

Folder Hierarchy

The benefits of a standard folder hierarchy to the portability of code between SAS Drug Development and native SAS.

by: James McDermott

"Innovation by definition will not be accepted at first. It takes repeated attempts, endless demonstrations, monotonous rehearsals before innovation can be accepted and internalized by an organization. This requires 'courageous patience'." Warren Bennis

What is a Clinical Reporting Tool?

[Code of Federal Regulations]
[Title 21, Volume 1]
[Revised as of April 1, 2011]
[CITE: 21CFR11]

TITLE 21--FOOD AND DRUGS
CHAPTER I--FOOD AND DRUG ADMINISTRATION
DEPARTMENT OF HEALTH AND HUMAN SERVICES
SUBCHAPTER A--GENERAL
PART 11 ELECTRONIC RECORDS; ELECTRONIC SIGNATURES

- Driven by 21 CFR Part 11 requirement
 - (4)*Closed system* means an environment in which system access is controlled by persons who are responsible for the content of electronic records that are on the system.
 - (9)*Open system* means an environment in which system access is not controlled by persons who are responsible for the content of electronic records that are on the system.

Ordered Repository

SAS Drug Development

You are logged in as: Jim McDermott

Settings Tools Admin Help Search+

Search



Logout

- jmcdermott
 - Aspirin
 - 1_cardiovascular
 - docs
 - library
 - macros
 - study 1
 - study 2
 - study 3
 - 2_pain
 - docs
 - library
 - macros
 - study 1
 - study 2
 - study 3
 - docs
 - library

Home / SDD / users / jmcdermott / Aspirin

Aspirin

Aspirin is part of a group of medications called nonsteroidal anti-inflammatory drugs (NSAIDs), but differs from most other NSAIDs in the mechanism of action.

Actions

☐	Name	Size	Type	Owner	Created	Modified
☒	* 2_pain	0 KB	indication	jmcdermott	6/19/12 11:26:56 PM GMT	6/19/12 11:35:25 PM GMT
☒	* 1_cardiovascular	0 KB	indication	jmcdermott	6/19/12 11:27:48 PM GMT	6/19/12 11:35:07 PM GMT
☐	library	0 KB	folder	jmcdermott	6/19/12 11:32:46 PM GMT	6/19/12 11:32:46 PM GMT
☐	macros	0 KB	folder	jmcdermott	6/19/12 11:32:46 PM GMT	6/19/12 11:32:46 PM GMT
☐	docs	0 KB	folder	jmcdermott	6/19/12 11:32:47 PM GMT	6/19/12 11:32:47 PM GMT

```
pc22BB
├── s01
├── pc2250
│   └── s01
│       ├── r01
│       │   ├── Tables
│       │   └── Data
│       └── Clinical
│           ├── Documents
│           └── SASPrograms
└── r00
    ├── Tables
    ├── SASPrograms
    └── Data
        ├── Clinical
        ├── Documents
        └── QCPrograms

pc2187
├── s00
├── r00
├── PC2244
│   ├── s00
│   │   └── r00
│   │       ├── reports
│   │       ├── data
│   │       ├── programs
│   │       │   ├── validation
│   │       │   └── prevalidation
│   │       ├── csr
│   │       ├── documents
│   │       └── ots_lock_notscrambled
│   ├── documentation
│   ├── s02
│   └── s01
│       └── r00
│           └── QC
│               ├── Data
│               ├── Programs
│               └── Reports
```

Two Key Questions

- ▣ Where is my study?
 - ▣ how easy is it to find?
 - ▣ are all related activities grouped together?
- ▣ Where is my work?
 - ▣ how easy is it to find on a daily basis?
 - ▣ how easy is it for my code to “know”?





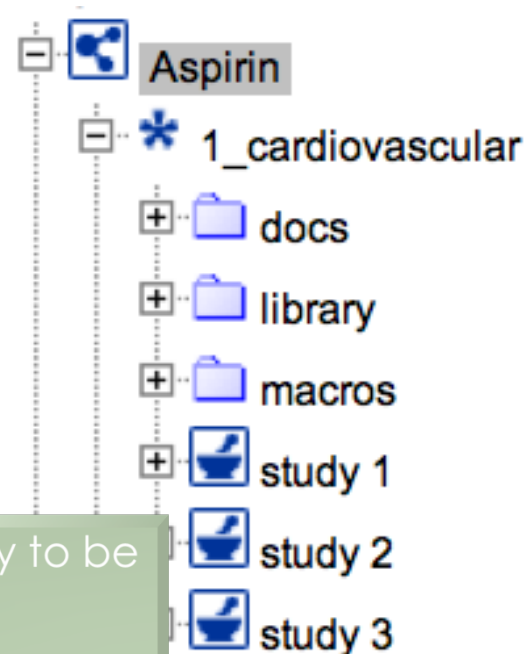
Where is my study?

The SAS 3 level categorization

- ▣ Product 1
 - ▣ Indication 1
 - ▣ Study 1
- ▣ Product 2
- ▣ :
- ▣ Product **x**
 - ▣ Indication 1
 - ▣ Indication 2
 - ▣ :
 - ▣ Indication **y**
 - ▣ Study 1
 - ▣ Study 2
 - ▣ :
 - ▣ Study **z**

How many are there likely to be
of
X, Y, Z

Representation in SAS Drug Development



Study



Where is my work?

Purpose

Level +1

- ▣ dev
- ▣ prod

Level +2

- ▣ library
- ▣ macros
- ▣ docs
- ▣ data
- ▣ qcqa
- ▣ cdm
- ▣ statprog
- ▣ biostat

Level +3 v1

- ▣ rawdata
- ▣ sdtmdata
- ▣ adamdata
- ▣ control

Level +3 v2

- ▣ programs
- ▣ output
- ▣ logmisc



Study

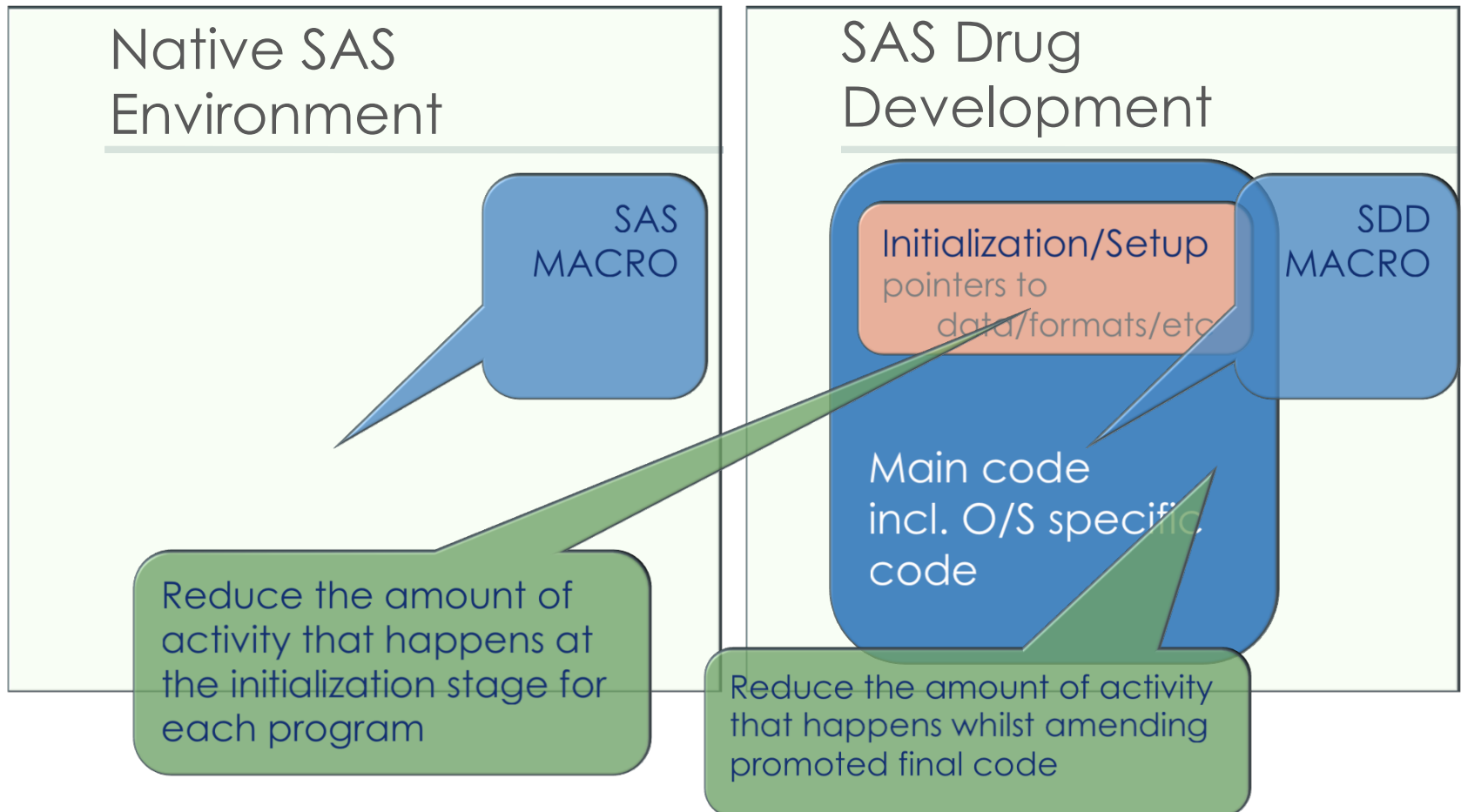
Purpose

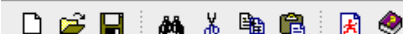
utility folders

Study Data

Function Progs

Basics of Code Structure





- ▶ Local File System
- ▶ SAS Drug Develop

Process Editor - template.sas-10(/SDD/global/library) from SAS Drug Development Domain

```

*_BEGIN_HEADER *****
Protocol: - ALL -
Program Name:
SAS Version: UNIX SAS Version 9.3 / PC SAS Version 9.3
Purpose:

Usage Notes:
Files Used:
Files Created:
Author Initials:
Date Program Created:

Modification History:

Date          Initials      Modification Description
-----

```

```

*_END_HEADER_*****;

%include &setup;

/*****
/* End of SETUP section: Code must follow this marker */
*****/

```

Parameters

#	Var Name	Type	Label	Enabled	Required	Default	Tabname
1	*LOG*	SAS log	SAS log	☐	☐	SAS Log File	System Files
2	*LST*	SAS output	SAS output	☐	☐	SAS Output File	System Files
3	SDDPARMS	Process paramete...	Process p...	☐	☐	SAS v9 Data Set (PC, Unix)	System Files
4	*PGM*	SAS program	SAS progr...	☐	☐	SAS Program File	System Files
5	SETUP	Input file	Input file	☐	☐	setup.sas-<version not available>(/SDD/global/...	Parameters
6	rawdata	Folder	rawdata	☐	☐	../data/raw (relative)	Parameters
7	sdtmdata	Folder	sdtmdata	☐	☐	../data/sdtmdata (relative)	Parameters
8	adamdata	Folder	adamdata	☐	☐	../data/adamdata (relative)	Parameters
9	control	Folder	control	☐	☐	../data/control (relative)	Parameters
10	trtcode	Folder	trtcode	☐	☐	../data/trtcode (relative)	Parameters
11	logmisc	Folder	logmisc	☐	☐	../logmisc (relative)	Parameters
12	outputs	Folder	outputs	☐	☐	../output (relative)	Parameters
13	global_m	Folder	global_m	☐	☐	../global/macros (relative)	Parameters
14	produc_m	Folder	produc_m	☐	☐	../macros (relative)	Parameters
15	protoc_m	Folder	protoc_m	☐	☐	../macros (relative)	Parameters
16	global_f	Folder	global_f	☐	☐	../global/library (relative)	Parameters
17	produc_f	Folder	produc_f	☐	☐	../library (relative)	Parameters
18	protoc_f	Folder	protoc_f	☐	☐	../library (relative)	Parameters

Up

Down



- ▶ Local File System
- ▼ SAS Drug Develop
 - ▶ SDD

* Process Editor - setup.sas-3(/SDD/global/macros) from SAS Drug Development Domain

```

*__END_HEADER_*****;

*_Allocate Data Libraries_*****;

libname rawdata "&rawdata";
libname sdtmdata "&sdtmdata";
libname adamdata "&adamdata";
libname control "&control";
libname trtcode "&trtcode";

libname logmisc "&logmisc";
libname outputs "&outputs";

*_Define FMT/MACRO Search priority_*****;

libname global_f "&global_f";
libname produc_f "&produc_f";
libname protoc_f "&protoc_f";

filename global_m "&global_m";
filename produc_m "&produc_m";
filename protoc_m "&protoc_m";

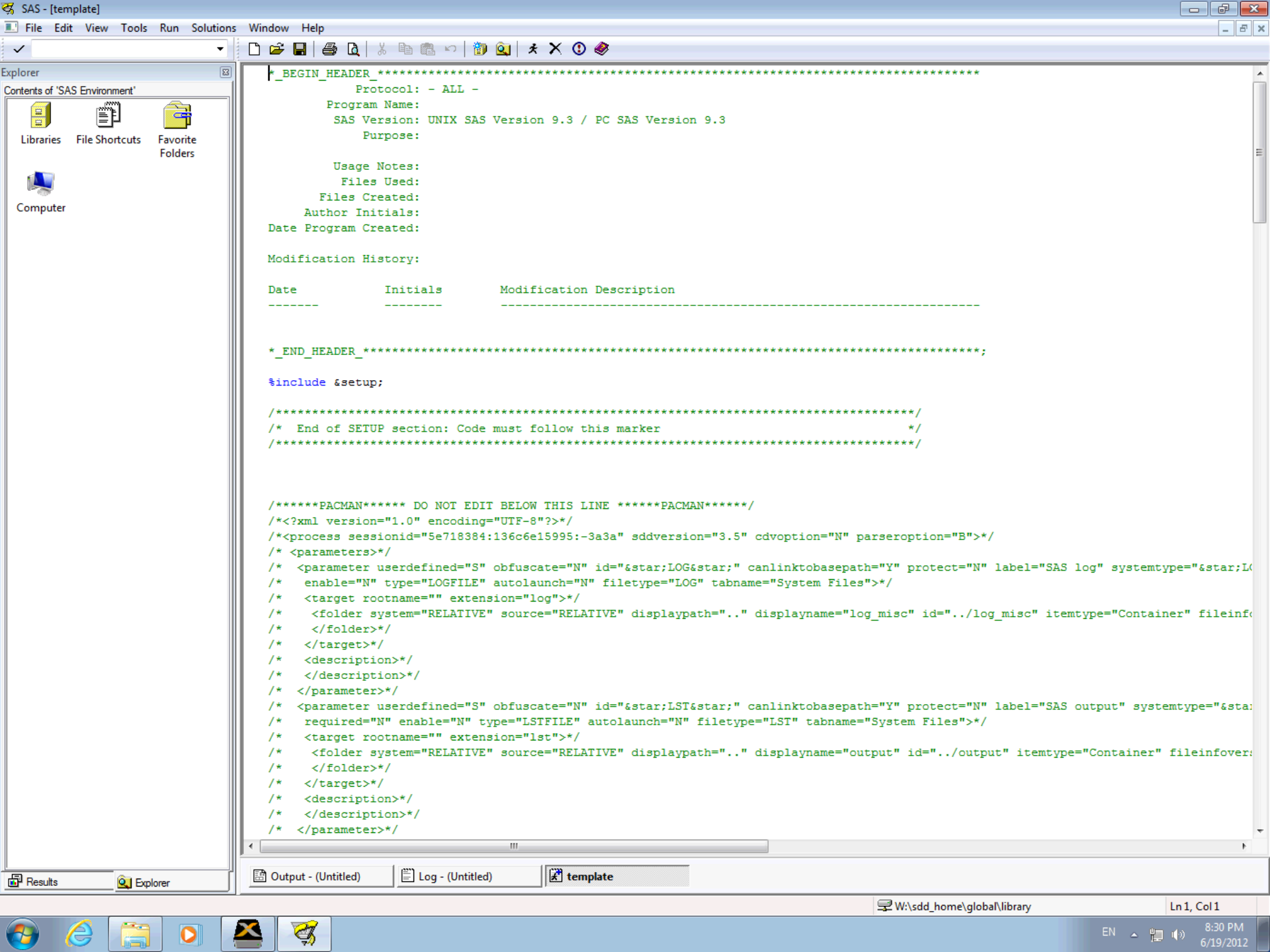
options fmtsearch=(protoc_f produc_f global_f)
sasautos=(sasautos protoc_m produc_m global_m)
mautosource
;
    
```

Parameters

#	Var Name	Type	Label	Enabled	Required	Default	Tabname
1	*LOG*	SAS log	SAS log	☐	☐	SAS Log File	System Files
2	*LST*	SAS output	SAS output	☐	☐	SAS Output File	System Files
3	SDDPARMS	Process paramete...	Process p...	☐	☐	SAS v9 Data Set (PC, Unix)	System Files
4	*PGM*	SAS program	SAS progr...	☐	☐	SAS Program File	System Files
5	RAWDATA	Text field	Text field	☒	☒		Parameters
6	SDTMDATA	Text field	Text field	☒	☒		Parameters
7	ADAMDATA	Text field	Text field	☒	☒		Parameters
8	CONTROL	Text field	Text field	☒	☒		Parameters
9	LOGMISC	Text field	Text field	☒	☒		Parameters
10	GLOBAL_F	Text field	Text field	☒	☒		Parameters
11	PROTOC_F	Text field	Text field	☒	☒		Parameters
12	GLOBAL_M	Text field	Text field	☒	☒		Parameters
13	PROTOC_M	Text field	Text field	☒	☒		Parameters
14	PRODUC_F	Text field	Text field	☒	☒		Parameters
15	PRODUC_M	Text field	Text field	☒	☒		Parameters
16	TRTCODE	Text field	Text field	☒	☒		Parameters
17	OUTPUTS	Text field	Text field	☒	☒		Parameters

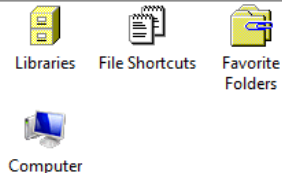
Up

Down



Explorer

Contents of 'SAS Environment'



```

*_BEGIN_HEADER_*****
      Protocol: - ALL -
      Program Name: setup.sas
      SAS Version: PC SAS Version 9.3
      Purpose: initialization code to setup all libnames and macro variables

      Usage Notes: this version is for Windows
      Files Used:
      Files Created:
      Author Initials: JMcD
      Date Program Created: 04APR12

Modification History:

Date          Initials      Modification Description
-----
20APR2012     JMcD          Various modifications to include amendments to structure for
                             presentation to users

*_END_HEADER_*****;

*_capture current location_*****;

%macro grabpath;

  %qsubstr(%sysget(SAS_EXECFILEPATH),
    1,
    %length(%sysget(SAS_EXECFILEPATH))-%length(%sysget(SAS_EXECFILENAME))
  )
%mend grabpath;

%let rootp= %grabpath;
%let prog_n= %qsubstr(%sysget(SAS_EXECFILENAME),
  1,
  %length(%sysget(SAS_EXECFILENAME))-4 );

*_Define default option set_*****;

%let root1 = %scan(&rootp,1,'\ ',b);
%let root2 = %scan(&rootp,2,'\ ',b);
%let root3 = %scan(&rootp,3,'\ ',b);
%let root4 = %scan(&rootp,4,'\ ',b);
%let root5 = %scan(&rootp,5,'\ ',b);
%let root6 = %scan(&rootp,6,'\ ',b);

%let roota = %qsubstr(&rootp,1,
  %length(&rootp)-%length(&root2.\&root1.\)
);

```

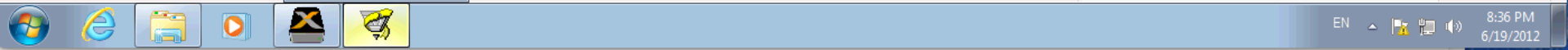
Results

Explorer

Output - (Untitled)

Log - (Untitled)

setup



A Simplified Hierarchy for CRE Implementation

- Designed to optimize the usage of the Environment as a Programming tool
- The structure is built on some simple principles
 - keep the structure as flat as possible
 - this aids in navigating through the system
 - also provides simple paths for standard macros and code
 - within each replicated component the standard hierarchy remains consistent allowing the use of relative pointers



Thank you & any questions?

James McDermott