Software through Pictures®
Structured Environment

Millennium Edition 8

Quick Reference

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Aonix

Software through Pictures Structured Environment Quick Reference

Millennium Edition 8

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FUNDAMENTALS OF STP

USE SHORTCUT MENUS AND GET HELP

Access Frequently-Used Commands

Click the right mouse button on a Model category or object on the Desktop or on an object, table cell, row, column or background area in an editor to display a context-sensitive, shortcut menu.

Access StP's Online Documentation

Choose **Help > Online Manuals**.

INSERT AND REPLACE SYMBOLS AND ARCS

Insert One or More Symbols into a Diagram

1. Select a symbol on the Symbols toolbar (or double-click it for multiple entry mode).
2. Click the left mouse button in the drawing area to insert the symbol (in multiple entry mode, click multiple times for more instances of the symbol).
3. Select Selection or another symbol on the Symbols toolbar to terminate multiple entry mode.

Draw One or More Arcs

1. Select the arc symbol on the Symbols toolbar (or double-click it for drawing multiple arcs).
2. Optionally select the arc type on the DefaultArcType toolbar.
3. Click the left mouse button on the source and destination objects to draw each link.
4. Select Selection or another symbol on the Symbols toolbar to terminate multiple entry mode.

Draw/Cancel Drawing of Right-Angled Arcs

Click the **Toggle Orthogonal Drawing** toolbar button to set / unset this drawing option.

Change an Object's Symbol Type

1. Select the object in the diagram.
2. Select the new symbol on the Symbols toolbar.
3. Choose **Replace** on the **Edit** or right-click menu.

Change an Arc Type

1. Select the arc in the diagram and choose **Replace** from the **Edit** or right-click menu.
2. Select an arc type in the dialog box and click **OK**.

SELECT AND REPOSITION SYMBOLS AND ARCS IN A DIAGRAM

Select a Single Element in a Diagram	Single-click the element with the left mouse button.
Select Multiple Elements in a Diagram	Select an element, press SHIFT and click the left mouse button on additional elements.
Select All Elements in One Area of a Diagram	Left-click the mouse in the drawing area and drag a dashed-line "bounding box" around the elements.
Reposition an Element in a Diagram	Drag and drop it with the left mouse button.
Reconnect an Arc	Select one end of the arc and drag and drop it on another object with the left mouse button.
Square up Non-Orthogonal Arcs	From the diagram's right-click menu, choose **Align All Links**.

LABEL AND RENAME OBJECTS

Edit a Name	Double-click a diagram element or table cell to display its label in edit mode; click outside an object label or table cell to terminate label edit mode.
Choose a Name from the System Repository	Select a diagram element or table cell and choose **Choose <object> Names** from the **Edit** or right-click menu; select a name from the list and click **OK**.
Rename an Object in the System Repository	Select a diagram element or table cell and choose **Edit > Rename Object Systemwide**.
Rename File or Directory Objects	1. Open the Desktop **Model Elements** category and select **File Objects** or **Directory Objects**. 2. Select an object in the objects pane and choose **Tools > Rename Object System Wide**. 3. Type the new name in the dialog, and click **OK**.

EDIT OBJECT PROPERTIES

1. Select an element in the diagram.
2. Click **Properties** toolbar button or choose **Properties** on **Edit** or right-click menu.
3. Select options and edit or enter values, then click **OK**.

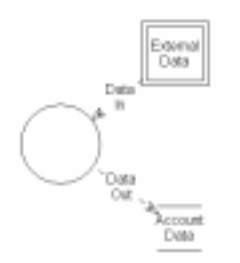
ADD AN ANNOTATION

1. To access the Object Annotation Editor (OAE):
   - From an editor—Select a diagram, object, table or table cell and click the <**Diagram | Object | Table | Cell> Annotation** toolbar button or choose the corresponding annotation command on the **Edit** or right-click menu.
   - From the Desktop—Open the **Model Elements** category, select **File Objects** or **Directory Objects**, select an object from the objects pane, and choose **Edit Annotation** on the **Tools** or right-click shortcut menu.
2. In the OAE, open the annotation folder and select an annotation, note, or item.
3. Add notes or items from the **Edit** menu, as appropriate.
4. Type item values and / or a note description in the **Description** field; click **Apply**.
5. Choose **File > Save**.

ATTACH AN EXTERNAL FILE

1. In the editor, select the diagram object or table cell (or none, to attach the file to the diagram or table itself) and click the appropriate **Diagram | Object | Table | Cell Annotation** toolbar button or choose the corresponding annotation command on the **Edit** or right-click menu.
2. In the Object Annotation Editor, open the annotation folder and select the Object note.
3. Choose **Edit > Add Item > External File**.
4. With the External File item still selected in the Annotations list, type the full path to the external file in the **Description** field and click **OK**.

DECOMPOSE A PROCESS

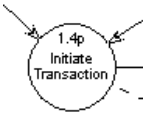


1. Select the process symbol.
2. From the **Go To** menu, choose **Decomposition** and when asked to confirm, click **OK**.
   The decomposition diagram appears with an unlabeled process symbol.
3. Label the process.
   A process index number appears above the label.
4. Add additional processes, stores, and flows as needed.
5. From the **File** menu, choose **Save**.

CREATE A PROCESS SPECIFICATION (PSPEC)

To create a Pspec, first add a Pspec annotation, then generate the Pspec.

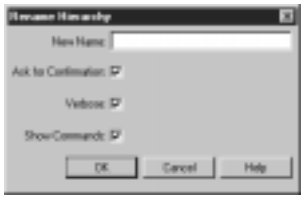
1. Select the process.
2. From the **DFE** menu, choose **Edit Pspec Note**.
3. In the **Description** dialog, type a process description and click **OK**.
   A display mark (p) appears next to the process index number in the diagram.
4. With the process still selected, from the **DFE** menu choose **Generate Pspec**.
   The Pspec is generated into an ASCII file named *<process_index>.pspec* in the *dfe_files* directory.
   If no process is selected, a Pspec is generated for each Pspec-annotated process on the diagram.



To generate a pspec for each process in the model that has a Pspec note, from the StP Desktop choose **Code** > **Pspec** > **Generate Pspec for All Diagrams**.

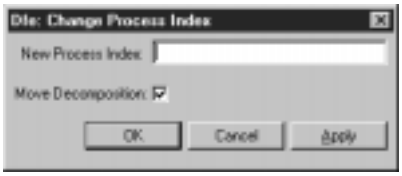
Note: A process can have a decomposition or a process specification, but not both.

RENAME A HIERARCHY



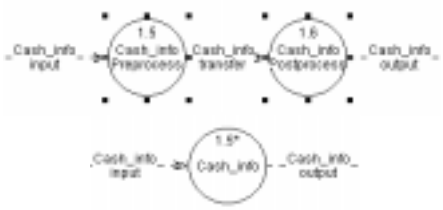
1. In the Model pane on the StP Desktop, open the **Diagrams** category and select the **DeMarco/Yourdan** or **Gane Sarson Data Flow** subcategory.
2. In the objects pane, select a data flow diagram.
3. From the **Tools** menu, choose **Rename Hierarchy**.
4. Type the new diagram name in the **New Name** text field and click **OK**.
   The diagram and any subdiagrams and associated Cspecs are renamed in the repository.
   All process indexes on the affected diagrams are renumbered.

CHANGE A PROCESS INDEX



1. Select the process.
2. From the **DFE** menu, choose **Change Process Index**.
3. In the dialog box, type the new relative process index (only the last decimal digits) in the **New Process Index** field.
4. Optionally, select **Move Decomposition** to change the process indexes throughout the diagram hierarchy.
5. Click **OK**.

COLLAPSE MULTIPLE PROCESSES INTO ONE



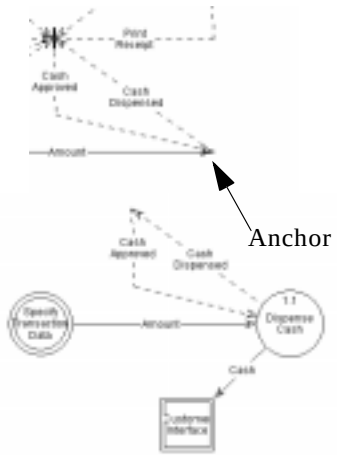
1. Select the processes to be collapsed.
2. From the **DFE** menu, choose **Collapse**.
3. In the dialog box, type a name for the collapsed process.
4. Click **OK**.
   The processes are combined and their decompositions are renumbered.

DATA FLOW DIAGRAMS

EXPLODE A PROCESS INTO ITS COMPONENTS

1. Select a process that has a decomposition diagram or has been "collapsed."
2. From the **DFE** menu, choose **Explode**.
   The exploded process is replaced with an anchor, and the component processes appear on the diagram.

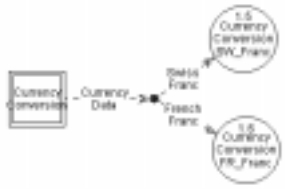
   The decomposition diagram is deleted, and any child diagrams are renumbered to reflect the new levels.
3. Move the flows from the anchor to the appropriate component processes.
4. Delete the anchor.
5. Delete unneeded duplicate stores, processes, and flows.



SPLIT A FLOW

1. Select the flow.
2. From the **DFE** menu, choose **Split Flow**.
3. Click the left mouse button on the new target process.
   A new flow is drawn from the arc to the process.
4. Optionally, label the split flow.

You can draw additional flows from the split flow vertex.



MERGE A FLOW

1. Select the flows to be merged.
2. From the **DFE** menu, choose **Merge Flow**.
   The flows are merged at a vertex.
3. Optionally, label the merged section of the flow.

DATA STRUCTURE DIAGRAMS

ADD SUBSTRUCTURE BY CREATING A SCOPED DECOMPOSITION

1. Select the object, choose **Go To** > **Scoped Decomposition**, and click **OK** to confirm.
   A decomposition diagram appears containing the object and its scope chain.
2. Add detail to the structure and save diagram when done.

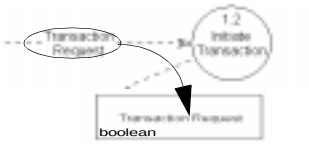
Note: A data object can have either a decomposition or a data type, but not both.

ADD SUBSTRUCTURE BY DEFINING AN ABSTRACT DATA TYPE

1. Select the object and click the **Properties** toolbar button or choose **Properties** on the **Edit** or right-click menu.
2. Enter an abstract data type name in the **Type** field and click **OK**.
3. With the object still selected, choose **Go To** > **Type's Definition**.
4. In the confirmation box, click **OK**.
   A diagram appears containing a root node labeled with the name of the data type.
5. Add detail to diagram and save when done.

DEFINE CONTROL INFORMATION

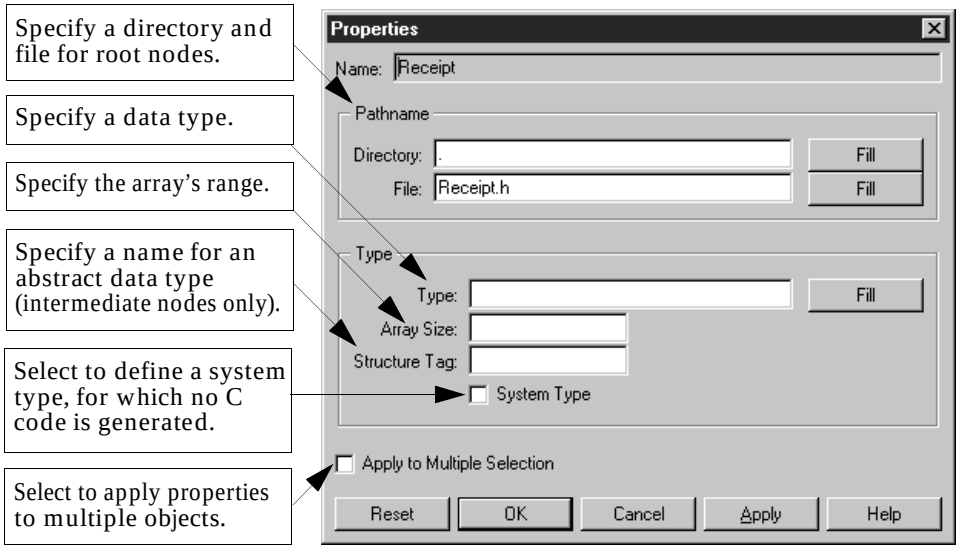
1. Select a control flow on a data flow diagram.
2. Choose **Go To** > **DSE Data Definition** and click **OK** when asked to confirm.
3. In the data structure diagram, select the labeled symbol and click the **Object Annotation** toolbar button or choose **Edit** > **Object Annotation**.
4. Open the annotation folder and select Data Definition.
5. Choose **Edit > Add Item > Allowed Value**, type a value in the **Description** field and click **Apply** (repeat to specify additional allowed values).
6. From the OAE **File** menu, choose **Save**.



DATA STRUCTURE DIAGRAMS

SET OBJECT PROPERTIES

1. Select object and click **Properties** toolbar button or choose **Edit > Properties**.
2. In the dialog box, set object properties, then click **OK**.

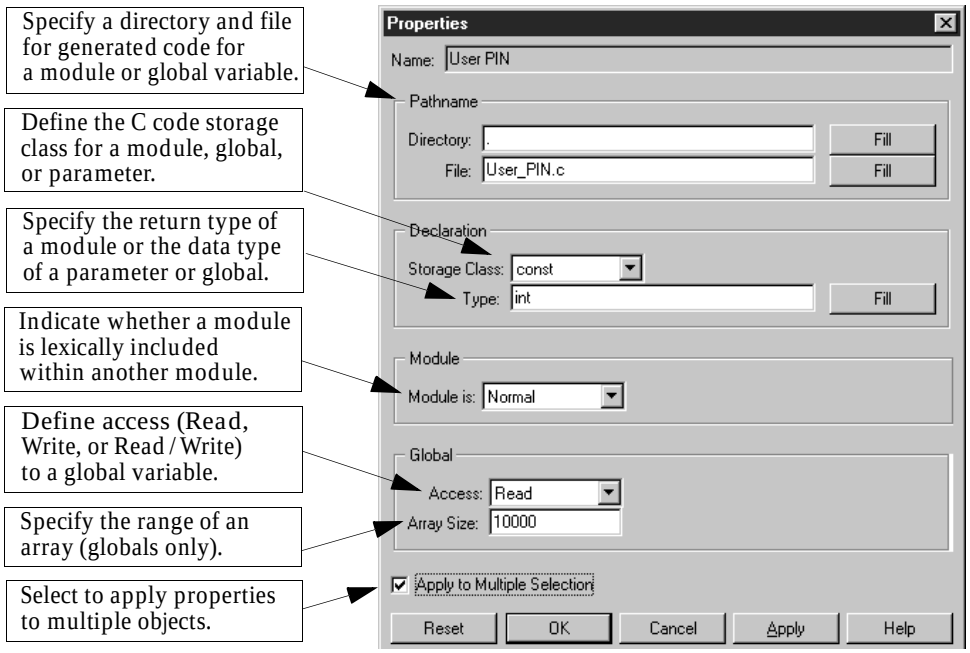


ANNOTATE DSE OBJECTS FOR CODE GENERATION

OBJECT	PROPERTY/ANNOTATION	SETTINGS
All	Data Structure Comment note	String
Sequences Selections Typedefs	Array Size (property)	String specifying array bounds
	Type (property)	Data type of a DSE element (default is int)
	System Type (property)	Selected (True) or unselected
Intermediate nodes (of any type)	Structure Tag (property)	String
SE File Object	SE File Definition note Included File item	String identifying files to be #included in *.h* file

SET OBJECT PROPERTIES

1. Select object and click **Properties** toolbar button or choose **Edit > Properties**.
2. In the dialog box, set object properties, then click **OK**.



ANNOTATE SCE OBJECTS FOR CODE GENERATION

OBJECT	PROPERTY/ANNOTATION	SETTINGS
Modules, Globals, Parameters	Type	Predefined C type (char, double, float, int, long, short, void) or DSE-defined abstract
	Storage Class	Const, static, static const, register, register const (or unset)
Modules	C Code Body note	String specifying code for the module
	Module Comment note	String representing a module comment
	Module Definition note Variable Arguments item	True or False; default is False
Globals	Array Size (property)	String specifying array bounds
	Global Comment	String representing a global comment
SE File Object	SE File Definition note Included File item	String identifying files to be #included in *.c* file

STRUCTURE CHARTS

CREATE A FORMAL MODULE DEFINITION

1. Select the module to be defined.
2. From the **GoTo** menu, choose **Definition** and click **OK** when asked to confirm.
   A new definition diagram appears with the module connected to a anchor.

   Actual parameters from the module's in-link in the original structure chart appear as formal parameters on the anchor-to-module link.

3. Specify module's return type and formal parameters' data types on module's property sheet (**Properties** toolbar button or **Edit > Properties**).
4. Define the module's return type and formal parameters' data types in data structure diagrams, as needed:
   - For module's return type, choose **GoTo > Return Type**.
   - For formal parameters' data types, choose **GoTo > Type Definition**.
5. From the structure chart editor's **File** menu, choose **Save** to link the new definition diagram to the parent diagram and save it.

CREATE AND VIEW A MODULE PDL

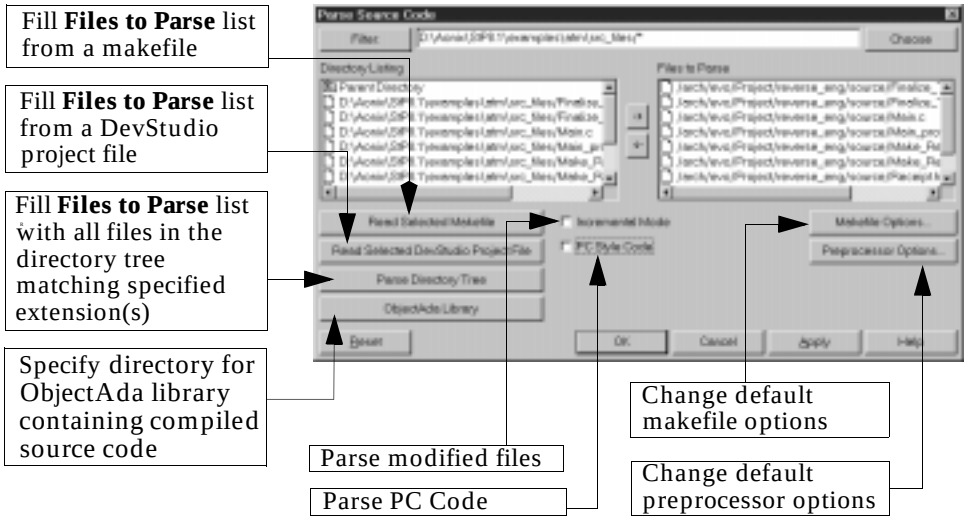
1. Select a module and choose **SCE** > **Edit PDL Note**.
2. In the **Description** dialog, type a module description or pseudo code and click **OK**.
   A display mark (p) appears on the module.
3. With the module still selected, choose **SCE** > **Generate PDL(s)**.
   A PDL is generated into an ASCII file named <*module_name*>*.pdl* in the *sce_files* directory.
   If no module is selected, a PDL file is generated for each PDL-annotated module in the diagram.

4. To view the PDL for a selected module, choose **SCE** > **View Generated PDL**.

To generate PDLs for every PDL-annotated module in the model, from the StP Desktop, choose **Code** > **PDL** > **Generate PDL for All Diagrams**.

PARSE SOURCE CODE

1. From the StP Desktop **Code** menu, choose **Reverse Engineering** > **Parse Source Code**.
2. In the **Filter** text field, type the full path for the makefile, project file, directory, or ObjectAda Library containing the files to parse, then click the **Filter** button to fill the **Directory Listing** scrolling list.
3. Do one of the following:
   - Select individual files to parse in the **Directory Listing** field and click the right arrow button to move them into the **Files to Parse** list.
   - Select a makefile, project file, directory, or ObjectAda Library in the **Directory Listing** scrolling list and click the appropriate button:
     - **Read Selected Makefile**
     - **Read Selected DevStudio Project File**
     - **Parse Directory Tree**
     - **ObjectAda Library**
4. Optionally, click **Makefile Options** button, change the options in the **Makefile Options** dialog box and click **OK**.
5. Optionally, click **Preprocessor Options** button, change the options in the **Preprocessor Options** dialog box and click **OK**.
6. On the **Parse Source Code** dialog box, click **OK**.

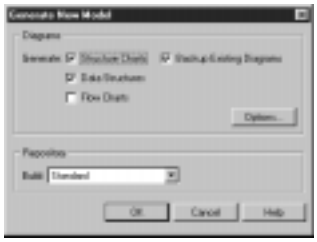


REVERSE ENGINEERING

EXTRACT COMMENTS

1. From the StP Desktop **Code** menu, choose **Reverse Engineering** > **Extract Source Code Comments**.
2. Specify search locations (above, below, and / or right of definition).
3. Specify how many lines (1-4) constitute a legal gap between a comment and the associated code object's line of definition.
4. Choose formatting options.
5. Click **OK**.

GENERATE THE MODEL



1. From the StP Desktop **Code** menu, choose **Reverse Engineering** > **Generate Model from Parsed Source Code**.
2. In the dialog box, select the types of diagrams you want to generate: structure charts, data structures, and / or flow charts.
3. Select **Backup Existing Diagrams** to copy current diagrams and annotations to a backup directory.
4. Click **Options** to invoke a dialog box with drawing options for each type of diagram.
5. Database owners can choose **Privileged** Repository Build to speed large builds.
6. Click **OK**.

UPDATE THE MODEL

1. Parse the modified code with **Incremental Mode** selected.
2. Rerun comment extraction.
3. From the **Code** menu, choose **Reverse Engineering** > **Synchronize Model**.
4. In the first field on the dialog box, choose **Find Differences** from the options list.
5. Click **Change Diagram Generation Options**, select drawing options in the dialog box that appears and click **OK**.
6. To synchronize the model with changes from specified files and directories only, select **Synchronize Partial Model** and click **Choose Files for Partial Model**.
   Search for and select files in the dialog box that appears, then click **OK**.
7. In the **Synchronize Model** dialog box, click **OK**.
   A dialog box displays the differences between the old and new semantic models.
8. Apply all or selected changes to the graphical model using the **Do All Design Updates**, **Do Design Additions**, or **Do Design Deletions** buttons.

REMOVE FILES FROM THE SEMANTIC MODEL

1. On the StP Desktop, open the Model Elements category and select **File Objects** or **Directory Objects**.
2. In the objects pane, select one or more file or directory objects.
3. From the **Code** menu, choose **Reverse Engineering** > **Remove File/Directory from RE Semantic Model**.

C CODE AND SE MODEL BROWSERS

BROWSE C CODE

1. From the StP Desktop **Code** menu, choose **Reverse Engineering** > **Browse C Code**.
2. In the dialog box, select a C identifier category. Categories are: user function, global, library function, constant, typedef, literal value, data structure, data member, #define, comment, file, identifier.
3. Optionally specify a name (regular expressions are acceptable) and the target's scope.
4. Select from among the activated options:
   - Search for **Definitions**, **References**, references with **Read Access** or **Write Access**; or search for an **Exact Match** to a text string.
   - Select desired case sensitivity.
   - Select the **Use Focus** option and click the **Set/Change Focus** button to limit the search to specified files.
5. Click **OK**.

BROWSE STRUCTURED MODEL

1. From the StP Desktop **Tools** menu, choose **Browse Structured Models**.
2. In the SE Repository Browser, select a Query-By-Example (QBE) row or cell and type an object name or regular expression in one or more columns.
3. From the **Query** menu, choose **Execute QBE**. The results appear in the body rows.
4. To browse results, select result row(s) (Shift-click for multiple rows) and choose a target from the **Browse** menu.
   Additional results appear in the browser.
5. To navigate from a result row to the model, select the row and choose a command from the **GoTo** menu.
   The target object appears selected in the appropriate diagram editor.