Paper 263-2008

Tabbing Through ODS® II
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ABSTRACT

The authors present a significant improvement to the approach of aligning multiple variables inside a cell by applying tabs to the ODS reporting process. Consequently the enhanced method is able to integrate seamlessly with inline formatting and greatly improving the ability for data presentation.

INTRODUCTION

This paper will describe the challenging question regarding the old approach of aligning variables in ODS reporting and why the inline formatting technique presented both challenge and opportunity and how the problem has been solved with the aid of improved DATA STEP functions such as LENGTH() and SUBSTR().

THE NOVEL APPROACH

As presented at SAS Global Forum (SGF) 2007 conference, our novel approach of applying tabbing control words enables one to present multiple variables inside a cell with perfect alignment. Following is an example of its application:

Record #	Header		
1	Conservative approach	That is a ship	What can I do now?
2	This is your gateway to becoming a part of SAS Global Forum 2008.		
3	SAS Global Forum 2008 depends on people like you.		From here, you can create and update Profiles.

In this example, up to three variables are combined under the column named "Header". Through a dynamic tabbing algorithm each variable contains data that are lined up inside a cell (refer to the original paper in last year's proceedings). On the third record, the second variable is missing data; however, the first and third variables are still lined up perfectly! This novel approach has become a powerful tool to organize and present complex data structure within a cell.

NEED FOR ENCHANCEMENT

The aforementioned approach has been successful until the data are presented for preserving inline formats carried from the source data. Inline formats were developed in the old approach to include tab controls in the formatting process; however, assumption is granted that the source data do not have any inline formats prior to any formatting process. Inline formats consisting of phrases that are used to specify customized attributes do not require space in the output area, therefore, will lead to inaccuracy of the counting process and undesirable effects or even misalignment of variables. On the other hand, it is as equally important to preserve the attributes as to preserve data accuracy. Both format and content are the two dimensions in defining the integrity of the source data.

ENHANCEMENT STRATEGY

The enhancement strategy is simple and intuitive to exclude any inline formats in the counting process while keeping them where they are and intact. Without loss of generality, all inline formats are assumed to take on the form \S={…}. Therefore, implementation of this enhancement strategy lies in improvement of two DATA STEP functions LENGTH() and SUBSTR().

IMPROVING LENGTH()

Since inline formats do not use any output space, those phrases enclosed with the "\S={…}" structure are excluded from the total length of characters based on which the determination of applying the tabbing technique to properly wrap the source data would be made.

```
Usable length = length(variable)+index variable,'\S={')-index(variable,'}')-1;
```

IMPROVING SUBSTR()

The improvement of the SUBSTR() function is more complicated than that of the previous LENGTH() function as it involves defining two different pointers. The first pointer is the regular one, i.e., pointing through every byte of the value of the variable. The second one is unique to this approach and only pointing to bytes that are not used for inline formats.

```
do while(pointer_2<=maximum column width);
   /*beginning of inline format*/
   if substr(variable, pointer_1)=:'\S={' then _ilen=1;
   if _ilen^=1 then pointer_2= pointer_2+1;
   /*ending of attributes*/
   if _ilen=1 & substr(variable, pointer_1,1)='}' then _ilen=0;
   pointer_1= pointer_1+1;
end;
```

THE IMPROVED PROCESS

The improved process works exactly the same way as the old process when inline formats are not present from the source data and works transparently when the source data do include inline formats. It wraps the character strings at exactly the same point where the old process would after ignoring the existence of inline formats.

AN APPLICATION EXAMPLE

Assuming the third record in the previous example contains inline format for the first variable:

```
'SAS Global Forum \S={font_weight=bold}2008\S={} depends on people like you.'
```

Applying the enhanced algorithm preserved the inline font attribute with alignment done exactly the same way as in the original example.

Record #	Header		
1	Conservative approach	That is a ship	What can I do now?
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3	SAS Global Forum **2008** depends on people like you.		From here, you can create and update Profiles.

DISCUSSION

Since the core technique of this enhancement has to do with improving two DATA STEP functions, LENGTH() and SUBSTR(), there'll be no further programming changes in SAS 9.2. For this upcoming new SAS version, one can customize functions. After customizing these two functions at the function level, no more changes will be necessary to apply the old program against data with inline formats.

CONCLUSION

It has been demonstrated that well-known tab keys can be integrated with ODS in-line formatting to tackle data already with inline attributes. The customized tab control plus improved DATA STEP functions LENGTH() and SUBSTR() provide powerful tuning capacity to wrap and line up data without sacrificing the format content. This enhanced technique makes the novel approach more robust and fit into more applications that require strong data presentation capacities.

REFERENCES

SAS Institute Inc. SAS Online Doc 9.1.3

Haibin Shu (2007), "*Tabbing Through ODS*," Proceedings of the SAS Global Forum (SGF) 2007 Conference,
    Duramed Research, Inc., Bala Cynwyd, PA.

CONTACT INFORMATION (HEADER 1)

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