

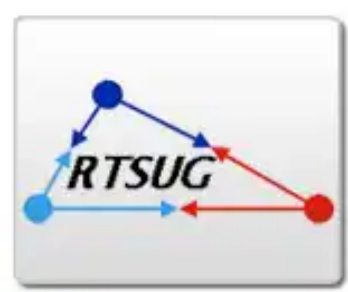
If its not broke, don't fix it;
existing code and the programmers' dilemma

Jay Iyengar, Data Systems Consultants LLC

Research Triangle SAS Users Group

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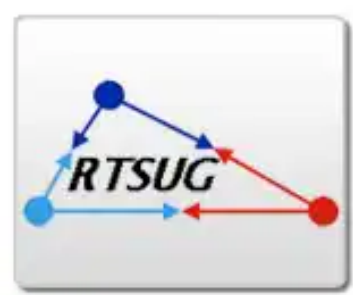




Introduction

- Contractors and Consultants work with Existing Code.
- SAS Programmer plays the role of a firefighter or a troubleshooter.
- Full-time employees develop code from scratch

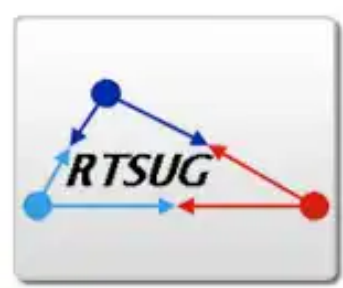




The process of revising code

- With Legacy code, task is to understand it.
- Good documentation aids in understanding the code.
- Readability assists in understanding the flow of the program.



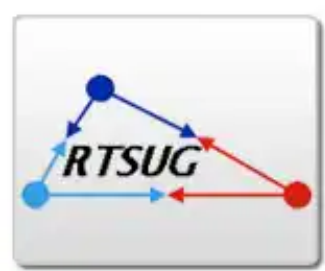


Find the developer who wrote the code



'Find the Programmer'



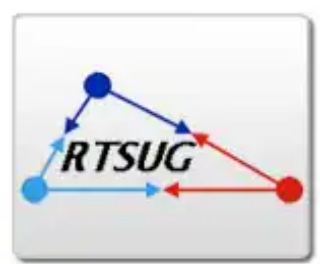


Find the developer who wrote the code

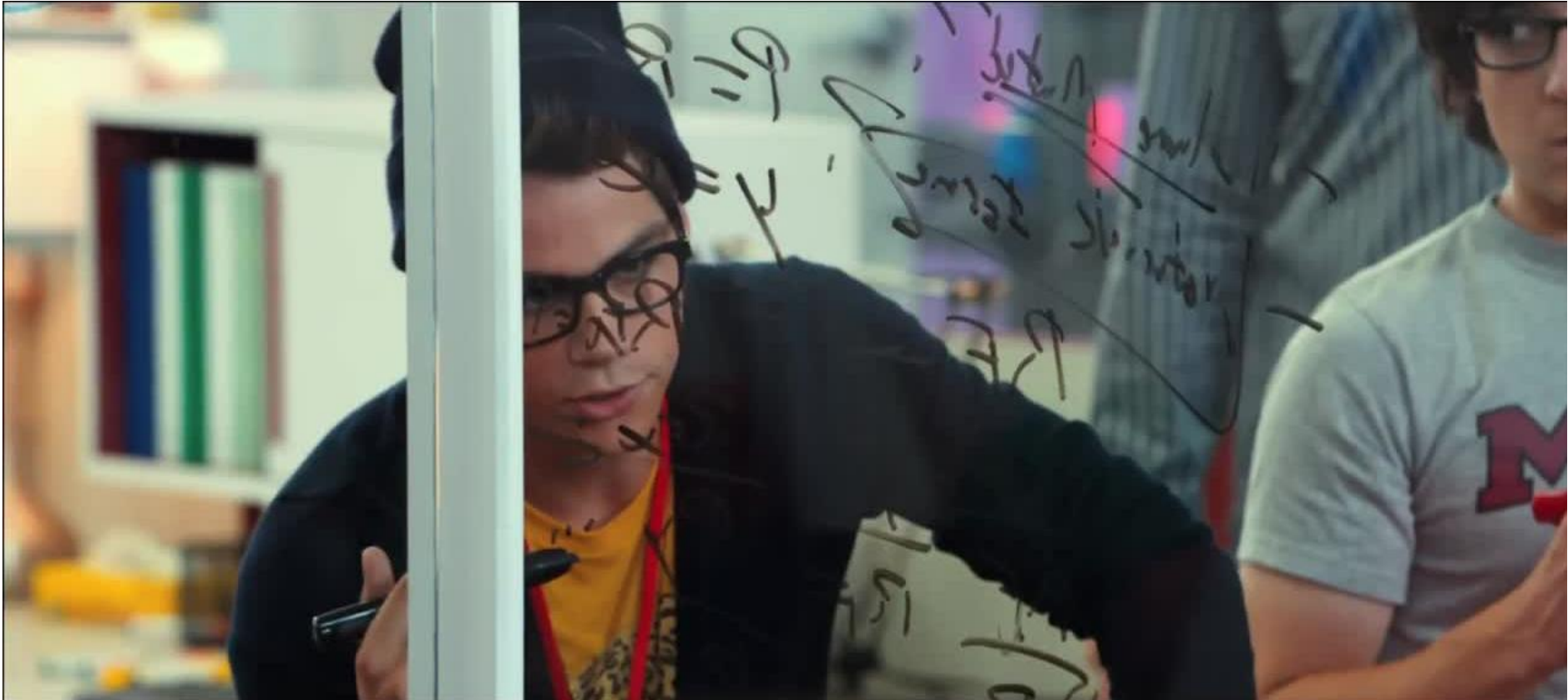
- If provided, use the Program Header to locate the Author of the Code.
- No guarantee developer still works for the company.

```
/* ***** */
/* Name: GET_CASE_MASTER.SAS */
/* Date: 08/12/22 */
/* Authors: JI */
/* */
/*-----*/
/* Maintained By: JI */
/*-----*/
/* Purpose: */
/* */
/* Downloads Case Master file from */
/* AWS bucket into a text file */
/* */
/* Imports text file and converts */
/* to permanent SAS data set */
/* */
/* Excludes records from */
/* SAS data set. */
/* */
/*-----*/
/* Input Files: AWS Text File */
/*-----*/
```



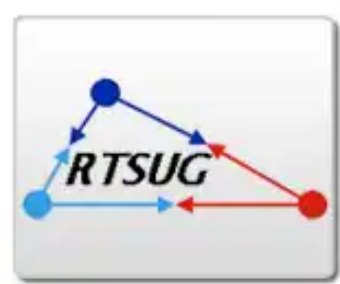


Format the code



'Format the Code'



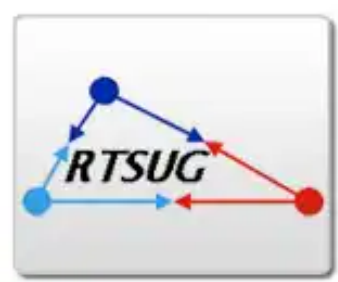


Format the code (con't)

Enterprise Guide
has a nice feature to
format the code;

insert line spaces,
and apply
indentation.

```
1 *****
2 *CHANGE IF NEEDED;
3 %let username=&Sysuserid; /*update with username*/
4 %let Monvalue=2; *Monday value should be 2 if there's no holiday, if Monday is
5 %let Tuesvalue=3; *Tuesday value should be 3 if there's no holiday, if Monday is
6
7 *Special Reports;*CHANGE IF NEEDED;
8 %let specialreport=0; *1 means to output a special report for Dr. Hogan, otherw
9 %let deathdaterange_SR='02NOV2020'd; *date range of death for the special repor
10
11 *Monthly Congregate and Death Reports;*C
12 %let MonCongregateReport=0; *1 means to
13 %let Monthlyreport=0; *1 means to output
14 %let deathdaterange_MR='31May2022'd; *da
15 *****
16
17 *****
18 *AUTO date and day preparation;
19 %let todate=%sysfunc(today(), MMDDYYN6.);
20 %let outputpath=C:\Users\&username\One
21 %let outputpath=C:\Users\&username\State
22 %let outputpath=C:\Users\&username\Doc
23 %let month= %sysfunc(putn(%sysfunc(month
24 %let day= %sysfunc(putn(%sysfunc(day(%sy
25 %let wkday=%sysfunc(weekday(%sysfunc(too
26
27 *check log to see if the path, month, da
28 %put &outputpath;
29 %put &month;
30 %put &day;
31 %put &wkday;
32 *****
33
34 %libname STATFMTS "C:\Users\&username\OneDrive - State of Rhode Island\TDI\Share
```

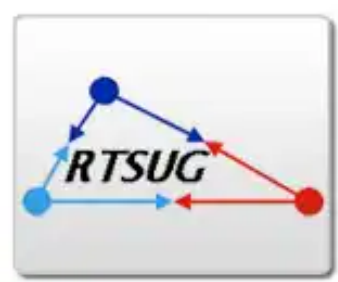



Test run the code



'Find the Bug'





Test Run the code (con't)

Test running
the code
entails
searching for
errors and
warnings

```
SAS - [Log - (Untitled)]
File Edit View Tools Solutions Window Help

NOTE: Copyright (c) 2016 by SAS Institute Inc., Cary, NC, USA.
NOTE: SAS (r) Proprietary Software 9.4 (TS1M7 MBCS3170)
      Licensed to RI DEPT OF HEALTH, Site 70250673.
NOTE: This session is executing on the X64_10HOME platform.

NOTE: Analytical products:
      SAS/STAT 15.2

NOTE: Additional host information:
      X64_10HOME WIN 10.0.19041 Workstation

NOTE: SAS initialization used:
      real time      5.01 seconds
      cpu time       4.49 seconds

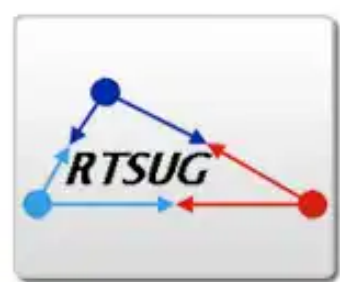
1  Proc Import Datafile='C:\Users\Owner\Documents\SAS
1  ! Files\Mathematica Exercise\HOSPITAL_SAFETY_Dæxercise.xlsx'
2      Out=Hosp_Safety
3      DBMS=XLSX
4      REPLACE;
5      SHEET='HOSPITAL_SAFETY';
6      GETNAMES=YES;
7  Run;

NOTE: Variable Name Change. HOSP.ID -> HOSP_ID
NOTE: One or more variables were converted because the data type is not supported by the V9
      engine. For more details, run with options MSGLEVEL=1.
NOTE: The import data set has 3263 observations and 18 variables.
NOTE: WORK.HOSP_SAFETY data set was successfully created.
NOTE: PROCEDURE IMPORT used (Total process time):
      real time      2.18 seconds
      cpu time       1.03 seconds

8
9  Proc Import Datafile='C:\Users\Owner\Documents\SAS
9  ! Files\Mathematica Exercise\HOSPITAL_SAFETY_Dæxercise.xlsx'
```

WARNING: No occurrences of "ERROR" found.



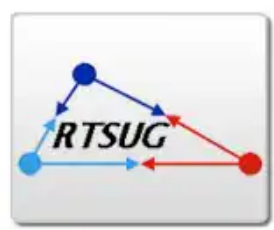


Save your log (con't)

Log saving methods

- Manually save the Log using FILE menu
 - Tedious
- PROC PRINTTO
 - Automated Log Saving.
 - Color-coded Log not accessible.
- Display Manager (DM) Command
 - `DM `Log;File "C:\Projects\SAS Files\SAS Logs\ETL_Process1.log";`





Modify the code

```
FILENAME MEDCOND "C:\SAS\SAS Temporary Files\ medical_cond_tables.txt";
```

```
/*STEP 1 */
```

```
Proc S3 Config="C:\Users\OneDrive-DHHS\DataLayer\Cred\tks3.conf";  
  Get "/cdc-corefiles-datalayer-dataanalytics/medcond_tables.txt"  
      "C:\SAS\SAS Temporary Files\medcond_tables.txt";
```

```
Run;
```

```
/*STEP 2 */
```

```
Proc Import Datafile=MEDCOND  
  Out=Medical_Conditions  
  Dbms=DLM  
  REPLACE;  
  Delimiter=TAB;  
  Getnames=YES;  
  Datarow=2;
```

```
Run;
```

```
/*STEP 3 */
```

```
Data Medical_Conditions2;  
  Set Medical_Conditions;  
  If Person_ID="IJKLMNOP54231534" then delete;
```

```
Run;
```

```
/*STEP 4 */
```

```
Data Medical_Conditions;  
  Set Medical_Conditions2;  
run;
```

```
/*STEP 5 */
```

```
Proc Datasets library=work;  
  Delete Medical_Conditions2;  
run;
```

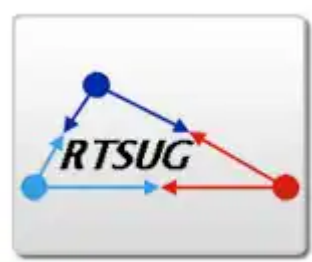
```
/*STEP 6 */
```

```
Proc Freq data = Medical_Conditions;  
  Tables file_update_date / nocum nopercnt;  
run;
```

The above code runs without errors and warnings.

Hence it runs 'Okay'.



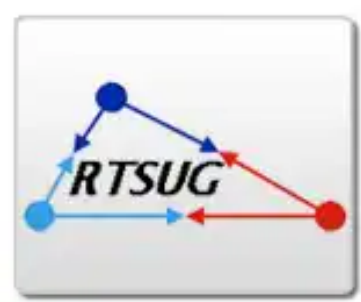


Modify the code

Okay isn't great!

Okay isn't fantastic!





Modify the Code

```
FILENAME MEDCOND "C:\SAS\SAS Temporary Files\medical_cond_tables.txt";
```

```
Proc S3 Config="C:\Users\OneDrive-DHHS\DataLayer\Cred\tks3.conf";  
  Get "/cdc-corefiles-datalayer-dataanalytics/medical_cond_tables.txt"  
      "C:\SAS\SAS Temporary Files\medical_cond_tables.txt";
```

```
Run;
```

```
Proc Import Datafile=MEDCOND  
  Out=Medical_Conditions  
  Dbms=DLM  
  REPLACE;  
  Delimiter=TAB;  
  Getnames=YES;  
  Datarow=2;
```

```
Run;
```

```
Proc Sql;  
  Delete from Medical_Conditions  
  Where Person_ID="IJKLMNOP54231534";
```

```
Quit;
```

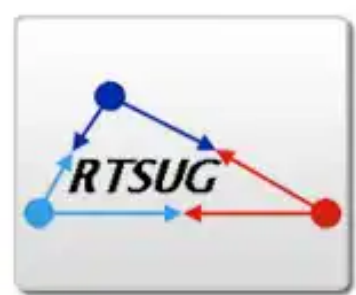
```
Proc Freq data = Medical_Conditions;  
  Tables file_update_date / nocum nopercnt;
```

```
Run;
```

4 steps instead of 6

Using PROC SQL DELETE FROM
avoids creating a data set.

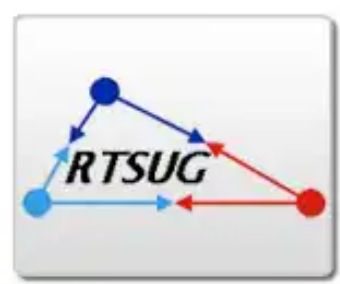
New code is more efficient and
streamlined.



Archive the Code

- When Code is retired it will need to be stored in an archive.
- Code is archived when
 - a project is completed or finished.
 - new modernized code replaces old code.
 - New development languages replaces SAS, Python, etc.

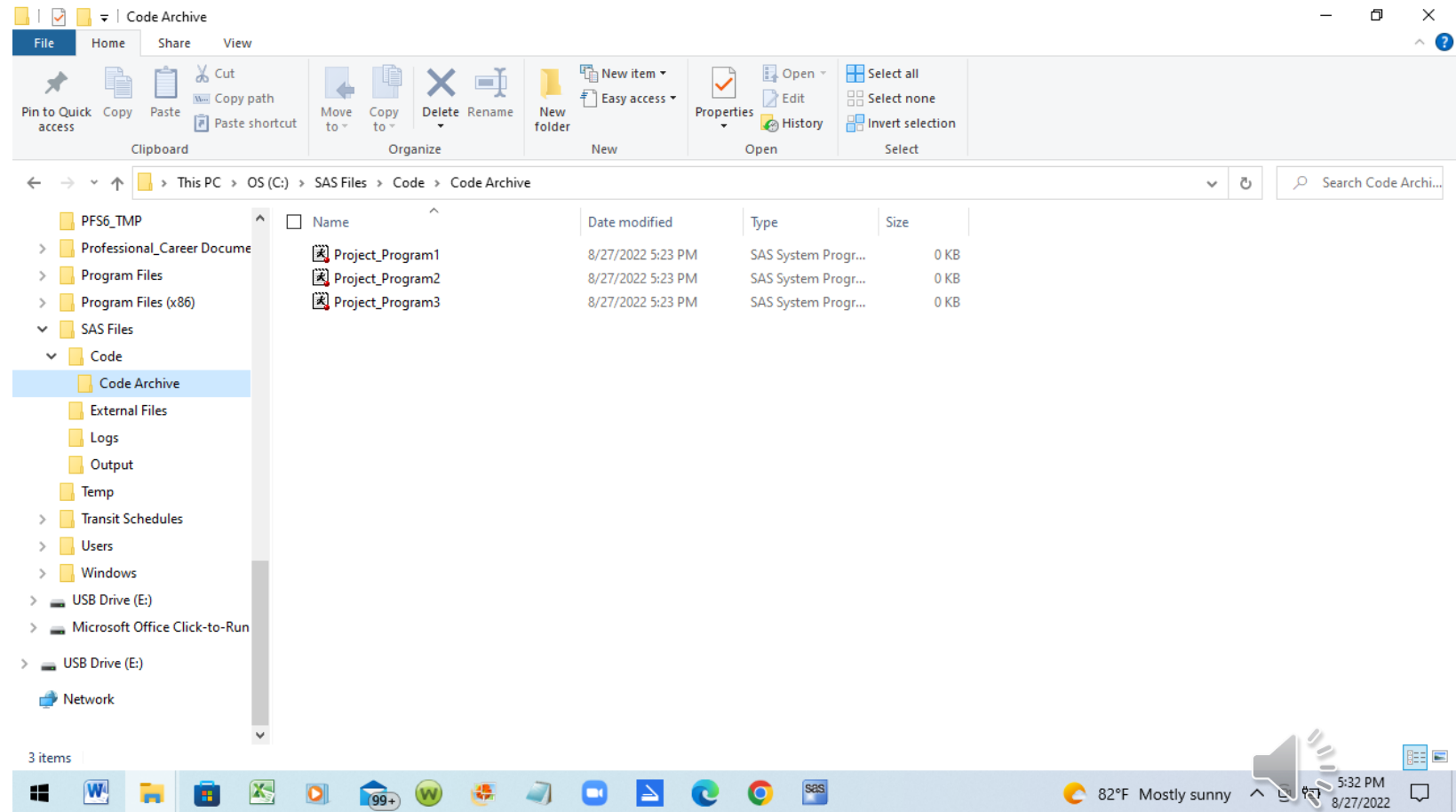


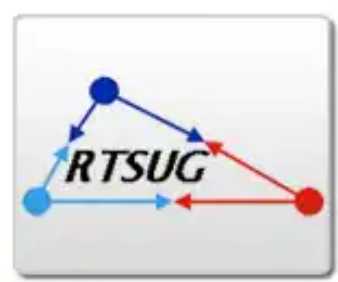


Archive the Code (con't)

Simple method to archive code involves creating code archive folder under project root directory

Code Archive is nested within Code Folder

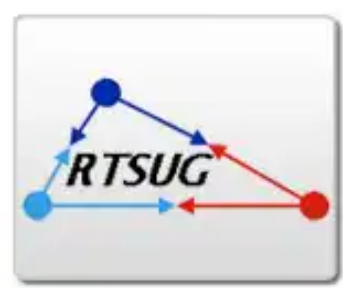




Conclusion

- Contract work demands that programmers hit the ground running and get up to speed quickly in high-pressure environments.
- The nature of contract SAS work is to work with existing SAS processes, not to reinvent the wheel.
- SAS consultants and contractors will need to perform a variety of tasks with legacy code, from updating and modifying to archiving the code.





Contact Information

Thanks for Attending!

Questions?

Jay Iyengar, Director

Data Systems Consultants LLC

<https://www.linkedin.com/in/datasysconsult/>

datasyscon@gmail.com

