Iterative and conditional processing in SAS macro programs

- The `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
%daily
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
%do i=1 %to 12;
month&i
%end;
set books.ytdsales;
mosale=month(datesold);
if mosale=1 then output month1;
%do i=2 %to 12;
else if mosale=&i then output month&i;
%end;
run;
%mend makesets;
```

```sas
%makesets
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): else if mosale=2 then output month2;
MPRINT(MAKESETS): else if mosale=3 then output month3;
MPRINT(MAKESETS): else if mosale=4 then output month4;
MPRINT(MAKESETS): else if mosale=5 then output month5;
MPRINT(MAKESETS): else if mosale=6 then output month6;
MPRINT(MAKESETS): else if mosale=7 then output month7;
MPRINT(MAKESETS): else if mosale=8 then output month8;
MPRINT(MAKESETS): else if mosale=9 then output month9;
MPRINT(MAKESETS): else if mosale=10 then output month10;
MPRINT(MAKESETS): else if mosale=11 then output month11;
MPRINT(MAKESETS): else 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

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

```sas
proc print data = phonebook;
run;
```

### 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:

```
-----Engine/Host Dependent Information-----

- 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-----

<table>
<thead>
<tr>
<th>#</th>
<th>Variable</th>
<th>Type</th>
<th>Len</th>
<th>Pos</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>area</td>
<td>Char</td>
<td>13</td>
<td>59</td>
</tr>
<tr>
<td>7</td>
<td>exchg</td>
<td>Char</td>
<td>13</td>
<td>72</td>
</tr>
<tr>
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<td>first</td>
<td>Char</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
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<td>last</td>
<td>Char</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
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<td>phone</td>
<td>Char</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
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<td>phone1</td>
<td>Char</td>
<td>13</td>
<td>33</td>
</tr>
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<td>46</td>
</tr>
<tr>
<td>9</td>
<td>phone3</td>
<td>Char</td>
<td>13</td>
<td>98</td>
</tr>
<tr>
<td>8</td>
<td>rest</td>
<td>Char</td>
<td>13</td>
<td>85</td>
</tr>
</tbody>
</table>