

What's New in BASE SAS[®] 9.2

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What's New in BASE SAS 9.2

- BASE Engine
- DATA Step
- BASE Procedures
- SAS Macro
- XML Engine
- ODS

Base Engine

- Index rebuilds
 - DLDMGACTION=NOINDEX
 - Continue on failure
- Single Signon (AUTHDOMAIN)
- Enhanced Encryption

DATA Step

- Hash Object
 - Support for duplicate key values
 - Find() frequency statistic
- Data set name lists
 - `SET DATA1-DATA10 ;`
 - `SET SALES.JAN: ;`
- Proc FCMP
- Java Object goes production

User Defined Functions

```
options cmplib = work.funcs;
```

```
proc fcmp outlib=work.funcs.math;
```

```
function test(x $) $ 16;
```

```
if x = 'yes' then
```

```
    return('This is Great :');
```

```
else
```

```
    return('Not so Great :');
```

```
endsub;
```

```
Run;
```

```
data _null_;
```

```
    Answer=test('yes');
```

```
    put answer=;
```

```
run;
```

```
Answer=This is Great :)
```

Data Set List

data out;

set a1 a2 a3 a4 a5 a6 a7 a8 a9 a10

a11 a12 a13 a14 a15 a16 a17 a18

a19 a20 a21 a22 a23 a24 a25 a26

a27 a28 a29 a30 a31 a32 a33 a34

a35 a36 a37 a38 a39 a40 a41 a42

a43 a44 a45 a46 a47 a48 a49 a50;

run;

Data Set Lists

```
data out;
```

```
    set a1-a50;
```

```
run;
```

DATA Step JavaObj

- "Compute" methods written in Java
- Call from DATA Step with JavaObj
- Uses dot syntax
- Production in SAS 9.2

DATA Step Functions

- GEODIST
- ZIPCITY/ZIPCITYDISTANCE
- DICTIONARY.FUNCTIONS
- CMISS

DATA Step Functions: GEODIST

GEODIST(*latitude-1, longitude-1, latitude-2, longitude-2*
<,options>)

```
data _null_;
    Livonia
    ↓
    dist=geodist(42.396016,-83.371538,42.256407,-83.680540,'M');
    Ann Arbor
    ↓
    put dist=;
run;
d=18.532935265
```

DATA Step Functions : ZIPCITY/ZIPDISTANCE

```
data _null_;  
    city = zipcity('27513');  
    dist = zipdistance('27513','27514');  
    put city= dist=;  
  
run;  
  
city=Cary, NC dist=16.2
```

sashelp.zipcode
has lat/long

DICTIONARY.FUNCTIONS

```
proc sql;  
    create view listfuncs  
    as select * from dictionary.functions;  
quit;
```

DATA Step Formats/Informats

BASE64 format/informat

- Can read Base64 data with \$BASE64X informat
- Can produce Base64 data with \$BASE64X format

ISO 8601 informats/formats

- Produces ISO 8601 date/time/datetime data
- Ensures input data are compliant

BASE Procedures

- Proc SORT
 - Linguistic collation (NLS/ICU) – language aware ordering
 - PRESORTED option
 - SORTSEQ=<encoding>
- Proc MIGRATE – cross platform support
- Proc CONTENTS ORDER
- PROC APPEND
 - NOWARN when force option used

BASE Procedures-Continued

- Proc DATASETS REBUILD
 - Rebuild indexes/integrity constraints on repaired data sets
- Proc TABULATE
 - Shortcut notation added
- Proc PRINT
 - `SUMLABEL` statement added
- Proc TRANSPOSE
 - multiple ID variables
 - `SUFFIX=`

Proc TABULATE

```
proc tabulate data=one;  
class var1 var2 var3;  
var sales amount;  
table var1-var3, sales amount;  
run;
```

Mode Statistic in Proc REPORT and Proc TABULATE

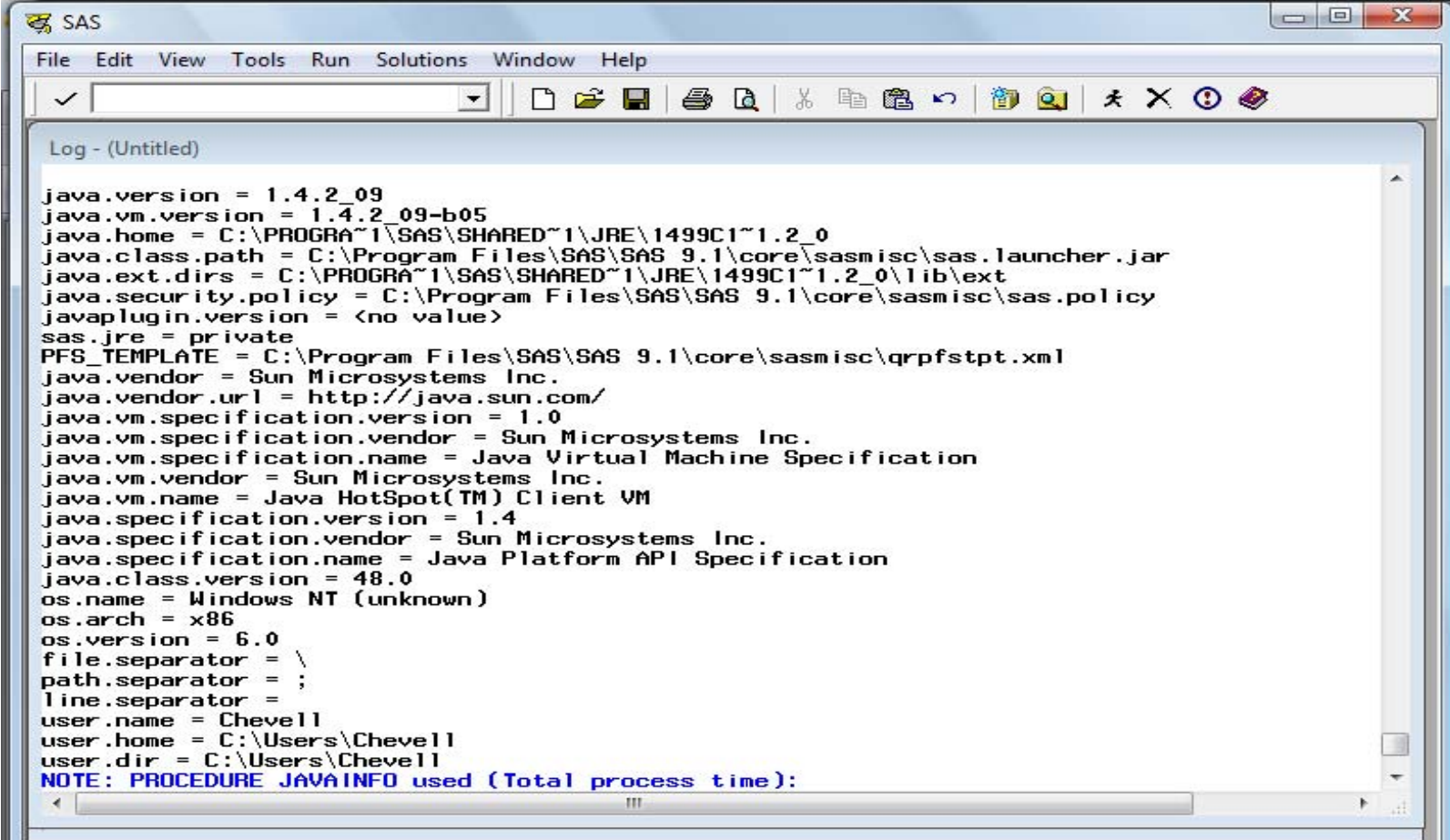
3	7	9	4	5
1	8	9	3	2
4	6	8	2	3

Proc PRINT Sumlabel Option

	1
	2
My Sum Label	3

	4
	5
My Sum Label	9
	12

Proc JAVAINFO



```

SAS
File Edit View Tools Run Solutions Window Help
Log - (Untitled)
java.version = 1.4.2_09
java.vm.version = 1.4.2_09-b05
java.home = C:\PROGRA~1\SAS\SHARED~1\JRE\1499C1~1.2_0
java.class.path = C:\Program Files\SAS\SAS 9.1\core\sasmisc\sas.launcher.jar
java.ext.dirs = C:\PROGRA~1\SAS\SHARED~1\JRE\1499C1~1.2_0\lib\ext
java.security.policy = C:\Program Files\SAS\SAS 9.1\core\sasmisc\sas.policy
javaplugin.version = <no value>
sas.jre = private
PFS_TEMPLATE = C:\Program Files\SAS\SAS 9.1\core\sasmisc\qrpfstpt.xml
java.vendor = Sun Microsystems Inc.
java.vendor.url = http://java.sun.com/
java.vm.specification.version = 1.0
java.vm.specification.vendor = Sun Microsystems Inc.
java.vm.specification.name = Java Virtual Machine Specification
java.vm.vendor = Sun Microsystems Inc.
java.vm.name = Java HotSpot(TM) Client VM
java.specification.version = 1.4
java.specification.vendor = Sun Microsystems Inc.
java.specification.name = Java Platform API Specification
java.class.version = 48.0
os.name = Windows NT (unknown)
os.arch = x86
os.version = 6.0
file.separator = \
path.separator = ;
line.separator =
user.name = Chevelli
user.home = C:\Users\Chevelli
user.dir = C:\Users\Chevelli
NOTE: PROCEDURE JAVAINFO used (Total process time):
  
```

SAS Macro Language

Automatic Macro Variables:

- &SYSENCODING
- &SYSERRORTTEXT
- &SYSHOSTNAME
- &SYSTCPIPHOSTNAME
- &SYSWARNINGTEXT

Macro Options: Secure

`%MACRO XYZ/SECURE STORE;`

- Encrypts the compiled source
 - MPRINT/MLOGIC do not expose the source
 - Allows for intellectual property protection
 - Introduced in 9.1.3SP3

What's New in BASE SAS 9.2

Other

Checkpoint/Restart

- SAS records information about DATA and PROC steps in a checkpoint library
- Global statements and macros are re-executed
- Program execution resumes with the step that did not complete when the failure occurred

SAS Code Analyzer

- Generates metadata about SAS job
- Captures information about the job step, I/O information such as file dependencies and macros
- Automatic Grid Enabled Job Creation

SAS Code Analyzer

```
proc scaproc;  
    record 'record.txt'; run;  
  
data a; do i = 1 to 100000;  
    j = cos(i);  
output; end;  
  
run;  
  
proc means data=a;  
run;  
  
proc scaproc;  
write; run;
```

SAS XML Libname Engine (SXLE)

- Wildcards can be used to read all XML files in a directory
- The new XMLTYPE=XMLMAP can write output according to a map
- Provides the ability to invoke a Web service using XMLTYPE=WSDL
- Enhanced XML Mapper features such as the Automap feature

PROC SOAP (Simple Object Access Protocol)

- Invokes a Web service through Java Native Interface
- Reads XML from a file which contains the SOAPenvelope

PROC XSL

- Applies XSL file to XML Output and Transforms

```
proc xsl in=<xml> xsl=<xsl> out=<output>;  
  
run;
```

ODS Enhancements

- New Destinations and Features
 - ODS Graphics
 - Tagsets.RTF
 - ODS Packages
 - ODS Text=
 - ODS Escapechar
- Enhanced Destinations
 - ODS PDF
 - ODS Document
 - ODS Output
 - PROC TEMPLATE

ODS Graphics

Production in **SAS** 9.2 for over 60 procedures

- **SAS/STAT**, **SAS/ETS**, High Performance Forecasting
- Base (CORR, FREQ, UNIVARIATE)
- **SAS/QC**

ODS PACKAGES

- Opens, adds to, publishes, or closes an ODS Package
- Can be used with an ODS Package statement
- Enables ODS destinations to use the SAS Publishing Framework
- Also has an ODS Package template

ODS TAGSETS.RTF

- More control over the output
- Ability to add tagset options for customized output
- Enhanced ability to control individual cell borders

```
Ods tagsets.RTF file="temp.rtf";  
Proc print data=sashelp.class;Run;  
Ods tagsets.RTF close;
```

... **^{\style [color=blue] nested ^{\sub sub} inline} ...**

*You can **do^{super} nested_{sub} inline styles** in ODS*

Obs	Name	Sex	Age	Height	Weight
1	Alfred	M	14	69.0	112.5
2	Alice	F	13	56.5	84.0
3	Barbara	F	13	65.3	98.0
4	Carol	F	14	62.8	102.5
5	Henry	M	14	63.5	102.5
6	James	M	12	57.3	83.0
7	Jane	F	12	59.8	84.5
8	Janet	F	15	62.5	112.5
9	Jeffrey	M	13	62.5	84.0
10	John	M	12	59.0	99.5
11	Joyce	F	11	51.3	50.5
12	Judy	F	14	64.3	90.0

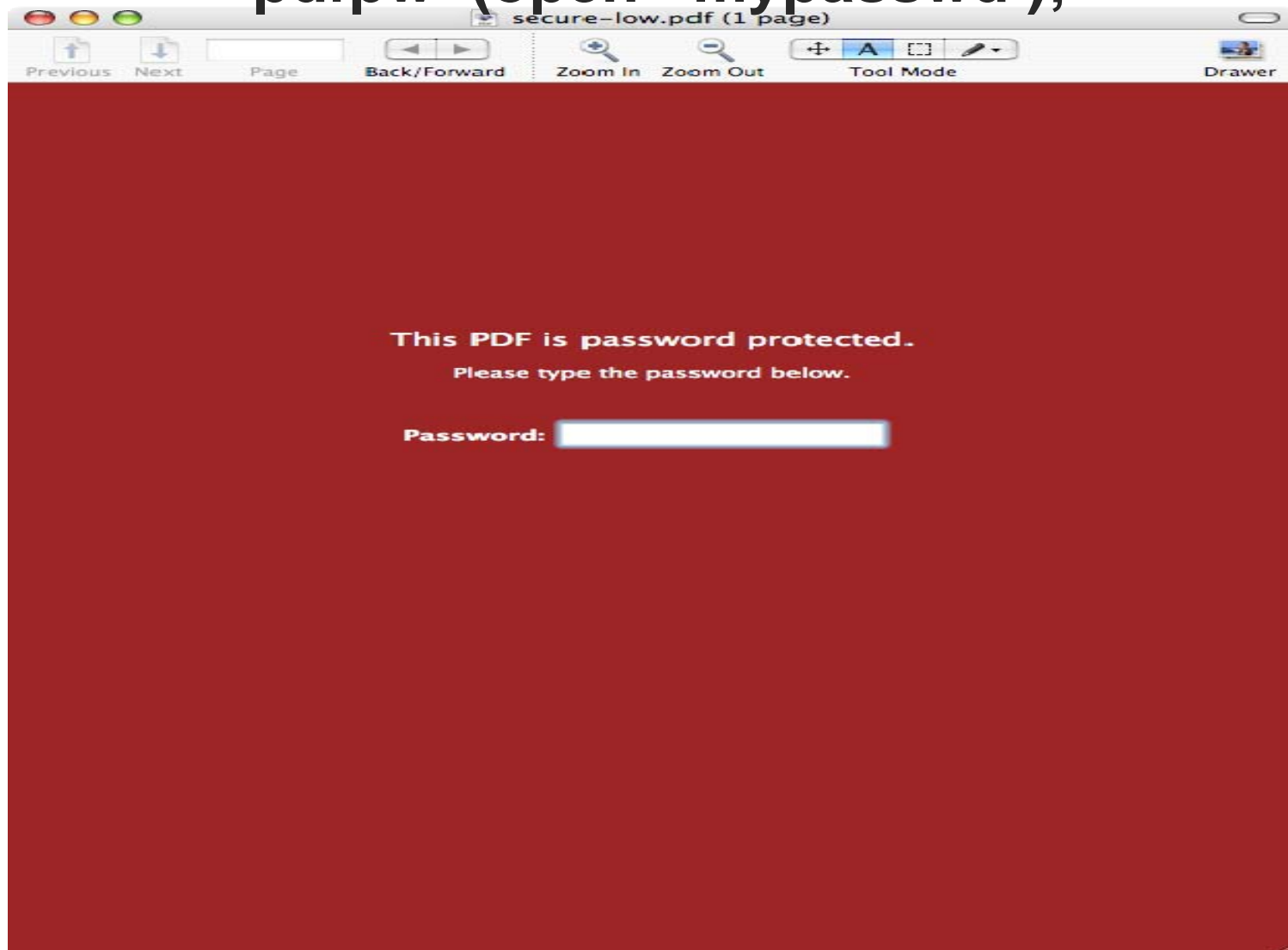
Scalable Vector Graphics (SVG)



ODS PDF

- Added new security feature to PDF
- Provided the ability to control individual cell borders
- Added PDFTOC= option to control the levels of bookmarks displayed
- CSSTYLE= option which allows CSS files

**options pdfsecurity=high
pdfpw=(open='mypasswd');**



Proc Document

- List BYGROUP variables and values
- Display template associated with output object
- WHERE Clause

```
proc print data=sashelp.vdest;
run;
```

The SAS System

13:51 Tuesday, January 30

Obs	destination	style
1	LISTING	Listing
2	HTML(MYHTMLID)	Analysis
3	PDF	Printer

PROC REPORT

The SAS System

SpanRows



Sex	Name	Height	Weight
F	Alice	56.5	84
	Barbara	65.3	98
	Carol	62.8	102.5
	Jane	59.8	84.5
	Janet	62.5	112.5
	Joyce	51.3	50.5
	Judy	64.3	90
	Louise	56.3	77
	Mary	66.5	112
M	Alfred	69	112.5
	Henry	63.5	102.5
	James	57.3	83
	Jeffrey	62.5	84
	John	59	99.5
	Philip	72	150
	Robert	64.8	128
	Ronald	67	133
	Thomas	57.5	85
William	66.5	112	

Proc Freq Crosstabs Template

- Numerical Formats
- Change or Remove Headers
- Styles
- Change or Remove Legend
- Cell Stacking Order

City Government Form	Number of Citizens Robbed						Total
	?	Not Known	100 or Less	101-200	201-300	Over 300	
?	0	0	0	1	0	0	.
Not Applicable	0	10	0	0	0	0	.
Council Manager	0	0	47	63	49	52	211
	.	.	12.30	16.49	12.83	13.61	55.24
	.	.	22.27	29.86	23.22	24.64	.
	.	.	55.95	58.88	62.03	46.43	.
Commission	0	0	6	7	3	5	21
	.	.	1.57	1.83	0.79	1.31	5.50
	.	.	28.57	33.33	14.29	23.81	.
	.	.	7.14	6.54	3.80	4.46	.
Mayor Council	1	0	31	37	27	55	150
	.	.	8.12	9.69	7.07	14.40	39.27
	.	.	20.67	24.67	18.00	36.67	.
	.	.	36.90	34.58	34.18	49.11	.
Total	.	.	84	107	79	112	382
	.	.	21.99	28.01	20.68	29.32	100.00

Frequency Missing = 12

SAS/GRAPH

- New 256 color support
- Default styles applied
- New PROCS – GKPI (generates KPIs), GTILE (display charts using JAVA, ActiveX)
- New STAT Graphics PROCS - SGRENDER, SGPLOT, SGSCATTER, SGPANEL

Resources

“BASE/SAS What’s New”

<http://support.sas.com/rnd/base/new92/index.html#new92>

“A Sampler of What’s New in Base SAS”

<http://support.sas.com/rnd/base/datastep/whats-new-base-sas92.pdf>



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