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

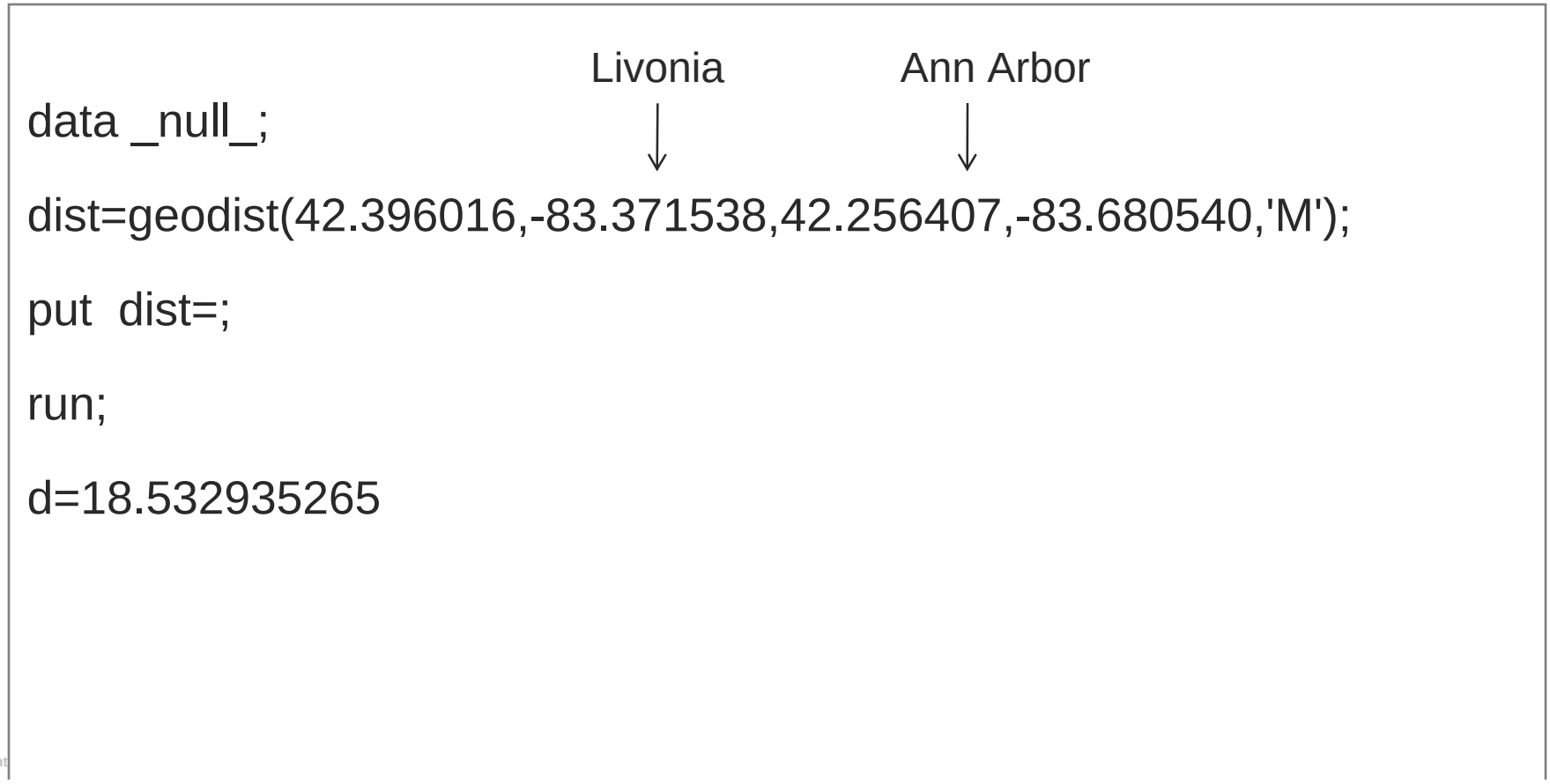
- "Compute" methods written in Java
- Call from DATA Step with JavaObj
- Uses dot syntax
- Production in SAS 9.2

DATA Step Functions

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

DATA Step Functions: GEODIST

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



DATA 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

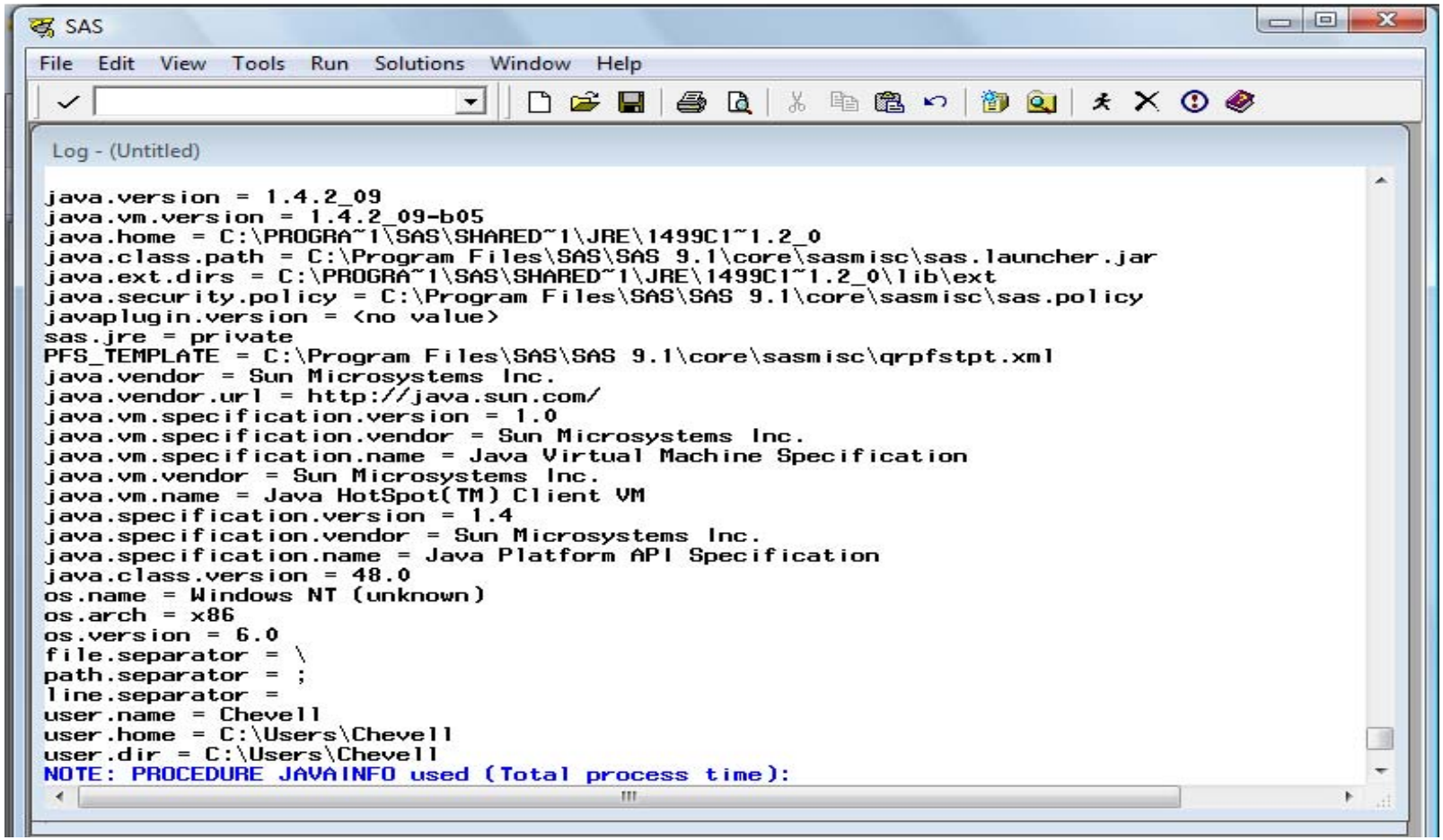
4 6 8 2 3

Proc PRINT Sumlabel Option

	1
	2
My Sum Label	3

	4
	5
My Sum Label	9
	12

Proc JAVAINFO



SAS Macro Language

Automatic Macro Variables:

- &SYSENCODING
- &SYSERRORTEXT
- &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 Ouptut 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

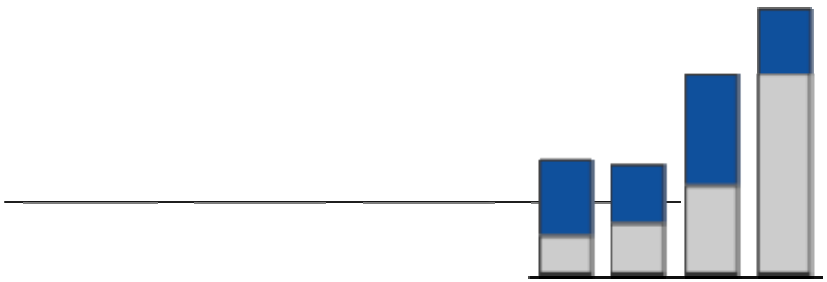
```
Ods tagsets.RTF file="temp.rtf";

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 3(

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

PROC REPORT

SpanRows

The SAS System

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						
	?	Not Known	100 or Less	101-200	201-300	Over 300	Total
?	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