based upon **FFEL LOAN**.
Save, and then Reset the Format File.
Select all symbols on the diagram and impose the symbol formats.
- ✎ Consider the consequences of Imposing styles upon symbols.
- ✎ Open the MyStyle.sty Format File and ensure that the Save checkbox is enabled.
Select all symbols on the diagram and impose the symbol formats.
- ✎ Add a data Class Relation Line from LENDER to FFEL LOAN named **Provides**.
Change the Line style for all lines to Straight- orthogonal.

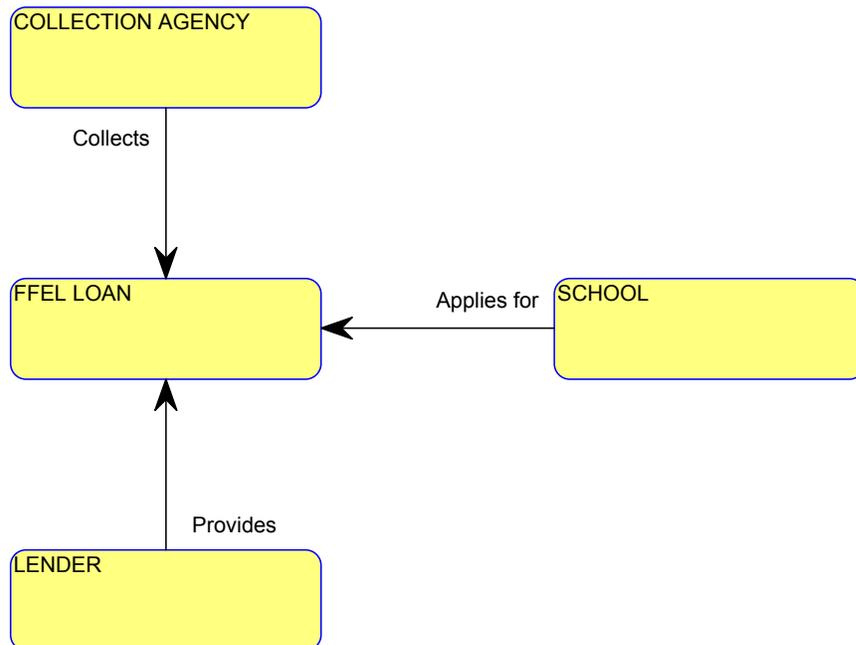


Figure 20 **Completed Exercise**

Complete the diagram as shown in Figure 20.