1

Introduction

This chapter introduces the EZBuilder code generator and the TRAKKER Antares Simulator, defines some basic EZBuilder terms, and introduces the EZBuilder tutorial exercise. Read this introduction before starting the exercise in Chapter 2.

Introducing the EZBuilder Code Generator

EZBuilder™ is a software code generator product that provides programmers and technically-oriented non-programmers with a quick and easy way to create application programs for the TRAKKER® Antares™ hand-held terminal (hereafter called "terminal" in this document).

Overview of How EZBuilder Works

After telling EZBuilder you want to create a new application (or enhance an existing application), you give simple commands to create menus, screens, and transactions and to define menu items, labels, and data fields. You can easily set appropriate attributes and other parameters as properties for these objects. You can define function keys to cause specific actions to occur when specific keys are pressed. You can specify other processing, such as calculations, as needed for your application.

When you are ready, you give the Build command and EZBuilder generates the application program code for you. Using the TRAKKER Antares Simulator tool, you then test the program on your computer. When your test results prove the application is ready to use, you download your generated application program to the TRAKKER Antares terminal.

Note: *Although C programmers can edit the generated program code to enhance or comment the program as desired, their changes are not reflected in the code generator. Discussion of the generated program code is beyond the scope of this document.*

Overview of EZBuilder Windows

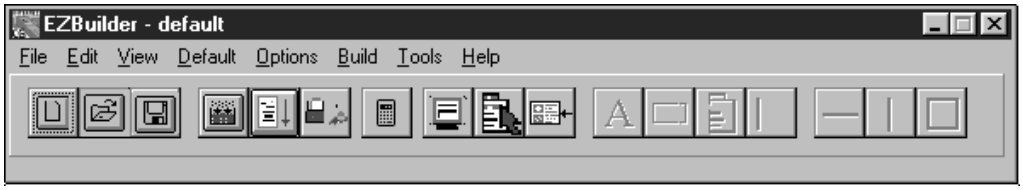
This section illustrates and describes the main parts of three EZBuilder windows listed below. Other windows and dialog boxes are illustrated later in this document, as needed for the tutorial exercise.

- Menus and Toolbar window
- Object Manager window
- Viewport window

Menus and Toolbar Window

EZBuilder commands are available by selecting from drop-down menus and by clicking toolbar buttons. In the tutorial exercise provided in this document, you will use some of the more commonly used EZBuilder commands. You will

have practice using both drop-down menus and toolbar buttons, which are located in the same window, as illustrated next.



Menus

The EZBuilder commands are grouped under menu headings File, Edit, View, Default, Options, Build, Tools, and Help. All but a few of the commands listed under the File menu are included in the tutorial exercise; they are listed below as an overview of most of the commands to be covered.

- Open Application
- New Application
- Save Application
- Save Application As
- New Screen
- New Menu
- New Transaction
- New Math Process (not covered in this tutorial)
- Add Label
- Add Field
- Add Menu Item
- Add Scrolling Section
- Add Horizontal Line (not covered in this tutorial)
- Add Vertical Line (not covered in this tutorial)
- Add Draw Box
- Add System Fields (not covered in this tutorial)
- Exit

The names of the most recently opened EZBuilder applications are listed below the Exit command. This short list makes it easy for you to locate and open the EZBuilder application you are currently developing.

Several commands may require you to enter certain property attributes or define actions for specific situations. For example, you may define a function key so that, when the user of your application presses that key, an appropriate response occurs.

***Note**: Some commands under the Edit, View, Default, Options, Build, Tools, and Help menus are described later, as needed for this tutorial.*

Toolbar

EZBuilder has 17 toolbar buttons located directly beneath the menu headings. The toolbar buttons provide quick access to many of the EZBuilder commands.

Whenever this tutorial indicates you should choose a specific command from a menu, you often have the option of using a toolbar button instead. The tutorial exercise will provide you with practice at using both methods; you can choose the method you prefer.

To learn the function of any toolbar button while using EZBuilder, move the mouse cursor over the button and its brief description displays in a tool tip box.

The list below identifies the toolbar buttons, in their order from left to right.

 New Application

 Open Application

 Save Application

 Build

 Simulate TRAKKER Antares and Run Application

 Download

 New Math Process

 New Screen

 New Menu

 New Transaction


Add Label to Screen / Menu


Add Field to Screen


Add Menu Item to Menu


Add Scrolling Section to Screen


Add Horizontal Line to Screen / Menu

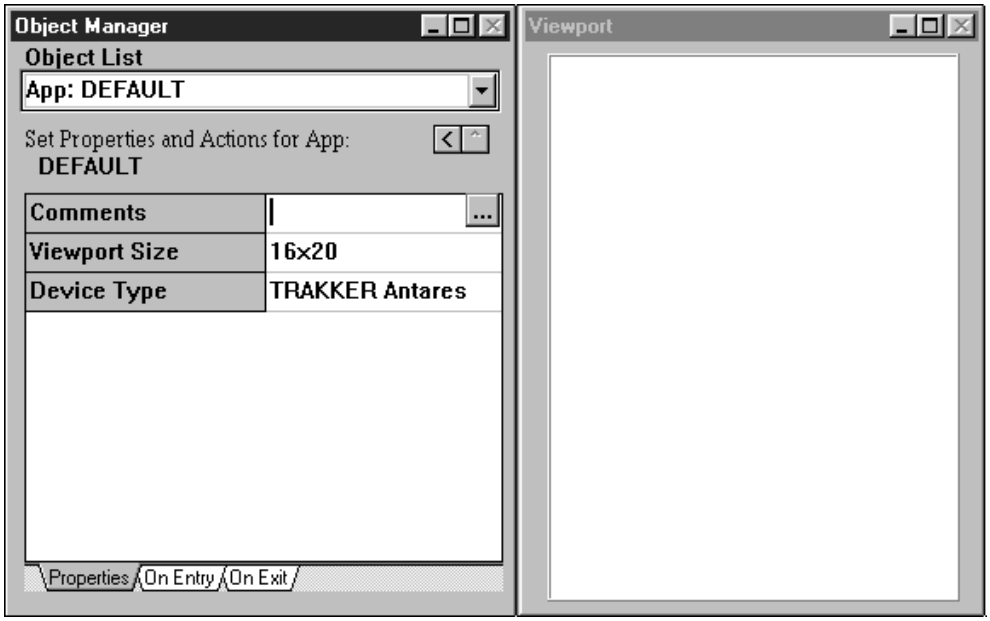

Add Vertical Line to Screen / Menu


Add Box to Screen / Menu

Some of the toolbar buttons will be grayed out (unavailable for your use) at specific times as you work in various parts of EZBuilder. These will become available as needed for the creation of certain objects for your application.

Object Manager Window

The Object Manager window is located below the Menus and Toolbar window and to the left of the Viewport window. The Object Manager window is described on the next page, followed by a description of the Viewport window.



Notice that, aside from small buttons, the Object Manager window has three separate parts: the Object List field, the Properties and Actions area, and three tabs labeled Properties, On Entry, and On Exit at the bottom of the Object Manager. These main parts are briefly described next. More detail on these and other parts of the Object Manager are given later as you use different parts of EZBuilder during the tutorial exercise.

Object List

The Object List is located near the top of the Object Manager window. You can click its down arrow and a list drops down to show you the high-level program components (applications, screens, menus, and transactions) that are created as you work in EZBuilder. These high-level components are objects—as are the menu commands and data fields (and their respective labels) that you create.

Altogether, objects are generally called "resources." All objects are listed in the View Resource dialog box, as described and illustrated later in the tutorial.

The previous illustration shows the windows you will get when you initially open EZBuilder on your computer (by clicking the EZBuilder icon—in other words, when no existing application is concurrently opened with EZBuilder). You also get those same windows if you select the File menu and then choose the New Application command at any time during your EZBuilder session

Properties, On Entry, On Exit Tabs

At the bottom of the Object Manager are three tabs labeled Properties, On Entry, and On Exit.

As you create menus, menu items (commands and labels), screens, data items (data fields and their labels), and transactions, different types of properties are shown and the text above that area changes. For example, when you are creating a menu item, the text is "Set Properties and Actions for Item:" and when you are creating a transaction, it says "Set Properties and Actions for Trans:" and so on.

In this document, we refer to this part of the Object Manager as "the Properties and Actions area." This area is where you will enter the attributes or values (which are called properties) for the object being defined and the actions, if any, caused by specific objects being selected, entered, exited, or executed by the application user. Details and illustrations of this area are provided throughout the tutorial exercise.

In the previous illustration, the Properties tab is shaded to indicate it is currently selected. At the top of that area, just under the Object List, notice the "Set Properties and Actions for App:" text. Notice that default Properties and Actions options for a new application are shown: the Viewport Size = 16x20, the Device Type = TRAKKER Antares, and there are no Comments.

The two tabs, On Entry and On Exit, allow you to bring up certain Property and Action parameters that are pertinent to the entering or exiting of an

application or a data field. Examples of these are also included in the tutorial exercise.

Viewport Window

The Viewport window is located to the right of the Object Manager window. When you begin an EZBuilder session, you will see a blank Viewport, as illustrated previously, if this is the initial opening of EZBuilder. If EZBuilder has been previously opened on your computer, when you reopen EZBuilder, you will see the last EZBuilder application opened to the last place where you—or the last EZBuilder user on your computer—had exited EZBuilder.

The Viewport shows the software display area or window in which you will see the results of the commands that you provide to EZBuilder as you create menus, screens, and transactions. The Viewport represents the terminal screen the user will see when the application is running. Display information is based upon device type and terminal characteristics.

The Viewport has "row" and "column" coordinates which you use to specify the location of items. The upper left corner is row = 0 and column = 0.

Overview of EZBuilder Components

Aside from an understanding of the EZBuilder windows, you need just a few more basic EZBuilder terms described before you are ready to start the tutorial exercise. Let's start with a high-level look at the components that make up an EZBuilder application. Other terms will be introduced and defined as needed in various parts of the tutorial.

Applications

From the information you provide, EZBuilder will generate an application program with built-in verification functions. This program will be run by a user who will perform scanning and data entry, using a terminal or a computer keyboard.

Simply put, a program is a specific set of instructions that allows a device (such as a terminal or computer) to accept input, do processing, and provide output for a specific function or use (an application). For example, a few applications that you could build using EZBuilder are listed below.

- Factory Automation Systems
- Inventory Control
- Labor Time Records

High-level component resources of an application include menus, screens, and transactions. Each of these components (objects) can include other objects, such as menu commands, data fields, and their labels.

Menus

A menu usually contains an identification label at its top. For example, in the tutorial exercise, you will create one menu that you will identify (label) as the Main Menu. Because EZBuilder menus look very similar to EZBuilder screens, including the word "menu" in your identification label can be helpful to users of your program.

When you create a menu, you include on it a list of user options, (called "menu items" as you create them in EZBuilder, but called "menu commands" by the user of your application program). The main purpose of a menu is to provide user options from which the user of the application chooses one.

You can create your menus so the user can choose to execute a menu command in a variety of different ways. For example, the user can:

- press a function key (**F1**, **F2**, **F3**, for example).
- use the up and down arrow keys and then press **Enter**.
- enter text or numbers using the keyboard ("EXIT" for example).
- scan text characters ("SFCLBR" for example) using the terminal's wand or some other scanning device.

The chosen menu item may take the user to another menu where additional options are listed or to a screen where the user enters or views data.

Screens

An EZBuilder screen is the software display of information shown in the Viewport. A screen usually contains an identification label at its top. In the tutorial exercise, you will create four screens, each identified with labels.

In the tutorial exercise, there are two main types of screens: data entry screens and help screens. You could also create a screen to show results of calculated data or other processing.

The main purpose of a data entry screen is to show the user what data is to be scanned or entered and where the data fields are located on the terminal's screen. This type of screen contains data fields with their respective labels (captions that describe the data fields to the user).

Another type of screen, called a "help screen," may contain labels or scrolling text fields that provides information to the user. For example, a help screen may describe the kind of data that can go in each of the data fields on a data entry screen, or it may describe the purposes of specific function keys that aid the user in navigating through the application.

Transactions

A transaction usually contains an identification label at its top.

The variable data that is scanned or keyed in by the user is accepted in the data fields (shown on data entry screens) and then packaged as transactions. The

packaging process can include appending automatically obtained data from the system; this data can be, for example, the current date and time or calculated data.

Transactions can be handled in different ways.

- Transactions can be sent to or received from the RF network.
- Transactions can be sent to or received from a COM (communications) port.
- Transactions can be saved to or read from a record in a file.
- Transactions can be sent to another field or fields.

In the tutorial exercise, each transaction is saved as a record and sent to a file that later can be printed for management review and analysis.

Overview of the EZBuilder Simulator

A simulator allows one device (such as your computer) to act like or emulate another device (such as the terminal).

EZBuilder comes complete with a TRAKKER Antares Simulator tool so you can run the application that you create with EZBuilder on your computer for program testing and debugging as well as for training and demonstration purposes.

The simulator lets you check out all the menus, screens, transactions, and other processing that you defined in EZBuilder before you download your generated application program to the terminal.

Introducing the Tutorial Exercise

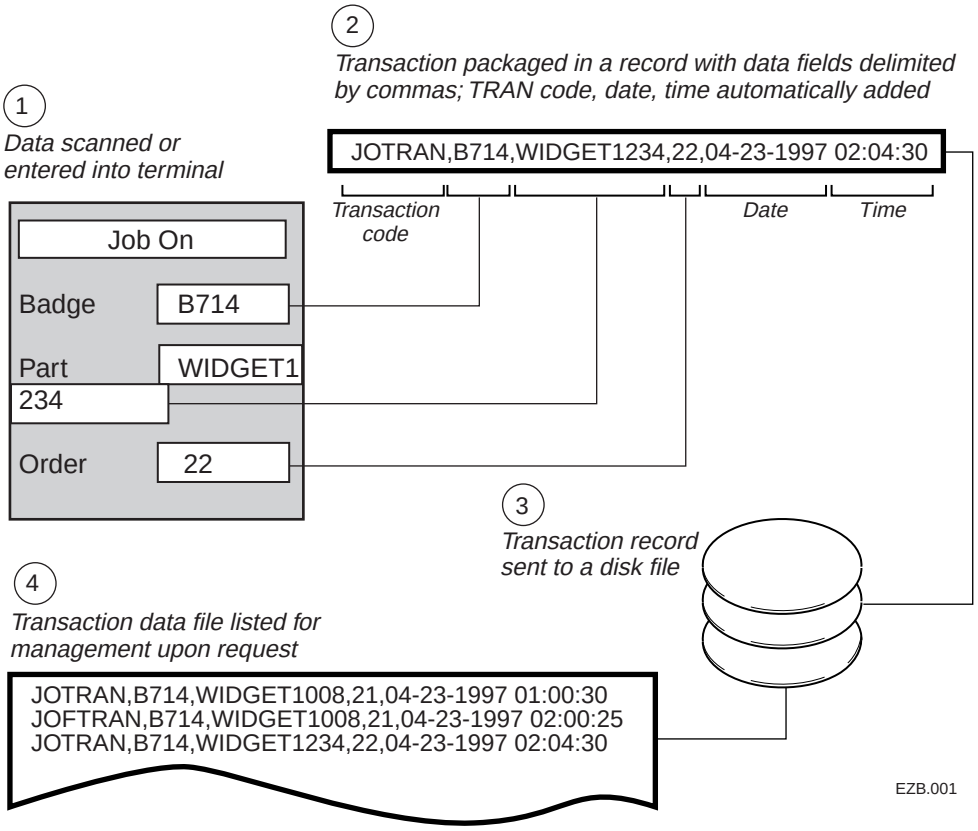
The exercise that you will do throughout the remainder of this document is a simple example of collecting the start and end times of factory workers as they perform various activities or projects (called “jobs” in this document).

In this exercise, factory workers keep track of their time spent on each job by scanning the SFCLBR (Start Factory Labor) text or bar code printed on work orders when they begin the job (producing the Job On transaction). They scan the EFCLBR (End Factory Labor) text or bar code when they end the job (producing the Job Off transaction). As alternates to scanning, the SFCLBR and EFCLBR codes can be entered as text on the keyboard or they can be selected from the menu using the up and down arrow keys and the **Enter** key.

Each transaction is packaged as one data output record and sent to a file. The data record will show the worker’s Badge ID Number, the Part Number, and Order Number as well as automatic date and time stamps and the Job On or Job Off transaction identification code (JOTRAN or JOFTRAN).

An overview of the process for a Job On transaction (currently being scanned by a worker with Badge ID Number B714) is illustrated next.

Job On Transaction Process



Tutorial Organization

There are several tasks in the tutorial exercise. There can be different ways to accomplish the same thing. However, new users of EZBuilder should follow the tasks described in this tutorial in the order presented, entering the data and building the application, step-by-step, as directed.

It might help you to look at the Viewport and think, “Where do I want to put something? What do I want to call it? What are its other properties? What actions will it cause?” in that order, then it will become clear why properties and actions are consistently entered in a certain order in this tutorial.

Note: *After you are familiar with EZBuilder, you may prefer a somewhat different method or data entry order. That is your choice at that time.*

The tasks for this tutorial exercise are presented over four chapters.

- In Chapter 2, you will create a main menu and its menu items that provide navigation options to the users. This chapter includes how to create hidden menu items that can be useful during program development.
- In Chapter 3, you will create screens and their data fields. This chapter includes creation of scrolling sections for help text as well as data entry fields where the user of your program will enter Badge ID, Part Number, and Order Code for the tutorial's example application. In this chapter, you will also learn how to program function key actions.
- In Chapter 4, you will create transactions that process the scanned or keyed in data for Job On records and Job Off records. Records of these transactions are saved in a file which later can be listed for management who might want to analyze the time spent for each job and for each factory worker.
- In Chapter 5, you will build and test your application. You will instruct EZBuilder to build (generate) the application's program code, and you will use the EZBuilder TRAKKER Antares Simulator to test your application by running (executing) the application program on your computer. For those applications that are ready for users, this chapter includes information on downloading your generated application program files to the TRAKKER Antares terminal.

Using EZBuilder's Online Help

You can use EZBuilder's online help when you need more information than provided in this document. To get online help about an item, place your cursor on the item and press the **F1** function key. After reading the help text in its window, close the help window and continue with the tutorial exercise.

Note: *You should be able to complete the tutorial exercise without using online help.*

Tutorial Time

You can enter the basic EZBuilder tutorial exercise commands, build your program, and run it to test the result in less than two hours, depending on how thoroughly you read and study the material and check each screen result as you go along. Allow more time if you choose to try out some things to expand on information in the tutorial as you go along.

Note: *We recommend that you leave out your own enhancements until after your first time through the complete exercise.*

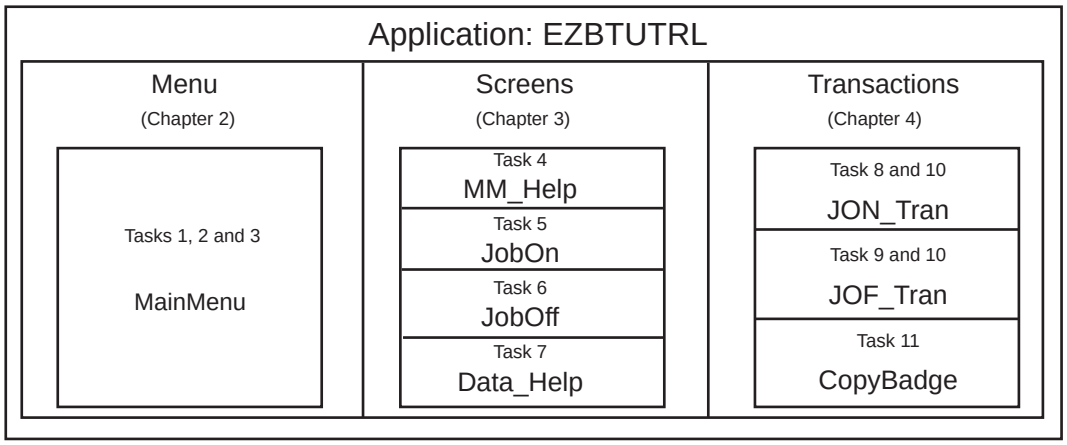
Chapter Summary

This chapter introduced you to EZBuilder: its purpose, window descriptions, and definitions of major terms that relate to creating and using EZBuilder applications. This chapter also introduced you to the tutorial exercise and the tutorial organization.

The remainder of this document provides simple tutorial exercises that allow you to quickly and easily learn how to use the basic features of EZBuilder. For example, you will learn how to create menus, screens, and transactions, each with their respective labels, menu commands, data fields, and the appropriate properties and actions.

An overview of the EZBuilder components included in the tutorial is illustrated next.

Tutorial Exercise Summary



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The Tutorial Exercise Summary illustration is repeated at the end of each chapter, with the components that you have created up to that point shaded. Thus, at the end of each chapter, you can see what you have learned and what is coming up next.

Upon completion of this tutorial exercise, you will have covered the basic parts of EZBuilder. Building upon this foundation, you can easily learn additional features during self study, experimentation, and study of example applications included with EZBuilder (see the document, *EZBuilder Getting Started Guide*).

Before you begin the tutorial exercise in Chapter 2, be sure that the following is ready:

- EZBuilder has been properly installed on your computer (see the document, *EZBuilder Getting Started Guide*, if this has not been done).

- A RAM drive (E drive) has been created on the terminal. This is the disk drive to which you may want to send your output file when your generated application program is executed (see *EZBuilder Getting Started Guide* for details).

When you are ready, continue with Chapter 2 and begin the tutorial exercise.