



SAS Formats and Informats

Usage and tips

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The SAS Format facility

- Powerful set of capabilities to work with and represent your data
- Provide control on how variables are portrayed in SAS output
- Formats and Informats have been a part of SAS since at least version 5
- Allows SAS programmers to write elegant, concise code
- With Enterprise Guide, non-programmers can also take advantage of SAS formats



What are SAS formats?

- Used to represent variables in a SAS data set
- Change how the values are displayed in SAS output
- A template used to write data values
- Basic categories are numeric, character and date formats
- Does not change the actual values of the data
- SAS supplied or user defined



SAS Formats

- A format is an instruction that SAS uses to write data values.
- Use formats to control the written appearance of data values, or, in some cases, to group data values together for analysis.
- For example, the WORDS22. format, which converts numeric values to their equivalent in words, writes the numeric value 692 as six hundred ninety-two



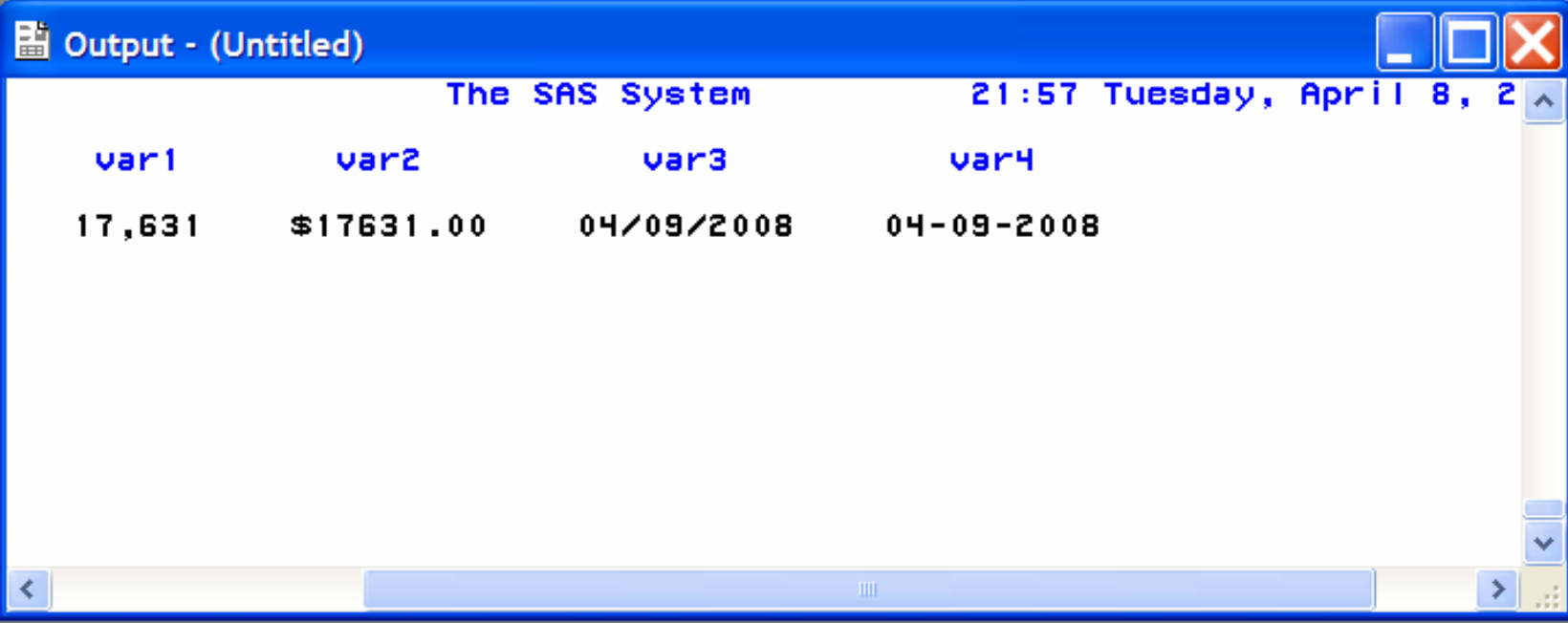
Example

- The number 17631 can be written in several ways

```
data testfmts;  
retain var1 - var4 17631;  
run;
```

```
Proc print data=testfmts width=min noobs;  
format var1 comma9. var2 dollar9.2  
var3 mmddy10. var4 mmddy10.;  
run;
```

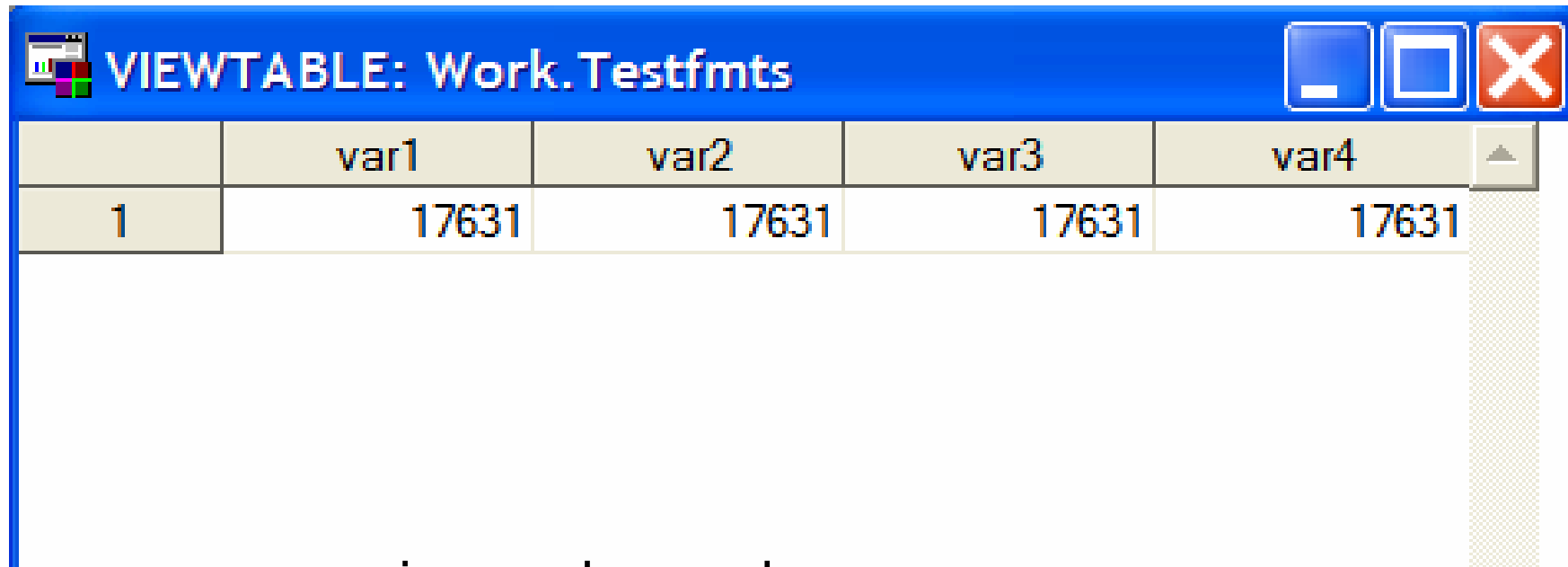
Results



The screenshot shows a SAS Output window titled "Output - (Untitled)". The window displays the following output:

The SAS System		21:57 Tuesday, April 8, 2008	
var1	var2	var3	var4
17,631	\$17631.00	04/09/2008	04-09-2008

And the data...



The screenshot shows a window titled "VIEWTABLE: Work.Testfmts" with standard Windows window controls (minimize, maximize, close). The window contains a table with the following data:

	var1	var2	var3	var4
1	17631	17631	17631	17631

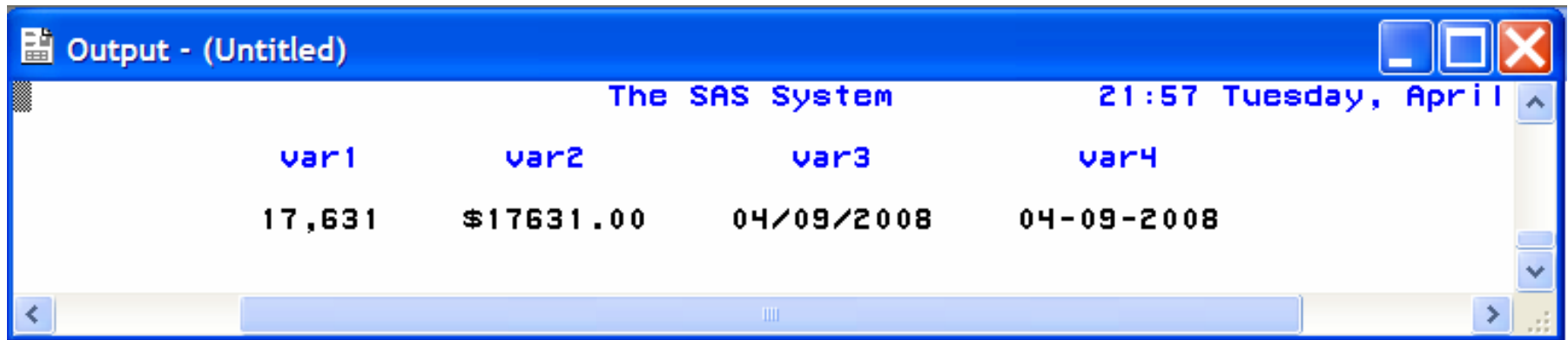
...remains unchanged



Another example

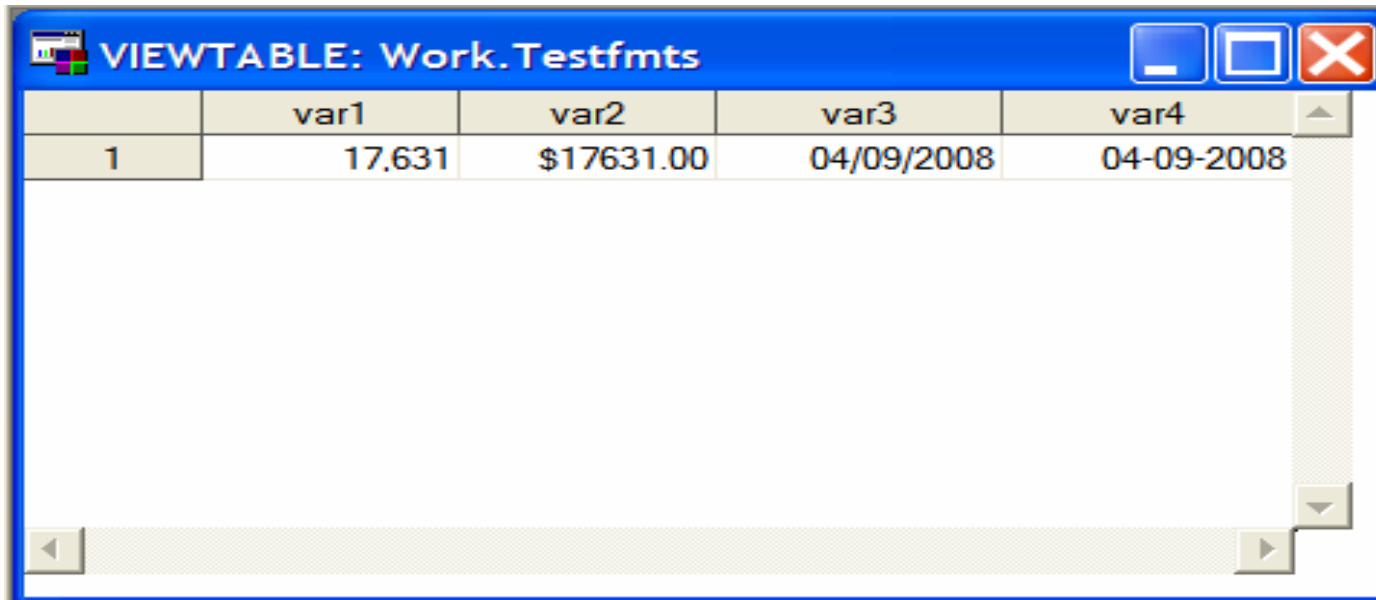
```
data testfmts;  
retain var1 - var4 17631;  
format var1 comma9.    var2 dollar9.2  
        var3 mmddy10.  var4 mmddy10.;  
run;
```

Results



var1	var2	var3	var4
17,631	\$17631.00	04/09/2008	04-09-2008

And the data...



The screenshot shows a window titled "VIEWTABLE: Work.Testfmts" with a blue title bar and standard Windows window controls (minimize, maximize, close). The window contains a table with the following data:

	var1	var2	var3	var4
1	17.631	\$17631.00	04/09/2008	04-09-2008

...has now been formatted but has not been changed*



What about **Informats**?

- Typically used to read external data into SAS variables
- Tell a sas program how to interpret the data
- Data converted at run time to the representation required by the program.
 - The original data remains unchanged
 - All data written “inherits” the informat used to read it in.



What are the Differences

- Informats used at input
 - Usually reading external data
- Formats used during output cycle
 - Write formatted value to output



Examples of SAS supplied Date Formats

■ 11 April 2005	WORDDATX.
■ Monday, April 11, 2005	WEEKDATE.
■ Monday	DOWNAME.
■ 2	WEEKDAY.
■ April 11, 2005	WORDDATE.
■ 2005Q2	YYQ6.
■ 05Q2	YYQ4.
■ 2005	YEAR
■ 2	QTR.
■ APR2005	MONYY7.
■ 11APR2005	DATE9.
■ 11APR05	DATE7.
■ 11/04/2005	DDMMYY10.
■ 04/11/2005	MMDDYY10.
■ 04/11/05	MMDDYY8.
■ 16537	No Format Applied



What if a format/informat doesn't exist

- SAS allows you to create your own!
- PROC FORMAT allows for creation of both FORMATS and INFORMATS
- Can create numeric or character formats
- Can create discrete or range formats
- Formats stored in a format catalog
 - Work by default but can also create a permanent

USER DEFINED FORMATS

PROC FORMAT:

- ◆ creates user - defined formats
- ◆ can create user - defined informats
- ◆ does not generate output

Syntax of the FORMAT Procedure :

```
proc format options ;  
    value name options  
        range1 = 'label1'  
        range2 = 'label2' ;  
run ;
```

Value Statement Examples

- ◆ single numbers - value answer 1 = ' Yes '
 2 = ' No ' ;

- ◆ range of numbers - value gfmt low – 10 = ' Group 1 '
 11 – 20 = ' Group 2 '
 21 – high = ' Group 3 ' ;

- ◆ several values - value \$prov 'CALGARY', 'EDMONTON' = 'AB'
 'VANCOUVER', 'FIELD' = 'BC' ;

- ◆ other - value sexfmt 1 = ' FEMALE '
 2 = ' MALE '
 other = ' ? ' ;

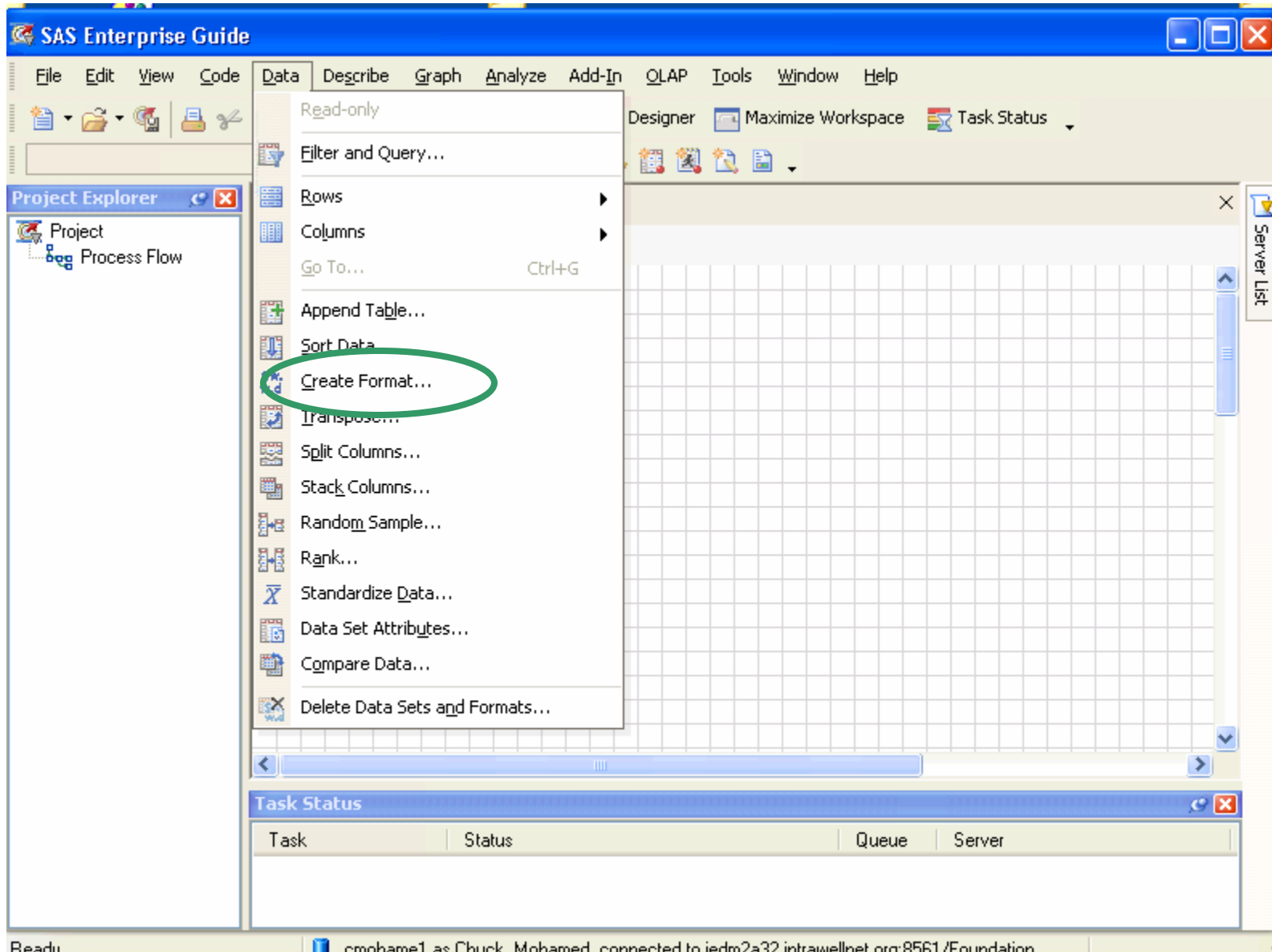
What if you are not a SAS programmer?

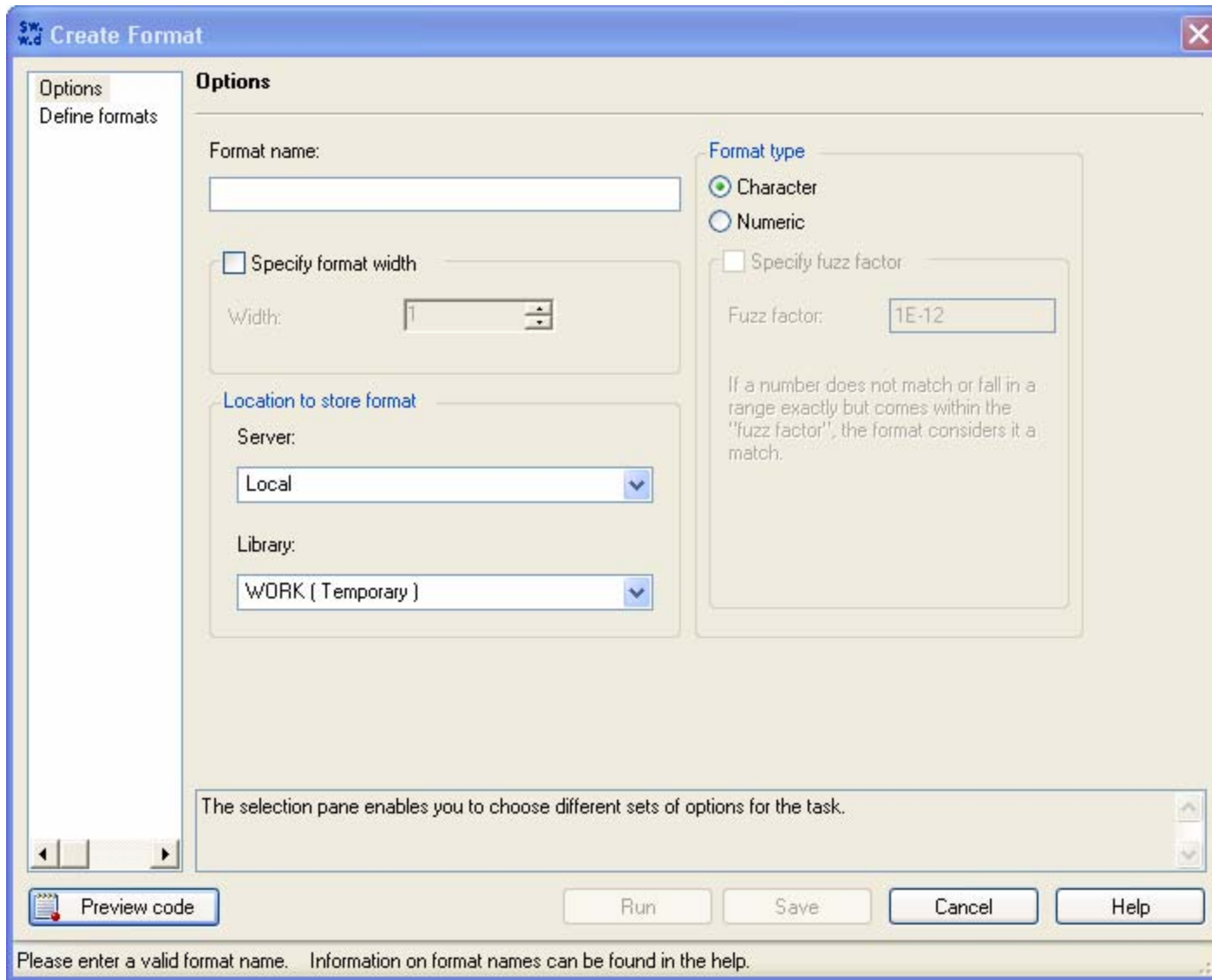


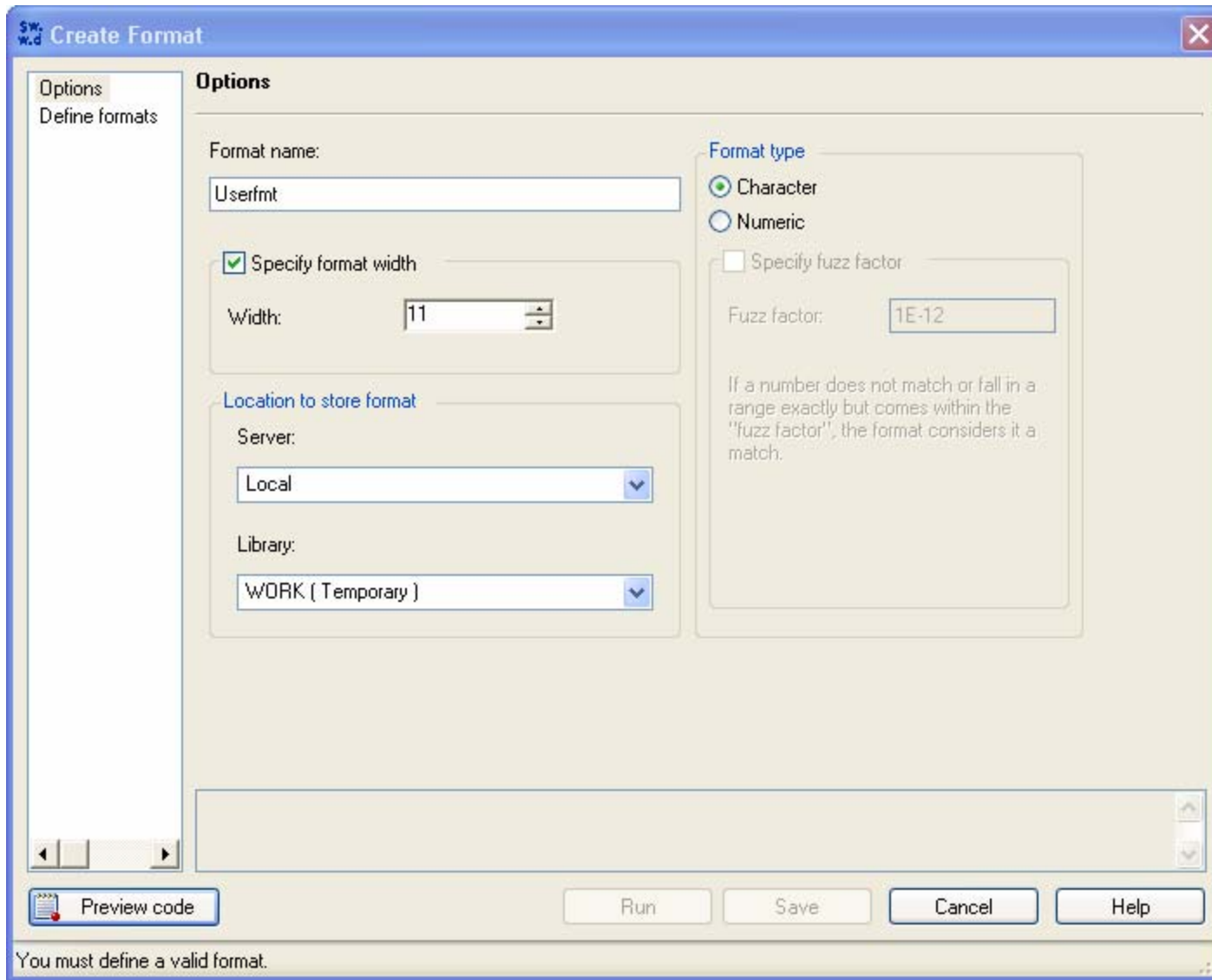


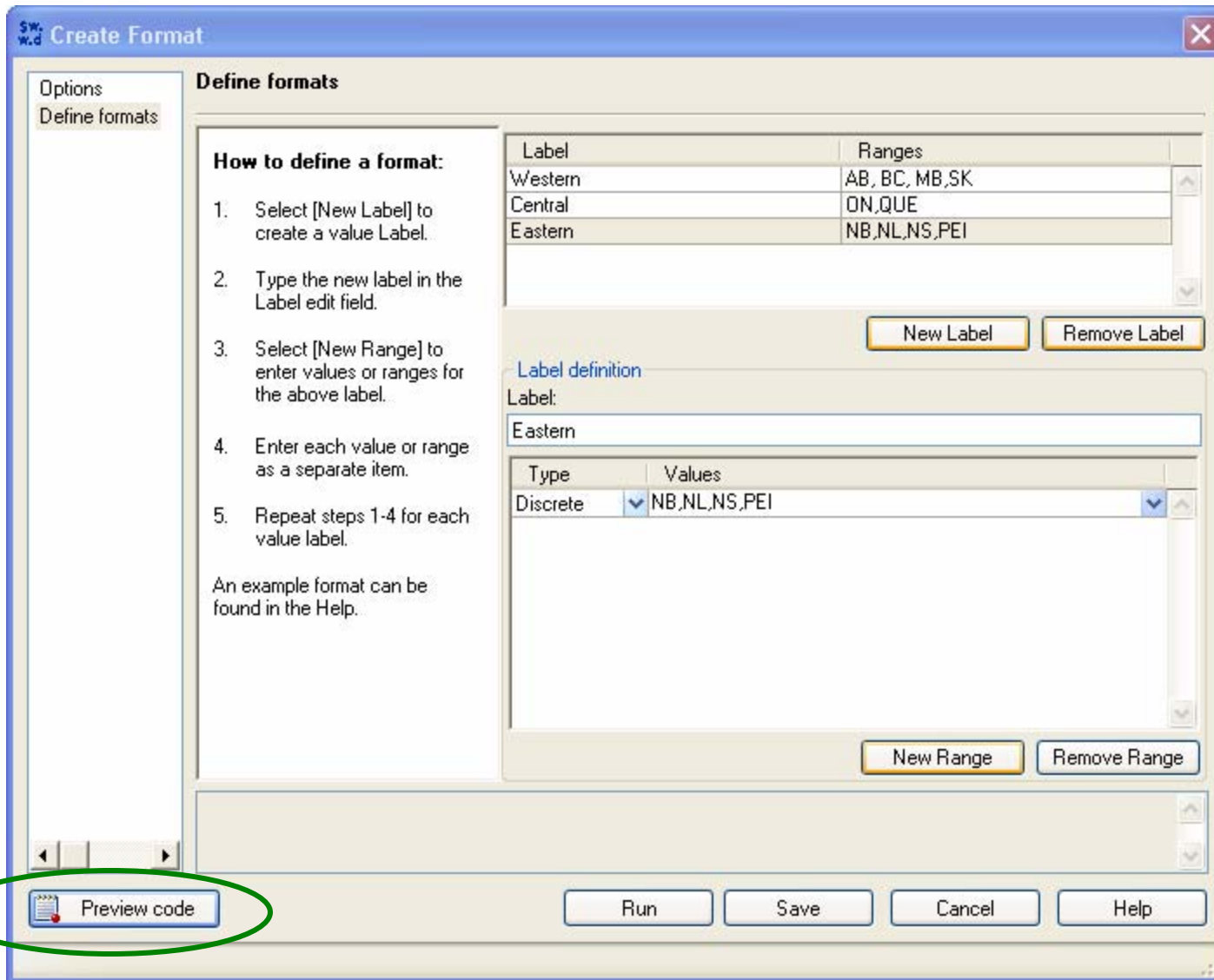
User defined formats in Enterprise Guide

- EG can also be used to create formats/informats
- Can be used by non-programmers in a point and click interface
- Generates PROC FORMAT code that can be viewed











Formats [X]

Categories: None
Character
User Defined
All

Formats: \$USERFMT.

Attributes

Overall width: 0

Decimal places: 0

Description

Example

Value:

Output:

OK Cancel



SAS search order for formats

- Default search path is catalog containing sas supplied formats
- Followed by “WORK”
- Followed by any additional Formats catalogs specified in the FMTSEARCH option
- Store your formats in a permanent library if you are going to use them often.

Using the FMTSEARCH= System Option

- To use permanent formats or to search multiple catalogs, use the FMTSEARCH= system option to identify the catalog(s) to be searched for the format(s).
- General form of the FMTSEARCH= system option:

```
OPTIONS FMTSEARCH = (item-1 item-2...item-n);
```



Other uses

- Formats can also be used to emulate table lookups
- Use the CNTLIN option to specify an input control data set
 - Must have 3 variables FMTNAME, START and LABEL



Using the CNTLIN option

```
PROC FORMAT LIBRARY = libref.catalog  
                CNTLIN = SAS-data-set,  
RUN;
```



Enhancements to the FORMAT Procedure in v9

- **FORMAT and INFORMATS with longer names.**
 - **32 Characters for Numeric formats.**
 - **31 Characters for Character formats (allows for a \$ sign).**
- **Note: Not compatible with version 8**


```
proc format;  
  value $genderformat "1"="Female"  
                    "2"="Male";
```

NOTE: Format \$GENDERFORMAT has been output.



SAS Formats and Informats

- Have multiple uses
- Can be used to manage, analyze and display data
- Can be used with procedures
- Enhance visual appeal of reports
- Reduce ambiguity
- Reduce coding
- Centralize Maintenance
- Increase performance



*Formats can really make your SAS
data management activities more
effective and efficient*

