Introduction

Unix offers 'Source Code Control' utilities which provide the ability to easily control document files & source code.

It effectively creates a pseudo 'database' for each source file which then allows :

- Full version history (allowing access to prev versions)
- Amendments history (who/when/why file amended)
- Development control (who is currently editing file)

The 4 main SCCS commands that we will be using are discussed briefly later on, namely:

- admin
- get
- delta
- unget

Note, only the basic options are discussed and that there are other SCCS utilities – see man pages for more information.

SCCS Files

File prefixes used by SCCS are :

s. source control file (source with version history)
p. control file – file being edited

Our SCCS Directory Structure

We have created a directory structure for SCCS files, which is as follows :

```
/u1/SCCS/
        |
        |
        |---------- sh        # Shell scripts
        |
        |---------- ace       # Ace Reports – '.ace' files
        |
        |---------- sql       # SQL scripts
        |
        |---------- 4gl       # 4gl (made up of program sub-directories)
```

The 4gl directory is further split into sub-directories, 1 per program, which contains the source code/make files/help files/perform screens that go to make up that program.

e.g. /u1/SCCS/4gl/mcs_002 # program directory for program 'mcs_002'
Files below…
/u1/SCCS/4gl/mcs_002/s.make.mcs_002
/u1/SCCS/4gl/mcs_002/s.mcs_002.4gl
/u1/SCCS/4gl/mcs_002/s.mcs_002 _1.per
/u1/SCCS/4gl/mcs_002/s.mcs_002_2.per
/u1/SCCS/4gl/mcs_002/s.mcs_002hlp.src

Our SCCS Standards

Our SCCS site standards, are that the source files must begin with the following 'comments' :

Script name
Author name
SCCS keywords (for version & date amended)
Description

Sample header for a make-file - file name format is 'make.xxxx' where 'xxxx' is the program name

```
#====================================================================
# Make File  :    make.mcs_003
# Author       :  Gary Pigott
# SCCS         :  %I% %G%
# Description:
# Standard make file for program mcs_003.
#====================================================================
```

%I% and %G% keywords are replaced with the version number and date amended when you use 'get –r'

Sample header for Shell scripts of similar format.

Sample header for ACE Report

```
{====================================================================
ACE Report:       mrs_001.ace
 Author          :       Gary Pigott
 SCCS            : %I% %G%
 Description:
 Ace report to produce a transaction report for the input LBM HB data supplied to PHA.

Input Params:       no parameters

Output File:          mrs_001.prt
====================================================================}
```

Sample headers for SQL & 4GL similar layout.

The intention is that no site-written source code (other than shell scripts) will be held outside of SCCS. So in $BASE/site we will only have compiled code ('.arc' files etc).

Shell scripts are interpreted and so 'read' executable versions will need to be held outside of SCCS (use 'get –r', and 'chmod +x').

The 'admin' Command

Used to create a new SCCS file. Basic format :

admin -i*<filename>* -fi [-r*<version>*] *<destination filename>*

Where, the flags have the following meaning

-i <filename>	specify input (source) file
-fi	treat 'no id' keywords as a fatal error (ensures that source file contains %I% and %G% keywords)
-r <version>	default version is 1.1

The destination filename is the full pathname (including the 's.' prefix) of the SCCS target file.

e.g. admin –imhg003.4gl –fi –r1 /u1/SCCS/4gl/mcs_003/s.mcs_003.4gl
the destination directory must exist

the source file is not removed by the admin command,
and therefore must be deleted after the admin command

The 'get' Command

Used to retrieve SCCS files – source code – either for reading or editing. Basic format :

get [-e] [-r*<version>*] *<SCCS filename>*

Where, the optional '-e' & '-r' flags have the following meaning

-e	retrieve for editing (creates 'p.' control file)
-r <version>	specify the version you wish to retrieve (defaults to latest)
	the '-r' option is intended to give you a snapshot of the file that you can use for printing, compilation, etc; although this is NOT recommended!

The SCCS filename is the full pathname (including the 's.' prefix) of the SCCS file, and is output to the current working directory.

e.g. get –e /u1/SCCS/4gl/mcs_003/s.mcs_003.4gl

get /u1/SCCS/ace/s.mrs_001.ace # retrieve source code in Read-only mode
file permissions '444'

get –r1.1 /u1/SCCS/sh/s.mhg003_data.sh # retrieve source code version 1.1 in Read-only mode

The 'delta' Command

Used to update SCCS files with any source code amendments. Basic format :

delta *<destination filename>*

The destination filename is the full pathname (including the 's.' prefix) of the SCCS target file. The delta command removes the source file.

You will be prompted with 'comments?' – to provide the ability to annotate the reason for the amendment.

e.g. # have amended program mcs_003.4gl (see get example above)
delta /u1/SCCS/4gl/s.mhg003.4gl
comments?
…provide full details of changes/amendments, which can be spilt over multiple lines, terminated with [Ctrl][D]

The 'unget' Command

Cancels a previous 'get –e' for an SCCS file. Basic format :

unget *<SCCS filename>*

The SCCS filename is the full pathname (including the 's.' prefix) of the SCCS file, and is output to the current working directory.

e.g. unget /u1/SCCS/4gl/mhg003/s.mhg003.4gl

More Examples

Consider the following scenarios :

a) New 4gl program 'mcs_099' including make file & forms

mkdir /u1/SCCS/4gl/mcs_099

admin –i make.mcs_099 –fi –r1 /u1/SCCS/4gl/mcs_099/s.make.mcs_099
admin –i mcs_099.4gl –fi –r1 /u1/SCCS/4gl/mcs_099/s.mcs_099.4gl
admin –i mcs_099.per –fi –r1 /u1/SCCS/4gl/mcs_099/s.mcs_099.per
admin –i mcs_099hlp.src –fi –r1 /u1/SCCS/4gl/mcs_099/s.mcs_099hlp.src

rm –i mcs_099* # clear down source files from current working directory

b) New shell script (for use within Inhouse)

admin –i mhg003_data.sh –fi –r1 /u1/SCCS/sh/s.mhg003_data.sh

rm –i mhg003_data.sh

cd $BASE/site # put code in $BASE/site
get /u1/SCCS/sh/s.mhg003_data.sh
chmod +x mhg003_data.sh

c) New ACE Report (for use within Inhouse)

isql lgh –rc mrp_009.ace # assuming it compiles/test runs ok!

admin –i mrp_009.ace –fi –r1 /u1/SCCS/ace/s.mrp_009.ace

rm –i mrp_009.ace
mv –i mrp_009.arc $BASE/site/. # put compiled '.arc' in $BASE/site

Other Useful Commands

Include :

- cdc change the delta (version) comments of the SCCS file
  e.g. cdc –r1.1 /u1/SCCS/sh/s.mhg003_data.sh
  ….comments? "amended in error"
- help on-line help facility for SCCS commands/error code
- prs print formatted information for SCCS file (version history)

  e.g. prs /u1/SCCS/sh/s.mhg003_data.sh
- rmdel remove a delta (version) from SCCS file (usually the latest version)

e.g. rmdel –r1.6 /u1/SCCS/sh/s.mhg003_data.sh

- sact — report on SCCS files being edited
- sccsdif — report differences between 2 versions of an SCCS file

  e.g. sccsdif –r1.1 –r1.5 /u1/SCCS/sh/s.mhg003_data.sh

  sccsdif –r1.1 –r1.5 –pr /u1/SCCS/sh/s.mhg003_data.sh
  # as above, but pipes output through 'pr'

- val — validate SCCS file