

APAC 2026

Want to be SASsy?
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Instant Bar Graphs with PROC SQL

Stars to bars

```
proc sql;
  select sex, '|', count(*) as Count,
  repeat('*',count(*)-1) as Bar
  from sashelp.class
  group by sex
  order by Count desc;
quit;
```

Sex		Count	Bar
M		10	*****
F		9	*****

```
proc sql;
  select age, '|', count(*) as Count,
  repeat('*',count(*)-1) as Bar
  from sashelp.class
  group by age
  order by Count desc;
quit;
```

Age		Count	Bar
12		5	*****
15		4	****
14		4	****
13		3	***
11		2	**
16		1	*



*Note: More information about `method` in the paper

```
sqxupd
  sqxfil
    sqxsrc( WORK.CHK(alias = C) )
```

```

--SUPD---|
|-FIL----|
|         |
|         | /-OBJ----|
|         | \-SYM-U-(age:3 flag=00000031)
|         |
|         | /-SYM-R-(#RID_PTR:1 flag=00040001)
|         | /-OBJ----|
|         | \-SYM-V-(c.Age:3 flag=00040001)
|         |
| --SRC----|
|         | --TABL[WORK].chk opt=' '
|         |         /-NAME--(Name:1)
|         | \-CEQ-----|
|         |         \-LITC('Alfred')
|         |
| --empty-|
| --empty-|
| --empty-|
| --empty-|
|         | /-ASGN---|
|         | \-SYM-U-(age:3 flag=00000031)
|         |         /-SYM-V-(c.Age:3)
|         |         \-AADD---|
|         |         \-LITN(1)
|         |
| \-OBJE---|

```



Numeric decoding

- **SQLRC:** Contains the following status values that indicate the success of the SQL procedure statement:
 - ❑ **0** PROC SQL statement completed successfully with no errors.
 - ❑ **4** PROC SQL statement encountered a situation for which it issued a warning. The statement continued to execute.
 - ❑ **8** PROC SQL statement encountered an error. The statement stopped execution at this point.
 - ❑ **12** PROC SQL statement encountered an internal error, indicating a bug in PROC SQL that should be reported to SAS Institute. These errors can occur only during compile time.
 - ❑ **16** PROC SQL statement encountered a user error. This error code is used, for example, when a sub query (that can only return a single value) evaluates to more than one row. These errors can only be detected during run time.
 - ❑ **24** PROC SQL statement encountered a system error. This error is used, for example, if the system cannot write to a PROC SQL table because the disk is full. These errors can occur only during run time.
 - ❑ **28** PROC SQL statement encountered an internal error, indicating a bug in PROC SQL that should be reported to SAS Institute. These errors can occur only during run time.
- **SQLLOOPS:** Contains the number of iterations that the inner loop of PROC SQL executes. The number of iterations increases proportionally with the complexity of the query.
- **SQLXRC:** Contains the DBMS-specific return code that is returned by the Pass-Through Facility.
 - **SQLXMSG:** Contains descriptive information and the DBMS-specific return code for the error that is returned by the Pass-Through Facility.



Guard rails against errors

Change the defaults and update the logs

```
/* Example with INVALIDDATA option */
options invaliddata=A;*invaliddata=.*/* Assign A to invalid numeric data */

data test;                                DKRICOND used for input DROP, KEEP and RENAME
    input name $ age;                     DKROCOND used for output DROP, KEEP and RENAME
    datalines;                           Values: error, warn, nowarn
John 25
Jane ABC /* Invalid numeric - will be set to A */
Bob 30
;
run;
options dkricond=error; /* Generate error for non-existent variables */

data new_test;
    set test(drop=weight); /* 'weight' doesn't exist in test dataset */
run;
```



Guard rails against errors

Magnifying glass

```
OPTIONS DATASTMTCHK=ALLKEYWORDS;  
  
DATA species  
    INFILE 'bugspecies.dat';  
    INPUT Order $ 1-15 InNorthAmerica  
    OutsideNorthAmerica;  
RUN;
```

Before:

ERROR: No DATALINES or INFILE statement.

ERROR: Extension for physical file name "bugspecies.dat" does not correspond to a valid member type.

NOTE: The SAS System stopped processing this step because of errors.

WARNING: The data set WORK.SPECIES may be incomplete. When this step was stopped there were 0 observations and 3 variables.

WARNING: The data set WORK.INFILE may be incomplete. When this step was stopped there were 0 observations and 3 variables.

After:

```
71 DATA species  
72 INFILE 'bugspecies.dat';
```

57

ERROR 57-185: INFILE is not allowed in the DATA statement when option DATASTMTCHK=ALLKEYWORDS. Check for a missing semicolon in the DATA statement, or use DATASTMTCHK=NONE.



Guard rails against errors

Stop look proceed

```
data _null_;  
    /* Create an error by referencing a  
non-existent dataset */  
    set non_existent_ds;  
    newvar = height + 10;  
run;  
  
/* Check for errors */  
%if &syserr ne 0 %then %do;  
    %put ERROR: An error occurred  
during the data step. &syserrortext;  
%end;
```

```
options errorabend; /* Set the system  
option */
```

```
data test;  
/* Create an error by referencing a non-  
existent dataset */  
    set non_existent_ds;  
    newvar = height + 10;  
    run; /* This will stop execution due  
to the error */
```



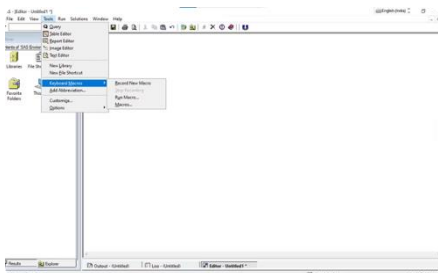
Guard rails against errors

Handle the error your way

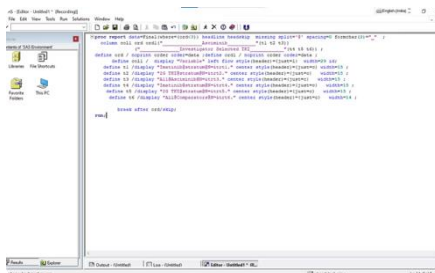
```
%macro explore(inputdata=, var=);  
    %if %length(&inputdata) = 0 %then %do;  
        %put ERROR: INPUTDATA= must be specified; %abort cancel;  
    %end;  
    /* Proceed with the rest of the macro */  
    data test;  
        set &inputdata.;  
        result = &var. / 0; /* Intentionally create an error */ /* Division by zero */  
        if _error_ then do; /* Check for error and take action */  
            put "ERROR detected for observation " _n_ ": " name=;  
            _error_ = 0; /* Reset error flag to continue processing */  
            result = .; /* Set to missing value */  
        end;  
    run;  
%mend;
```



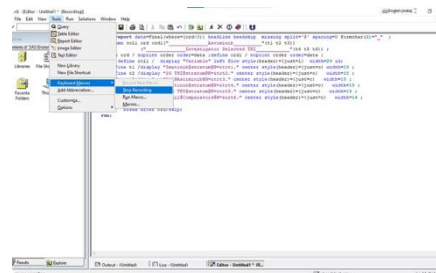
Beyond Visuals & Errors



Start recording



Create template



End recording

Keyboard Macro

Keyboard macro name:

heck

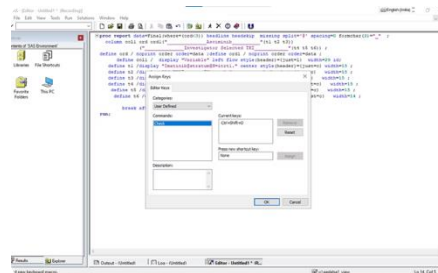
Keyboard macro description:

OK

Cancel

Assign keys...

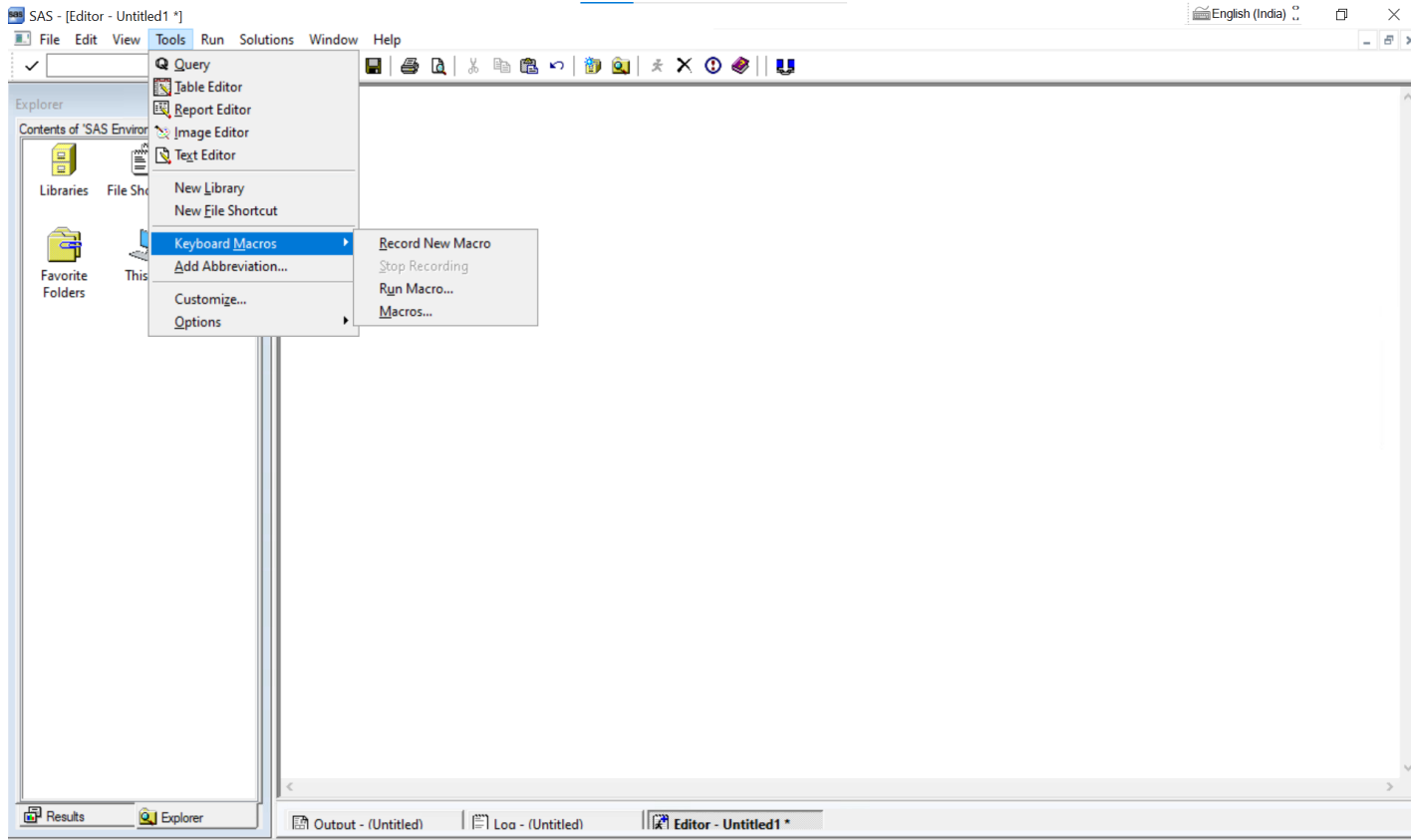
Name your template



Give a shortcut



Beyond Visuals & Errors





Beyond Visuals & Errors

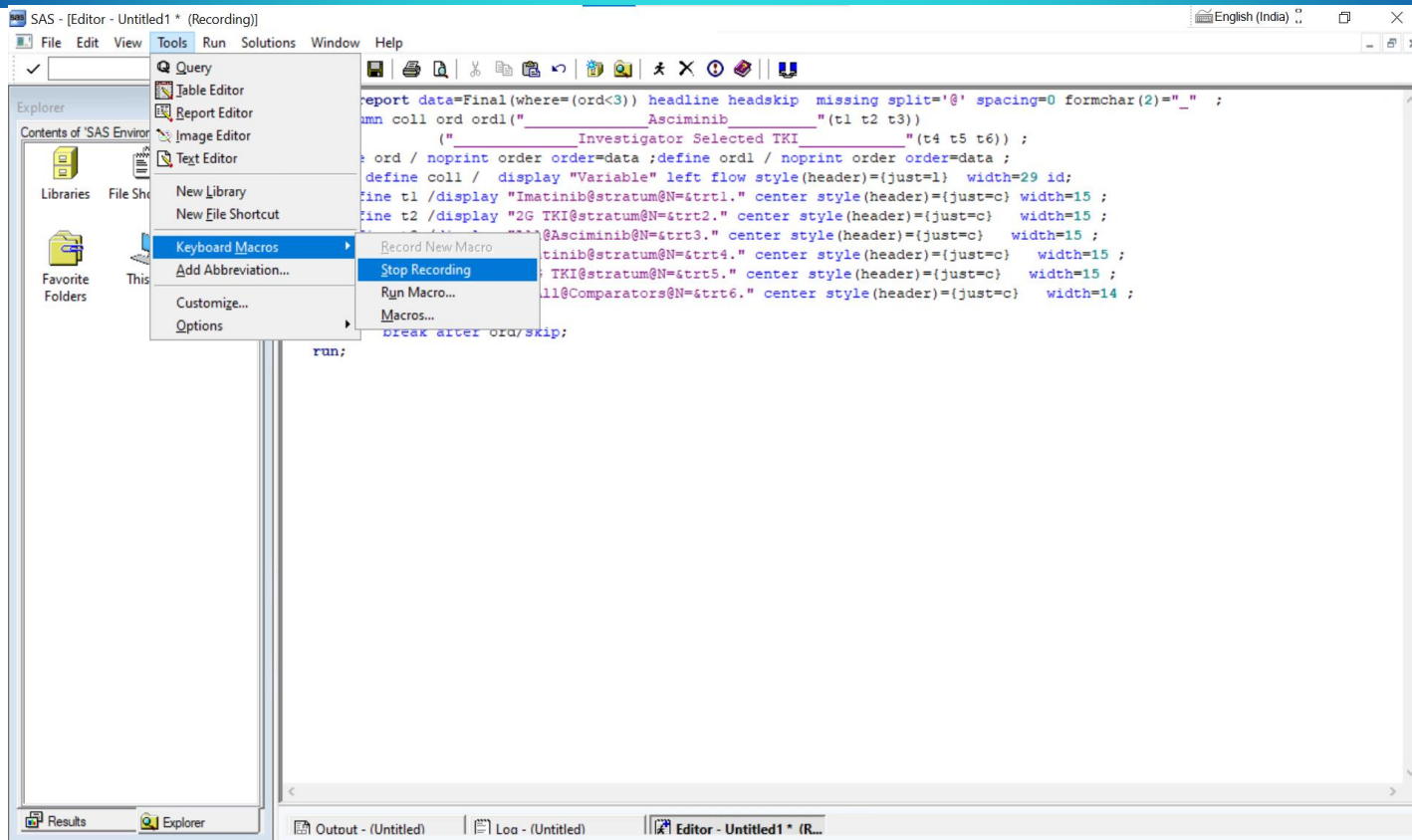
```
proc report data=Final(where=(ord<3)) headline headsip missing split='@' spacing=0 formchar(2)="_" ;
  column coll ord ord1("_____Asciminib" (t1 t2 t3))
    ("_____Investigator Selected TKI" (t4 t5 t6)) ;
  define ord / noprint order order=data ;define ord1 / noprint order order=data ;
    define coll / display "Variable" left flow style(header)={just=l} width=29 id;
  define t1 /display "Imatinib@stratum@N=&trt1." center style(header)={just=c} width=15 ;
  define t2 /display "2G TKI@stratum@N=&trt2." center style(header)={just=c} width=15 ;
  define t3 /display "All@Asciminib@N=&trt3." center style(header)={just=c} width=15 ;
  define t4 /display "Imatinib@stratum@N=&trt4." center style(header)={just=c} width=15 ;
  define t5 /display "2G TKI@stratum@N=&trt5." center style(header)={just=c} width=15 ;
  define t6 /display "All@Comparators@N=&trt6." center style(header)={just=c} width=14 ;

  break after ord/skip;

run;
```



Beyond Visuals & Errors





Beyond Visuals & Errors

A screenshot of a "Save Keyboard Macro" dialog box. The dialog has a title bar with the text "Save Keyboard Macro" and a close button (X) in the top right corner. The main area contains two text input fields. The first field is labeled "Keyboard macro name:" and contains the text "Check". The second field is labeled "Keyboard macro description:" and is currently empty. To the right of the first field are three buttons: "OK", "Cancel", and "Assign keys...". The "OK" button is highlighted with a blue border.

Save Keyboard Macro

Keyboard macro name:

Check

Keyboard macro description:

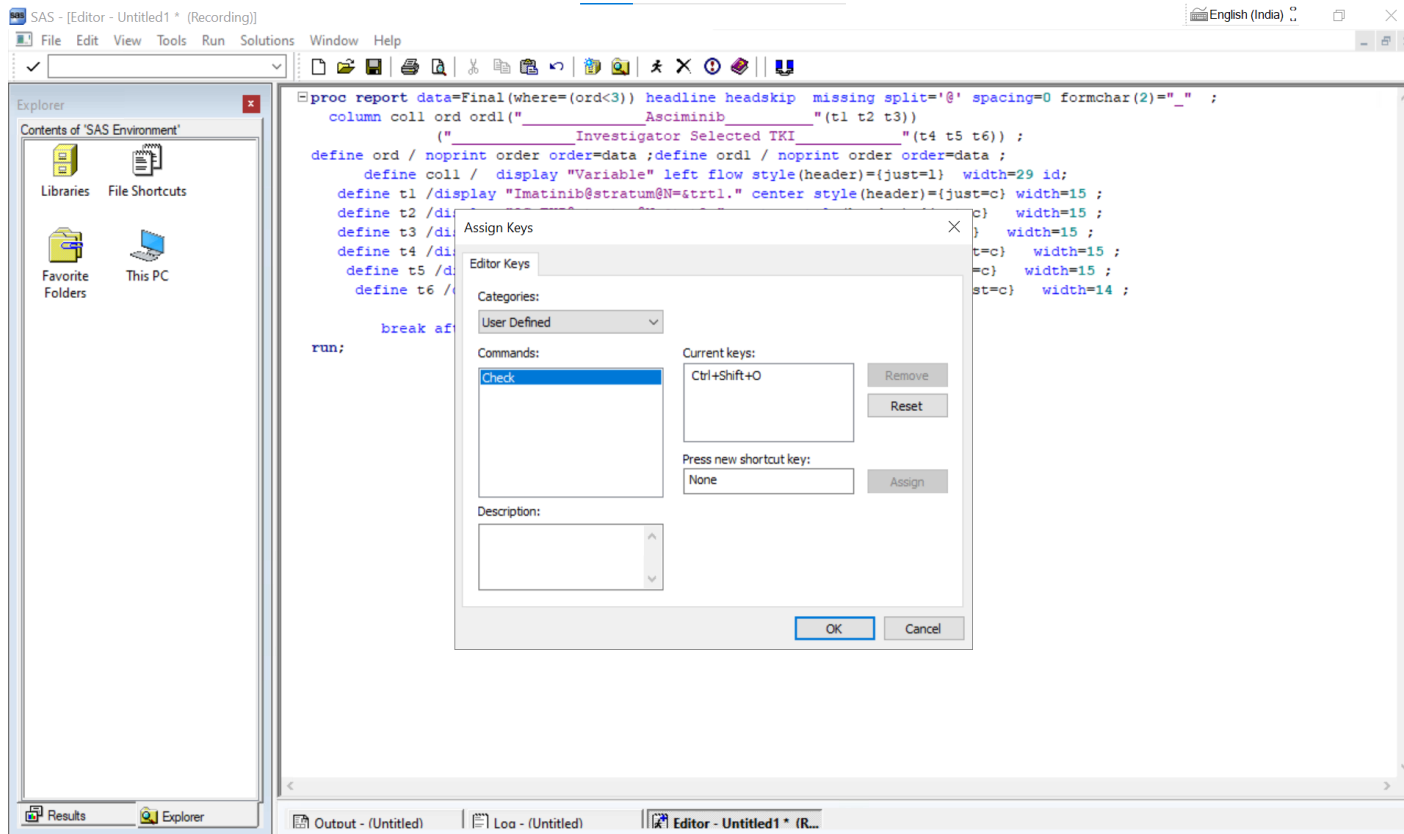
OK

Cancel

Assign keys...



Beyond Visuals & Errors





References

- https://www.lexjansen.com/wuss/2016/168_Final_Paper_PDF.pdf
- <https://www.sfu.ca/sasdoc/sashtml/lrcon/z0993436.htm>
- <https://support.sas.com/resources/papers/proceedings/proceedings/sugi30/101-30.pdf>
- <https://communities.sas.com/t5/SAS-Programming/Error-Handling-in-a-construct-like-try-catch/td-p/539151>
- **Thank you Anik Chatterjee, for helping me with a few topics.**

Thank you!



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