SAS® Essentials: Maximize the Efficiency of Your Most Basic Users

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Introduction

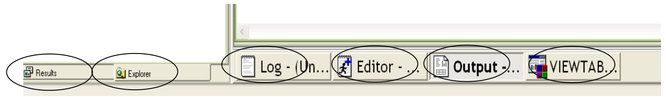
If programming and research assistants were taught SAS essentials, job efficiency could be maximized with the ability to use SAS as a tool to do their own preparatory work for assigned tasks. This paper summarizes a supplemental training program which teaches basic SAS programming skills to enable support staff to be more independent.

The purpose of this seminar is not only to teach how to do things, but also to provide a toolkit of essentials for new and infrequent users. Spending time with your employees while they explore SAS is the most economical way to teach basic users the skills they need to complete daily tasks. The ability to navigate various windows allows your novice user to be knowledgeable about their data. As new data sets are created they can be checked and errors detected within reasonable time frames.

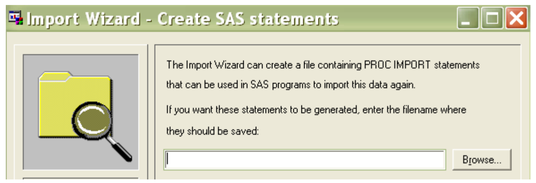
Course Outline

1. **Navigation**
   - Editor
   - Log
   - Results
   - Explorer
   - View Table
2. **Import Procedures**
   - Import Wizard
   - Alternatives in JMP®
3. **Data Exploration**
   - Using the Explorer
   - PROC CONTENTS
4. **Data Step**
   - Types of datasets
   - Storage of datasets
5. **Reading the Log**
   - Note
   - Error
   - Warning
6. **Procedures**
   - PROC SORT
   - PROC PRINT
   - PROC FREQ
   - PROC MEANS

1. **Navigation** – maximize efficiency by utilizing the simple tools SAS provides upon opening the product



2. **Import Procedures** - is an easy and efficient way of putting external data into a SAS dataset.



3. **Data Exploration** - The best way to become familiar with a foreign dataset is to begin with a PROC CONTENTS.

```
PROC CONTENTS DATA = 'Z:\practice1'; RUN;
```

4. **Data Step** - Data steps are written by the programmer and are utilized to create new data sets of two kinds: temporary and permanent.

Temporary :

```
DATA Y; SET X ;RUN;
```

Permanent :

```
LIBNAME X 'Z:\JKMH\SAS 2013\data';
DATA X.PRACTICE1;SET XYZ; RUN;
```

5. **Reading the Log** - The log is documentation of everything you have done during your SAS session.

```
NOTE: There were 250 observations read
from the data set WORK.X.
ERROR: File WORK.XYZ.DATA does not exist.
WARNING: Data set X.PRACTICE1 was not
replaced because this step was stopped.
```

6. **Procedures** – Allows the user to manipulate and view data in many ways.

PROC SORT
Orders a data set by the value of variables listed in the BY statement.

```
PROC SORT DATA = X; BY ID TDMP; RUN;
```

	Monitoring Period	INDOOR NO2 MEASURMENT (PPB)	TOWN	STOVE_TYPE	Address #	ALLERGY_ANY	id
1	1	6.6914217196	New Britain	1	1	1	480036
2	2	4.9012135711	New Britain	1	1	1	480036
3	3	5.2618245995	New Britain	1	1	1	480036
4	4	6.9569790417	New Britain	1	1	1	480036
5	1	7.9481885897	Stamford	1	1	1	480156
6	2	3.6181008555	Stamford	1	1	1	480156
7	3	29.867558396	Stamford	2	2	1	480156
8	4	48.706478315	Stamford	2	2	1	480156

PROC PRINT
'Prints' the contents of the specified dataset in the output window; options allow the user to change the visual appearance.

```
PROC PRINT DATA = X D LABEL;ID ID;BY TOWN;RUN;
```

```
------------------------------ TOWN=Wallingford ------------------------------

                                 INDOOR NO2
          Monitoring             MEASURMENT   STOVE_     Address    ALLERGY_
id           Period                  (PPB)     TYPE           #         ANY
481084            1                4.29465        1           1           0

------------------------------ TOWN=West Haven -------------------------------

                                 INDOOR NO2
          Monitoring             MEASURMENT   STOVE_     Address    ALLERGY_
id           Period                  (PPB)     TYPE           #         ANY
481156            1                10.1909        1           1           0
481156            2                 6.9355        1           1           0
```

PROC FREQ
Creates multi-way crosstabs or cross-listings of variables listed in the TABLES statement.

```
PROC FREQ DATA = X; TABLES STOVE_TYPE; RUN;
```

```
                        The FREQ Procedure

                                                Cumulative    Cumulative
STOVE_TYPE    Frequency     Percent     Frequency      Percent
---------------------------------------------------------------
         1          142       57.26           142        57.26
         2          106       42.74           248       100.00

                  Frequency Missing = 2
```

PROC MEANS
Provides number of observations and calculates descriptive statistics such as mean and standard deviation.

```
PROC MEANS DATA = X;VAR PPB_IN;RUN;
```

```
                        The MEANS Procedure

            Analysis Variable : PPB_IN INDOOR NO2 MEASURMENT (PPB)

        N            Mean         Std Dev         Minimum         Maximum
---------------------------------------------------------------------------
      250       8.4937966       6.1961535       1.4360183      48.7064783
---------------------------------------------------------------------------
```

Summary

The SAS slogan is 'the power to know.' When working in SAS it is important to remember that there are many 'right' ways to complete a task. SAS programming is a creative and iterative process designed to empower the user. One's personal style evolves over time. How to solve a data mystery or accomplish a data driven task is ultimately an independent decision made by the user.

The SAS Essentials training program is an easy course to implement for those who want their support staff to succeed and excel at interpreting, processing and summarizing data. Blending the idea of efficiency, empowerment and ultimately self-management is an opportunity for supervisors to fully utilize the time of all their staff and create a successful and productive team.