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2 PROMODEL WORLD VIEW, MENU, AND TUTORIAL

I only wish that ordinary people had an unlimited capacity for doing harm; then they might have an unlimited power for doing good.

—Socrates (469–399 B.C.)

In this lab, Section L2.1 introduces you to various commands in the ProModel menu. In Section L2.2 we discuss the basic modeling elements in a ProModel model file. Section L2.3 discusses some of the innovative features of ProModel. Section L2.4 refers to a short tutorial on ProModel in a PowerPoint presentation format. Some of the material describing the use and features of ProModel has been taken from the ProModel User Guide as well as ProModel’s online help system.

L2.1 Introduction to the ProModel Menu

In this section we introduce you to the title bar and various actions and commands in the ProModel menu bar. In subsequent chapters we will use many of these commands in various examples and you will have an opportunity to master them. We encourage you to use the ProModel’s online help to learn more about all the menu bar commands.

L2.1.1 The Title and the Menu Bars

The title bar at the top of the screen (Figure L2.1) holds the name of the model document currently being created. Until the document is given a name, the title bar shows “ProModel”. Once the document is given a title (like Paula’s Production Shop) in the general information dialog box, the title bar shows “ProModel—(Paula’s Production Shop).”

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Part II Labs

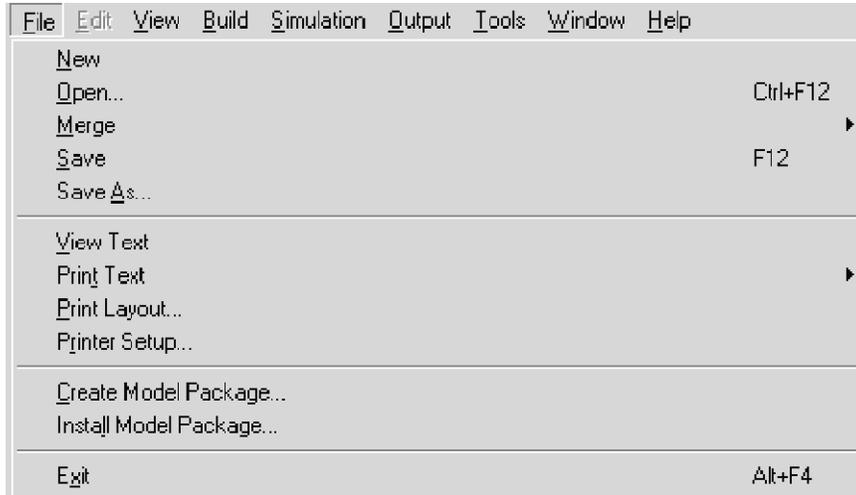
FIGURE L2.1

The title and the menu bars.



FIGURE L2.2

The File menu.



The menu bar, just below the title bar (Figure L2.1), is used to call up menus, or lists of tasks. The menu bar of the ProModel screen displays the commands you use to work with ProModel. Some of the items in the menu, like File, Edit, View, Tools, Window, and Help, are common to most Windows applications. Others such as Build, Simulation, and Output provide commands specific to programming in ProModel. In the following sections we describe all the menu commands and the tasks within each menu.

L2.1.2 File Menu

The File menu (Figure L2.2) allows the user to open a new model, open an existing model, merge two or more submodels into one, save the current model, and import models created in earlier versions of ProModel. It also allows you to view a text version of the model and print either the model text file or the graphic layout of the model. The printer setup can be modified from this menu. Model packages can be created for distribution to others and can also be installed using this menu. The last item on this menu allows the user to exit the ProModel environment and go back to the Windows (XP, Me, 2000, 98, 95, or NT) environment.

L2.1.3 Edit Menu

The Edit menu (Figure L2.3) contains selections for editing the contents of edit tables and logic windows. The selections available from this menu will change according to the module from which the Edit menu is selected. The selections also

FIGURE L2.3

The Edit menu.

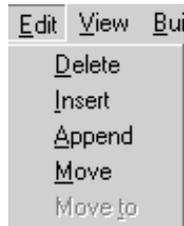
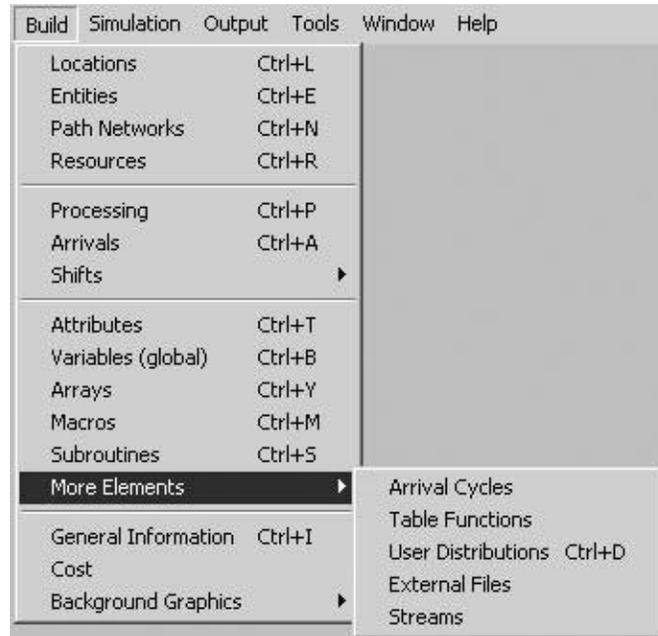


FIGURE L2.4

The Build menu.



vary according to the currently selected window. The Edit menu is active only when a model file is open.

L2.1.4 Build Menu

The Build menu (Figure L2.4) consists of all of the modules for creating and editing a model, which include the following basic and optional modules:

Basic Modules

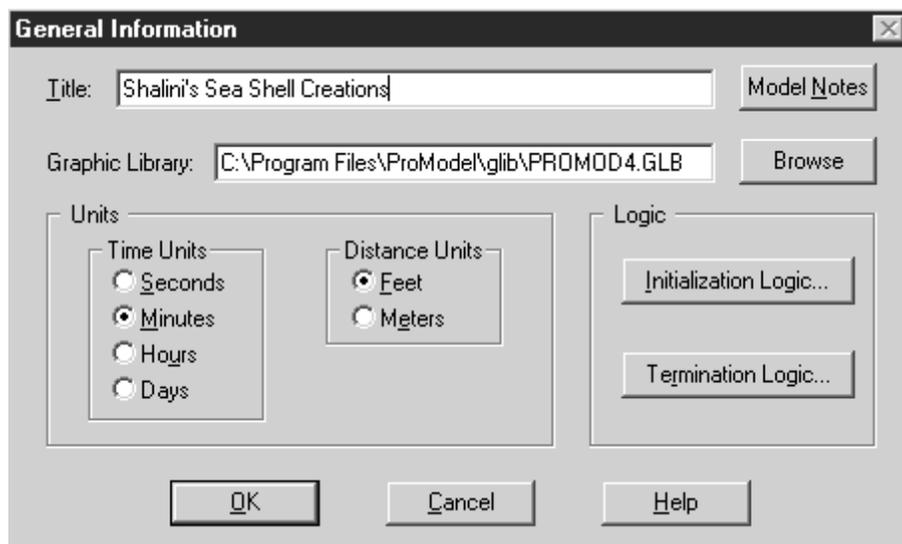
Locations	Processing
Entities	Arrivals

Optional Modules

Path Networks	Macros
Resources	Subroutines
Shifts	Arrival Cycles
Cost	Table Functions
Attributes	User Distributions
Variables	External Files
Arrays	Streams

FIGURE L2.5

General Information dialog box.



In addition, two more modules are available in the Build menu: General Information and Background Graphics.

General Information. This dialog box (Figure L2.5) allows the user to specify the name of the model, the default time unit, the distance unit, and the graphic library to be used. The model's initialization and termination logic can also be specified using this dialog box. A Notes window allows the user to save information such as the analyst's name, the revision date, any assumptions made about the model, and so forth. These notes can also be displayed at the beginning of a simulation run.

Background Graphics. The Background Graphics module (Figure L2.6) allows the user to create a unique background for the model using the tools in the graphics editor. An existing background can also be imported from another application such as AutoCAD.

Generally, most graphics objects are laid out in front of the grid. Large objects as well as imported backgrounds are placed behind the grid.

L2.1.5 Simulation Menu

The Simulation menu (Figure L2.7) controls the execution of a simulation and contains options for running a model, defining model parameters, and defining and running scenarios.

ProModel also has an add-on feature: SimRunner.

FIGURE L2.6

Background Graphics dialog box.

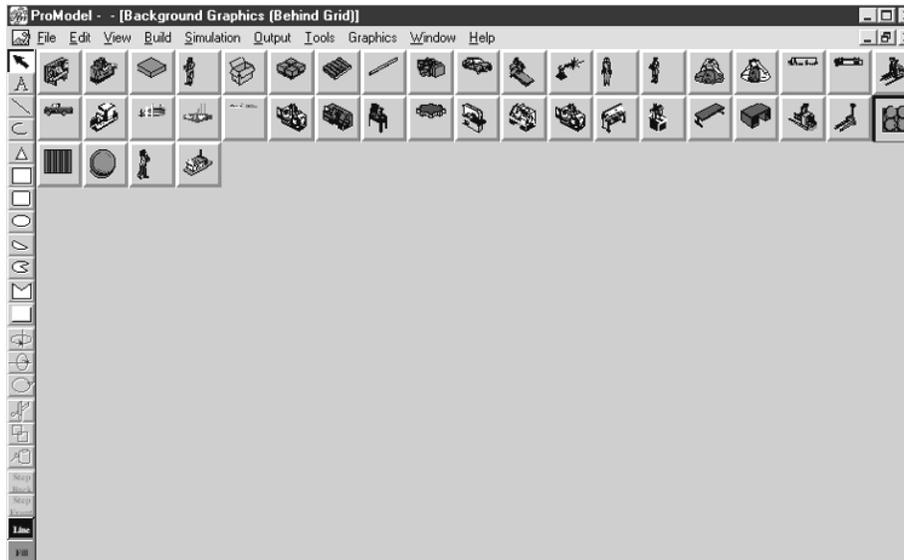


FIGURE L2.7

The Simulation menu.

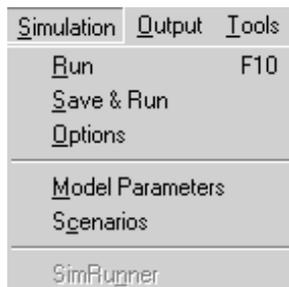


FIGURE L2.8

The Output menu.

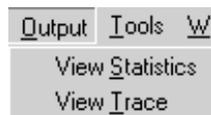
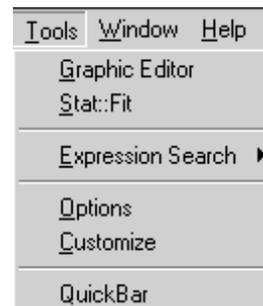


FIGURE L2.9

The Tools menu.



L2.1.6 Output Menu

The Output menu (Figure L2.8) starts the ProModel Output Processor for viewing model statistics. It also allows the user to view the trace, which was generated during simulation model runtime.

L2.1.7 Tools Menu

The Tools menu (Figure L2.9) contains various utilities as follows:

- *Graphics Editor*: For creating, editing, and modifying graphic icons.
- *Stat::Fit*: For fitting empirical distributions to a set of user data.

- *Expression Search*: A search-and-replace feature for finding or replacing expressions throughout a model.
- *Options*: The paths for model files, the graphic library, output results, and auto saves are specified in this dialog box. The time between auto saves is also specified here.
- *Customize*: With this utility one can add any tools (viz. Dashboard, MPA, ProClare, Prosetter, ProStat, or Quick Bar), or any other Windows executable files to the Tools Menu.
- *QuickBar*: QuickBar is a versatile tool that can make your work in ProModel much faster. It allows you to remove buttons, add custom ProModel buttons, or add custom buttons launching other applications.

L2.1.8 View Menu

The View menu (Figure L2.10) contains selections for setting up the model viewing environment. These settings are used whenever ProModel is started.

The Zoom submenu (Figure L2.11) allows the model to be displayed from 25 percent magnification to 400 percent magnification or any other user-specified custom magnification.

The Layout Settings submenu is shown in Figure L2.12. The grid settings allow the properties of the grids to be changed. The background and routing path colors can also be changed using this submenu. The various editing preferences are shown in the Edit Tables submenu (Figure L2.13).

FIGURE L2.10

The View menu.



FIGURE L2.11

The Zoom menu.

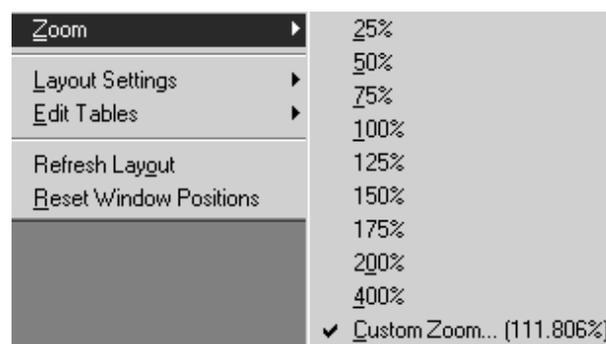


FIGURE L2.12

The Layout Settings submenu.



FIGURE L2.13

Editing preferences in ProModel.



FIGURE L2.14

The Window menu.

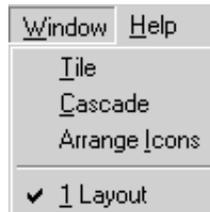
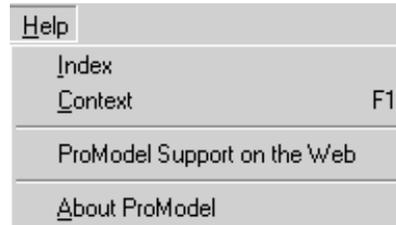


FIGURE L2.15

The Help menu.



L2.1.9 Window Menu

The Window menu (Figure L2.14) allows you to arrange the windows (or iconized windows) that are currently displayed on the screen so that all windows are visible at once. It also lets you bring any individual window to the front of the display.

L2.1.10 Help Menu

The Help menu (Figure L2.15) accesses the ProModel Online Help System and provides access to the ProModel Tutorial (getting started). Access to the PROMODEL Corporation website is also provided here. The index is an alphabetic list of all the help topics in the online help system. The main help topics are categorized as follows:

- Common procedures.
- Overview of ProModel.
- Main menus.
- Shortcut menu.
- Model elements (entities, resources, locations, path networks, and so on).
- Logic elements (variables, attributes, arrays, expressions, and so forth).
- Statements (GET, JOIN, and the like).

- Functions.
- Customer support—telephone, pager, fax, e-mail, online file transfer, and so on.

To quickly learn what is new in ProModel Version 6.0, go to the Help → Index menu and type “new features” for a description of the latest features of the product.

L2.2 Basic Modeling Elements

In this section we introduce the various basic modeling elements in ProModel. In Lab 3 you will actually build your first ProModel simulation model. The basic modeling elements in ProModel are

- a. Locations
- b. Entities
- c. Arrivals
- d. Processing

Click Build from the menu bar to access these modeling elements (Figure L2.4).

The ProModel Student Version 6.0 limits the user to no more than 20 locations, five entity types, five resource types, five attributes, and 10 RTI parameters in a simulation model. If more capability is required for special projects, ask your instructor to contact the PROMODEL corporation about faculty or network versions of the software.

L2.2.1 Locations

Locations represent fixed places in the system where entities are routed for processing, delay, storage, decision making, or some other activity. We need some type of receiving locations to hold incoming entities. We also need processing locations where entities have value added to them. To build locations:

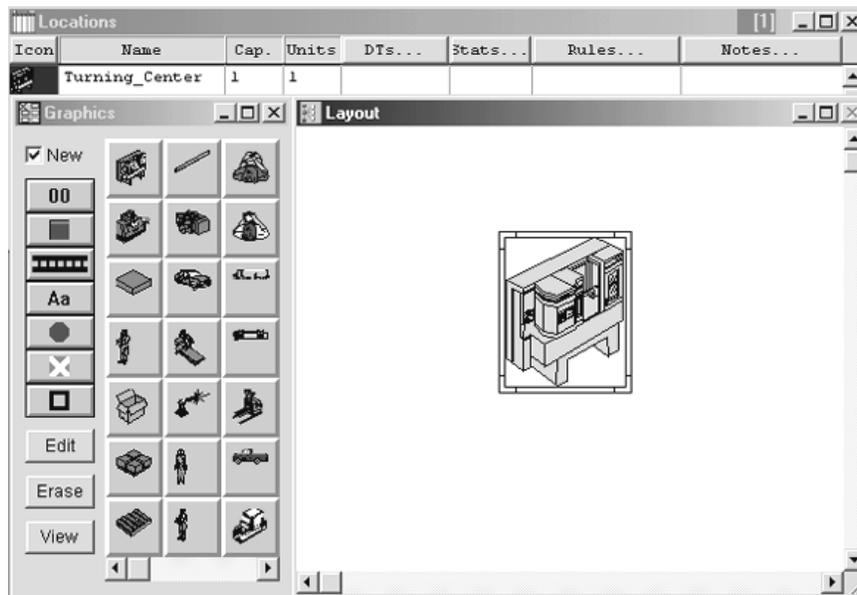
- a. Left-click on the desired location icon in the Graphics toolbox. Left-click in the layout window where you want the location to appear.
- b. A record is automatically created for the location in the Locations edit table (Figure L2.16).
- c. Clicking in the appropriate box and typing in the desired changes can now change the name, units, capacity, and so on. Note that in Lab 3 we will actually fill in this information for an example model.

L2.2.2 Entities

Anything that a model can process is called an *entity*. Some examples are parts or widgets in a factory, patients in a hospital, customers in a bank or a grocery store, and travelers calling in for airline reservations.

FIGURE L2.16

The Locations edit screen.



To build entities:

- Left-click on the desired entity graphic in the Entity Graphics toolbox.
- A record will automatically be created in the Entities edit table (Figure L2.17).
- Moving the slide bar in the toolbox can then change the name. Note that in Lab 3 we will actually fill in this information for an example model.

L2.2.3 Arrivals

The mechanism for defining how entities enter the system is called arrivals. Entities can arrive singly or in batches. The number of entities arriving at a time is called the batch size (Qty each). The time between the arrivals of successive entities is called interarrival time (Frequency). The total number of batches of arrivals is termed Occurrences. The batch size, time between successive arrivals, and total number of batches can be either constants or random (statistical distributions). Also, the first time that the arrival pattern is to begin is termed First Time.

To create arrivals:

- Left-click on the entity name in the toolbox and left-click on the location where you would like the entities to arrive (Figure L2.18).
- Enter the various required data about the arrival process. Note that in Lab 3 we will actually fill in this information for an example model.

FIGURE L2.17

The Entities edit table.

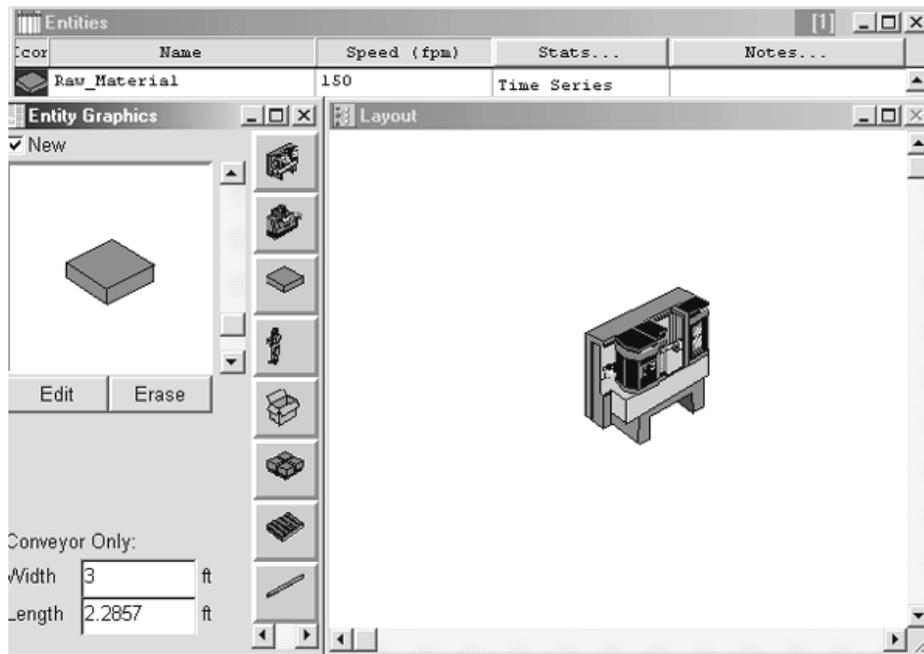
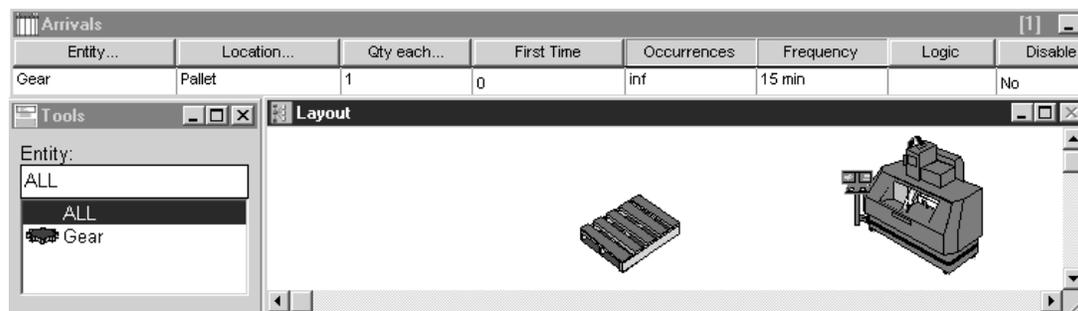


FIGURE L2.18

The Arrivals edit table.

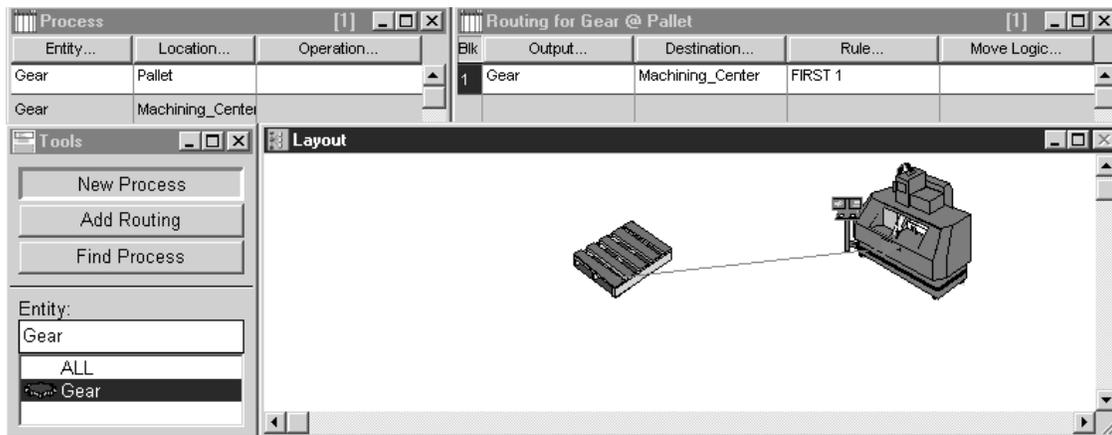


L2.2.4 Processing

Processing describes the operations that take place at a location, such as the amount of time an entity spends there, the resources it needs to complete processing, and anything else that happens at the location, including selecting an entity's next destination.

FIGURE L2.19

The Process edit table.



To create processing we need to do the following:

- a. Left-click on the entity name in the toolbar and then left-click on the desired beginning location (Figure L2.19).
- b. Left-click on the destination location. A processing record is created.
- c. To add multiple routing lines to the same record, left-click on the Add Routing button in the toolbox.
- d. To route the part to exit, left-click on the Route to Exit button in the toolbox. Note that in Lab 3 we will actually fill in this information for an example model.

L2.3 Innovative Features in ProModel

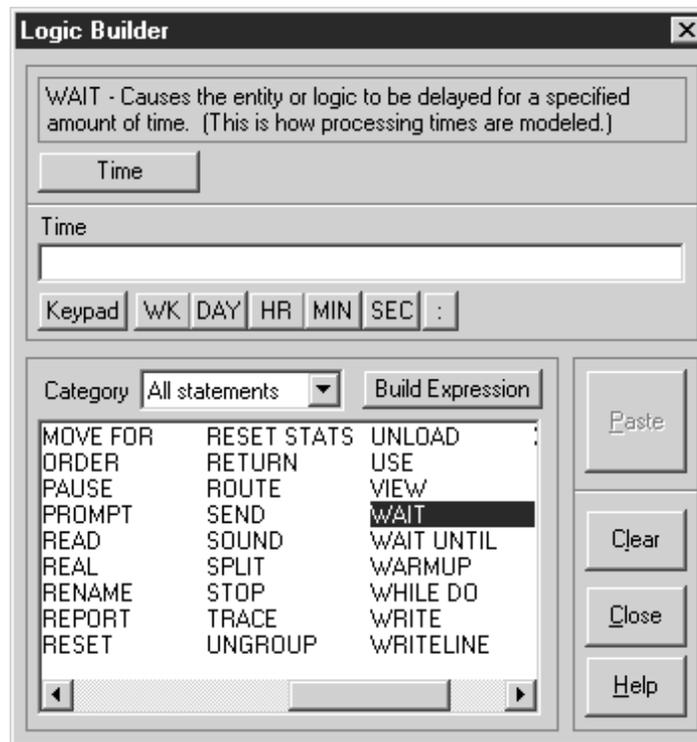
In this section we describe some of the innovative features in ProModel. These features help automate the model-building process, eliminate the need to remember command syntax, and all but eliminate unintentional errors.

L2.3.1 Logic Builder

The Logic Builder (Figure L2.20) is a tool that makes it easier to create valid logic statements without having to remember keywords, syntax, required arguments, or model element names. It takes you through the process of creating statements or expressions, as well as providing point-and-click access to every element defined in your model. The Logic Builder knows the syntax of every statement and function, allowing you to define logic simply by filling in the blanks.

FIGURE L2.20

The Logic Builder tool
menu.



When the Logic Builder is open from a logic window, it remains on the screen until you click the Close button or close the logic window or table from which it was invoked. This allows you to enter multiple statements in a logic window and even move around to other logic windows without having to constantly close and reopen the Logic Builder. However, the Logic Builder closes automatically after pasting to a field in a dialog box or edit table or to an expression field because you must right-click anyway to use the Logic Builder in another field.

You can move to another logic window or field while the Logic Builder is still up by right clicking in that field or logic window. The Logic Builder is then reset with only valid statements and elements for that field or window, and it will paste the logic you build into that field or window. Some of the commonly used logic statements available in ProModel are as follows:

- **WAIT:** Used for delaying an entity for a specified duration at a location, possibly for processing it.
- **STOP:** Terminates the current replication and optionally displays a message.
- **GROUP:** Temporarily consolidates a specified quantity of similar entities together.
- **LOAD:** Temporarily attaches a specified quantity of entities to the current entity.

- **INC:** Increments a variable, array element, or attribute by the value of a specified numeric expression.
- **UNGROUP:** Separates entities that were grouped using the `GROUP` statement.
- **MOVE:** Moves the entity to the end of the queue in the specified time.
- **VIEW:** Changes the view of the layout window.
- **GRAPHIC:** Changes the entity’s current picture (graphic).
- **IF THEN ELSE:** Executes a block of statements if the condition is true.
- **WAIT UNTIL:** Delays the processing of the current logic until the condition is true.
- **MOVE FOR:** Moves the entity to the next location, in the specified time.
- **SPLIT:** Splits the entity into a specified number of entities.
- **PAUSE:** Causes the execution of simulation to pause until the user selects the Resume option.

L2.3.2 Dynamic Plots

Dynamic plots enable you to graphically observe and record statistical information about the performance of model elements during run time. When the simulation model is running, it needs to be paused (Simulation → Pause Simulation). With the model in the pause mode select Dynamic Plots → New from the Information menu as in Figure L2.21.

The dynamic plots dialog contains a factors list, four panels, and several button controls. The factors list (Figure L2.22) provides each of the available model factors from your model, and the panels (Figure L2.23) display performance graphs for the factors you select (ProModel Help, 2001 PROMODEL Corporation).

Button Controls

- **Save:** Saves a copy of all model data—from the time you start the graphic display to when you click save—to an Excel spreadsheet.
- **Snapshot:** Saves a copy of currently displayed, graphed model data to an Excel spreadsheet.
- **Grid:** Turns the main panel grid lines on and off.
- **Multi-line:** Displays a combined graph of panels 1, 2, and 3.
- **Refresh:** Redraws the graph.

FIGURE L2.21
Dynamic Plots menu.



FIGURE L2.22

Dynamic Plot edit
table.

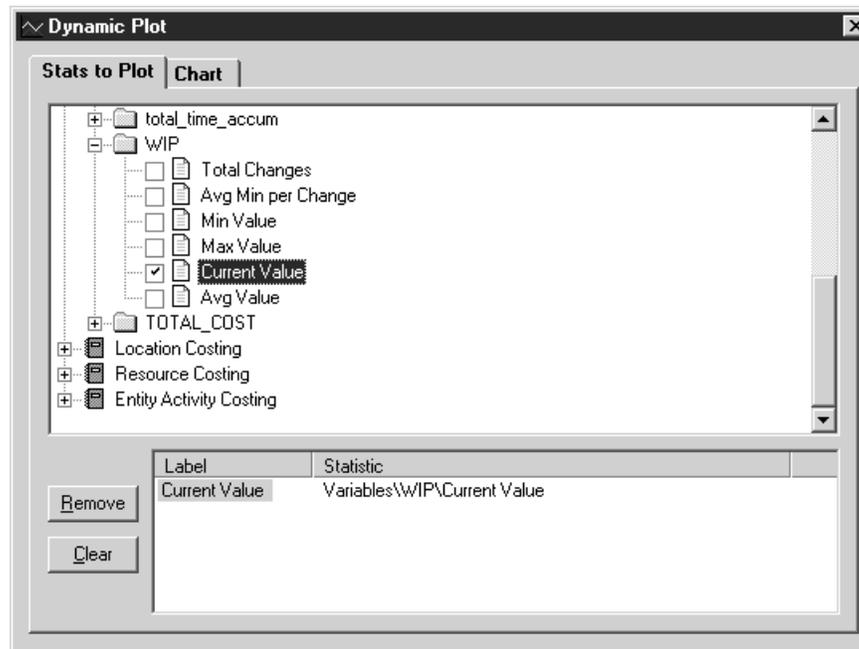
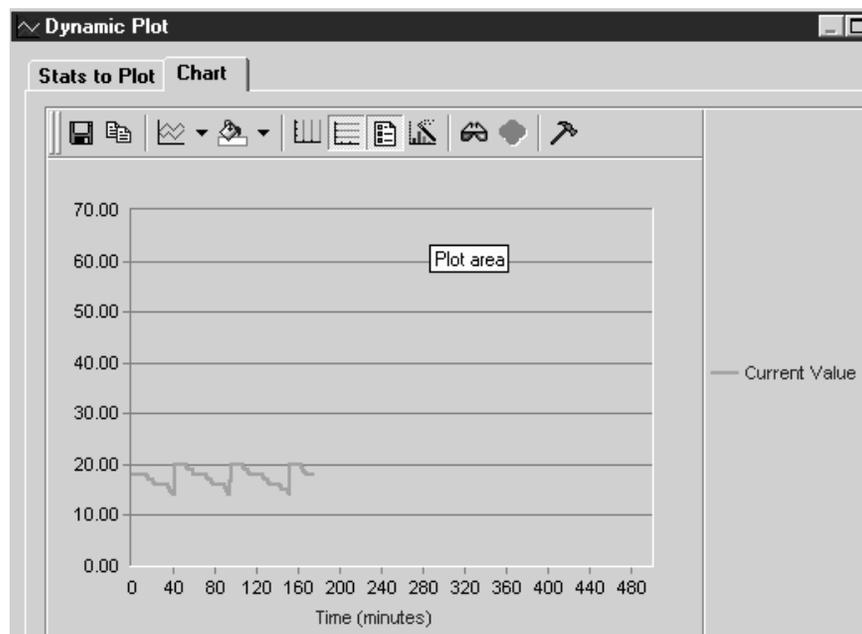


FIGURE L2.23

Dynamic Plot of the
current value of WIP.



Right-Click Menus

The right-click menu for the graphic display is available for panels 1, 2, and 3, and the main panel. When you right-click in any of these panels, the right-click menu appears.

Panels 1, 2, and 3

- *Move Up*: Places the graph in the main panel.
- *Clear Data*: Removes the factor and its graph from panel 1, 2, or 3 and the main panel. If you created a multi-line graph, Clear Data removes the selected line from the graph and does not disturb the remaining graph lines.
- *Line Color*: Allows you to assign a specific line color to the graph.
- *Background Color*: Allows you to define a specific background color for panels 1, 2, and 3.

Main Panel

- *Clear All Data*: Removes all factors and graphs from panels 1, 2, 3, and the main panel.
- *Remove Line 1, 2, 3*: Deletes a specific line from the main panel.
- *Line Color*: Allows you to assign a specific line color to the graph.
- *Background Color*: Allows you to define a specific background color for panels 1, 2, and 3.
- *Grid Color*: Allows you to assign a specific line color to the grid.

L2.3.3 Customize

Customize

You can add direct links to applications and files right on your ProModel toolbar. Create a link to open a spreadsheet, a text document, or your favorite calculator (Figure L2.24).

To create or modify your Custom Tools menu, select Tools → Customize from your ProModel menu bar. This will pull up the Custom Tools dialog window. The Custom Tools dialog window allows you to add, delete, edit, or rearrange the menu items that appear on the Tools drop-down menu in ProModel.

L2.3.4 Quick Bar

Overview

QuickBar is a versatile tool that can make your work in ProModel much faster (Figure L2.25). This tool is similar to the Windows Taskbar. You can move the bar around your screen or dock it on one side. Each button on the toolbar resembles an associated action in ProModel. You can jump straight to the Build Locations module, or open a new model with the click of a button.

FIGURE L2.24

Adding Calculator to the Customized Tools menu.

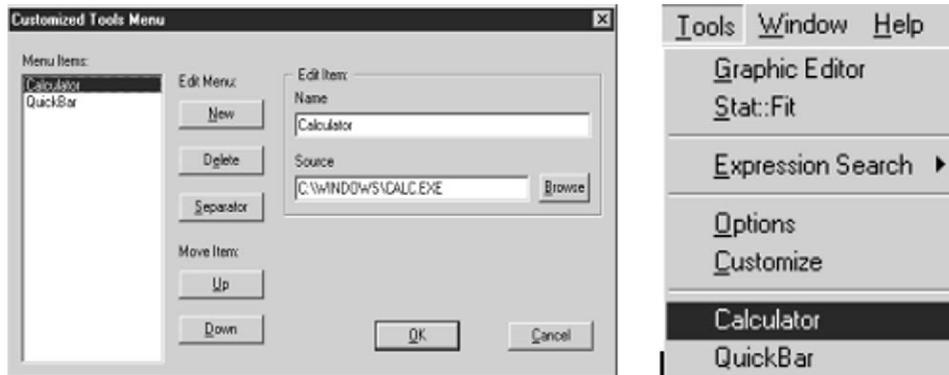


FIGURE L2.25

The QuickBar task bar.



QuickBar is fully customizable. QuickBar allows you to remove buttons, add custom ProModel buttons, or add custom buttons launching other applications (ProModel Help, 2001 PROMODEL Corporation).

System Button

Selecting the System button brings up a menu with the following options:

- *Auto-Hide:* The Auto-Hide feature is used when QuickBar is in the docked state. If docked, and the Auto-Hide is on, QuickBar will shrink, so that only a couple of pixels show. When your pointer touches these visible pixels, the QuickBar will appear again.
- *Docking Position:* The Docking Position prompt allows you to “dock” the QuickBar along one side of your screen, or leave it floating.
- *Customize:* Access the customize screen by clicking the System button, then choose “Customize. . .” Once in the Customize dialog, you can add or remove toolbars, add or remove buttons from the toolbars, show or hide toolbars, or move buttons up or down on the toolbar.

- *About*: The About option will display information about QuickBar.
- *Close QuickBar*: The Close QuickBar option will close QuickBar, but will not change any customizing you may have made to QuickBar.

L2.4 A Tutorial on ProModel 6.0

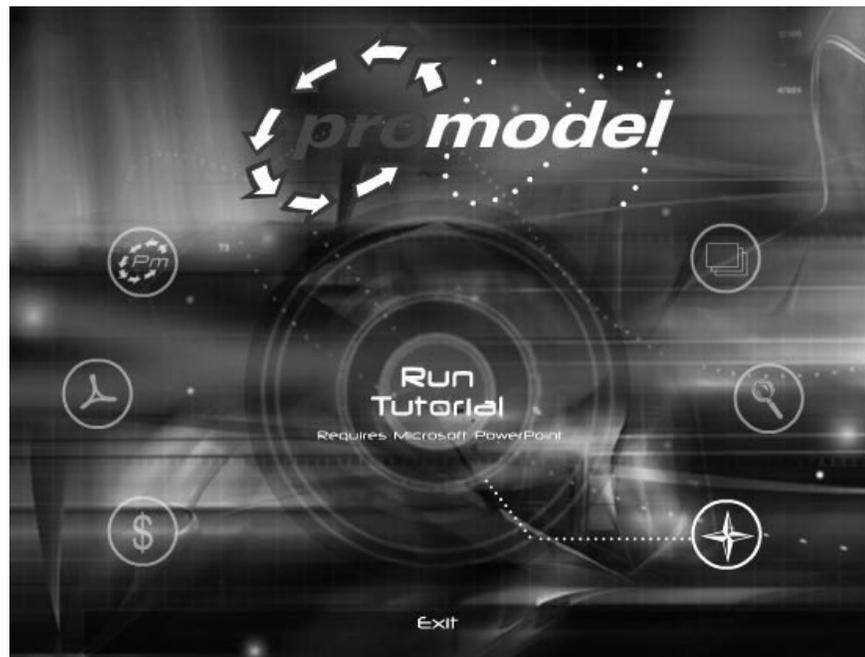
A tutorial on ProModel is included in the accompanying CD along with the ProModel software (Figure L2.26). Click on the lower right button to run the ProModel tutorial. Microsoft PowerPoint is needed to view the tutorial.

This tutorial is meant to familiarize the user with various features of ProModel and its strengths. The file named tutorial.ppt is in a PowerPoint presentation format and will execute by itself. The tutorial takes approximately 20 minutes to run and is divided into 10 major steps. Slides for each of the 10 steps also include animation that shows the model-building process clearly:

1. Start new model
2. Background graphic
3. Locations
4. Entities
5. Path networks

FIGURE L2.26

Tutorial on ProModel.



6. Resources
7. Processing
8. Arrivals
9. Run simulation
10. View output

L2.5 Exercises

1. Identify the ProModel menu where you will find the following items:
 - a. Save As
 - b. Delete
 - c. View Trace
 - d. Shifts
 - e. Index
 - f. General Information
 - g. Options
 - h. Printer Setup
 - i. Processing
 - j. Scenarios
 - k. Tile
 - l. Zoom
2. Which of the following is not a valid ProModel menu or submenu item?
 - a. AutoBuild
 - b. What's This?
 - c. Merge
 - d. Merge Documents
 - e. Snap to Grid
 - f. Normal
 - g. Paste
 - h. Print Preview
 - i. View Text
3. Some of the following are not valid ProModel element names. Which ones?
 - a. Activities
 - b. Locations
 - c. Conveyors
 - d. Queues
 - e. Shifts
 - f. Station
 - g. Server
 - h. Schedules
 - i. Arrivals
 - j. Expressions

- k. Variables
 - l. Create
4. What are some of the valid logic statements used in ProModel?
 5. What are some of the differences between the following logic statements:
 - a. Wait **versus** Wait Until.
 - b. Move **versus** Move For.
 - c. Pause **versus** Stop.
 - d. View **versus** Graphic.
 - e. Split **versus** Ungroup.
 6. Describe the functions of the following items in the ProModel Edit menu:
 - a. Delete
 - b. Insert
 - c. Append
 - d. Move
 - e. Move to
 - f. Copy Record
 - g. Paste Record
 7. Describe the differences between the following items in the ProModel View menu:
 - a. Zoom vs. Zoom to Fit Layout
 - b. Show Grid vs. Snap to Grid