Iterative and conditional processing in SAS macro programs

- `mprint` option was used so that SAS log will show code actually generated by macro programs.

```sas
%macro daily;
  proc means data=books.ytdsales(where=(datesold=today())) maxdec=2 sum;
  title "Daily Sales Report for &sysdate";
  class section;
  var salepric;
  run;
  %if &sysday=Friday %then %do;
    proc means data=books.ytdsales
    (where=(today()-6 le datesold le today())) sum maxdec=2;
    title "Weekly Sales Report Week Ending &sysdate";
    class section;
    var salepric;
    run;
  %end;
%mend daily;
```

```sas
%mprint(daily): proc means data=books.ytdsales(where=(datesold=today())) maxdec=2 sum;
%mprint(daily): title "Daily Sales Report for 16JUL03";
%mprint(daily): class section;
```

```sas
%macro makesets;
  data month1 month2 month3 month4 month5 month6
   month7 month8 month9 month10 month11 month12 ;
  set books.ytdsales;
  mosale=month(datesold);
  if mosale=1 then output month1;
  %do i=2 %to 12;
    if mosale=&i then output month&i;
  %end;
  run;
%mend makesets;
```

```sas
%mprint(makesets): data month1 month2 month3 month4 month5 month6
   month7 month8 month9 month10 month11 month12 ;
%mprint(makesets): set books.ytdsales;
%mprint(makesets): mosale=month(datesold);
%mprint(makesets): if mosale=1 then output month1;
%mprint(makesets): if mosale=2 then output month2;
%mprint(makesets): if mosale=3 then output month3;
%mprint(makesets): if mosale=4 then output month4;
%mprint(makesets): if mosale=5 then output month5;
%mprint(makesets): if mosale=6 then output month6;
%mprint(makesets): if mosale=7 then output month7;
%mprint(makesets): if mosale=8 then output month8;
%mprint(makesets): if mosale=9 then output month9;
%mprint(makesets): if mosale=10 then output month10;
%mprint(makesets): if mosale=11 then output month11;
%mprint(makesets): if mosale=12 then output month12;
%mprint(makesets): run;
```
Some useful character functions in SAS

- character functions operate on the values of character variables
- also called string functions

The Compress function: removing selected characters

- `compress` function with single argument removes only blanks
- optional second argument is list of all characters to be removed (enclosed in single or double quotes)

```sas
options linesize = 72 ;
data phonebook ;
  length first last $ 10 ;
  input first last phone $ 21-33 ;
  phone1 = compress(phone) ;
  phone2 = compress(phone, '()-' ) ;
datalines ;
  Kate Cowles (319)354-3684
  Brendan Holly 3193543684
  Mysterious Stranger 515 555 1212
;
proc print data = phonebook ;
run ;
```

SUBSTR: extract a part of a character variable

- arguments
  - character variable
  - which position to start at
  - how many characters to extract
- extracted sections will be padded out with blanks to length of original variable
The concatenation operator: ||

- glues together pieces to make a complete character string

data phonebook;
set phonebook;
area = substr(phone2,1,3);
exchg = substr(phone2,4,3);
rest = substr(phone2,7,4);
phone3 = '(' || area || ')' || exchg || '-' || rest;
run;

proc print data = phonebook;
run;

The SAS System

Obs first last phone phone1 phone2
1 Kate Cowles (319)354-3684 (319)354-3684 3193543684
2 Brendan Holly 3193543684 3193543684 3193543684
3 Mysterious Stranger 515 555 1212 5155551212 5155551212

Obs area exchg rest phone3
1 319 354 3684 (319)354-3684
2 319 354 3684 (319)354-3684
3 515 555 1212 (515)555-1212

Fixed version

data phonebook;
set phonebook;
area = substr(phone2,1,3);
exchg = substr(phone2,4,3);
rest = substr(phone2,7,4);
phone3 = '('--||compress(area)||')'||compress(exchg)||'-'||compress(rest);
run;

proc print data = phonebook;
run;

Obs first last phone phone1
1 Kate Cowles (319)354-3684 (319)354-3684
2 Brendan Holly 3193543684 3193543684
3 Mysterious Stranger 515 555 1212 5155551212 5155551212

Obs phone2 area exchg rest phone3
1 3193543684 319 354 3684 (319)354-3684
2 3193543684 319 354 3684 (319)354-3684
3 5155551212 515 555 1212 (515)555-1212

Contents of phonebook dataset

The CONTENTS Procedure

Data Set Name: WORK.PHONEBOOK Observations: 3
Member Type: DATA Variables: 9
Engine: V8 Indexes: 0
Created: 10:43 Wednesday, July 16, 2003 Observation Length: 140
Last Modified: 10:43 Wednesday, July 16, 2003 Deleted Observations: 0
Protection: Compressed: NO
Data Set Type: Sorted: NO
Label:

Data Set Page Size: 16384
Number of Data Set Pages: 1
First Data Page: 1
Max Obs per Page: 116
Obs in First Data Page: 3
Number of Data Set Repairs: 0
File Name: /usr/tmp/SAS_workF4D500005960 mouse/phonebook.sas7bdat
Release Created: 8.0202M0
Host Created: HP-UX
Inode Number: 53106
Access Permission: rw-------
Owner Name: UNKNOWN
File Size (bytes): 24576

-----Alphabetic List of Variables and Attributes-----

# Variable Type Len Pos
6 area Char 13 59
7 exchg Char 13 72
1 first Char 10 0
2 last Char 10 10
3 phone Char 13 20
4 phone1 Char 13 33
5 phone2 Char 13 46
9 phone3 Char 42 98
8 rest Char 13 85