CHAPTER 1

Introduction to the Output Delivery System (ODS)

1.1 What is ODS?

In SAS, a procedure or a DATA step supplies raw data and the name of a table definition that contains formatting instructions.   Traditional SAS output is designed for a traditional line–printer.   This type of output has limitations that prevent you from getting the most value from your results.   ODS is designed to overcome the limitations of traditional SAS output.   It provides a method of delivering output in a variety of formats, and makes the formatted output easy to access.

This book introduces the concepts necessary to understand and apply the basic features of ODS.   It discusses the issues surrounding writing to destinations, manipulating objects, and enhancing reports with styles.   The focus is on the creation of various types of output files through step-by-step examples.

1.2 Benefits of Using ODS

ODS opens a whole new world of choices in generating high-quality, detailed presentation output from SAS.   With ODS, you can create various file types including HTML, Rich Text Format (RTF), PostScript (PS), Portable Document Format (PDF), and SAS data sets.   You can also take advantage of ODS features to easily convert existing SAS code so that it can create these file types.   In addition, the variety of styles available within ODS enables you to enhance presentation output by controlling the report's overall color scheme, font, and size.

The Results window of the SAS windowing environment in the following figure shows the various icons that represent the different files that can be created by ODS:
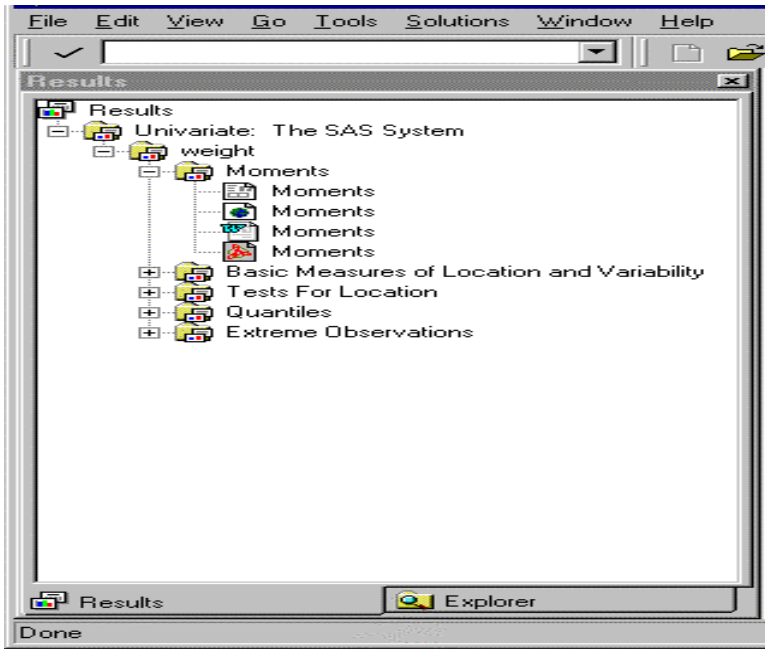
Figure 1.1 *Results window*

 represents a Listing file.

 represents an HTML file.

 represents an RTF file.

 represents a PDF file.

Through ODS, you can do the following:

- create HTML, RTF, PostScript, and PDF files

- select SAS-supplied styles to enhance reports

- create output objects from almost all SAS procedures

- create SAS data sets from output objects

- provide support for Web site navigation and management of HTML files.

1.2.1 Understanding ODS Terminology

When you are working in the ODS environment, it is helpful to consider the following ODS definitions:

- Destinations – Destinations are the locations to which ODS routes the output from SAS. ODS can be used to route quality presentation files, suitable for publishing, to various destinations, including LISTING (default), HTML, RTF, PRINTER, and PDF. ODS can also store results in a SAS data sets when you use the ODS OUTPUT statement. Destinations represent the output file type.

- Objects – Output objects are created by ODS to store the formatted results of most SAS procedures. An output object consists of the tabular data component from a SAS procedure and formatting instructions provided by a table template that is unique to that SAS procedure. You can select output objects to tailor your results.

- Styles – Styles define the presentation attributes of a report, such as font and color. ODS uses style definitions, or templates, to enhance the visual appearance of the output in those destinations that support styles. Note that styles do not apply to the LISTING and OUTPUT destinations.

1.3 Basic Structure of ODS Statements

The following is the syntax of some ODS statements that are essential for generating quick results with ODS. The numbers correspond to the explanations in the list that follows this syntax.

Example 1.1: Basic ODS syntax

ODS TRACE ON </<options>>;   ❶

ODS *destination* <FILE=*filename*>;   ❷

ODS OUTPUT *output-object-name=SAS-data-set-name*;   ❸

ODS <*destination*>**SELECT** *output-object-name*|ALL|NONE;   ❹

...SAS *procedure syntax*...   ❺

ODS <*destination*> **CLOSE**;   ❻

ODS TRACE OFF;   ❼

❶ The ODS TRACE ON statement is a useful tool for identifying output objects that are created from SAS procedures. You must place it before the first SAS procedure that you want to trace. Knowing what objects are created is important when you select objects for the destination.

❷ The ODS <*destination*> statements open a destination for output. A form of this statement is required to create the destination file. The *destination* value can be any of the destinations used for report generation, including LISTING, HTML, RTF, PS, and PDF. The FILE= option is required to name the output file for many of the destinations.

❸ The ODS OUTPUT statement creates SAS data sets. It saves the results that are stored in the output objects from SAS procedures to data sets. This is an alternative destination to

the file types available in the ODS *<destination>* statements. The object and data set names are required for this destination.

❹ The ODS *<destination>* SELECT statement specifies objects to include in the destination. This is an optional statement to restrict information to the destination. An ODS SELECT statement can be created for each opened destination. It is also possible to exclude objects from destinations with the ODS EXCLUDE statement.

❺ All results from one or more SAS procedures are routed to the open destination(s). This is true for all destinations except the OUTPUT destination.

❻ The ODS *<destination>* CLOSE statement closes the destination. You must close each opened destination to save results to that destination. You can close all open destinations with the ODS_ALL_CLOSE statement.

❼ The ODS TRACE OFF statement turns off the trace feature. Remember to place this statement after the last SAS procedure that you want to trace.

More Information

The *Complete Guide to the SAS Output Delivery System, Version 8* has detailed reference information about ODS syntax.

Chapter 2 of *Output Delivery System: The Basics* also has detailed information about ODS syntax.

You can also consult *SAS OnlineDoc* for more information about ODS syntax.