data bloodpressure;

do sequence = '1', '2', '3';

   do subject = 1 to 4;

      do period = 1 to 3;

      /\* doing modulo stuff, we can write this one line instead of the 9 after the "proc print" part:

      treatment = mod(sequence+period -2,3)+1;

      it just so happens to work out because a numerical pattern exists in the experiment

      \*/

      input bpchange @@;

      output;

      end;

   end;

end;

cards;

1.5 2.2 3.4 2.0 2.6 3.1 1.6 2.7

3.2 1.1 2.3 2.9 2.5 3.5 1.9 2.8

3.1 1.5 2.7 2.9 2.4 2.4 2.6 2.3

3.3 1.9 2.7 3.1 1.6 2.5 3.6 2.3

2.2 3.0 2.5 2.0

run;

proc print data=bloodpressure;

run;

data bloodpressure; set bloodpressure;

if sequence=1 and period=1 then treatment = 'trt1';

if sequence=1 and period=2 then treatment = 'trt2';

if sequence=1 and period=3 then treatment = 'trt3';

if sequence=2 and period=1 then treatment = 'trt2';

if sequence=2 and period=2 then treatment = 'trt3';

if sequence=2 and period=3 then treatment = 'trt1';

if sequence=3 and period=1 then treatment = 'trt3';

if sequence=3 and period=2 then treatment = 'trt1';

if sequence=3 and period=3 then treatment = 'trt2';

run;

proc glm data=bloodpressure;

class sequence subject period treatment;

model bpchange = sequence subject(sequence) treatment period treatment\*period;

/\* the interaction tests for carryover effects \*/

/\* seq has 0 df because it is determined by subject, treatment, and period

random subject(sequence)/test;

run;

proc mixed data=bloodpressure;

class sequence subject period treatment;

model bpchange = sequence treatment|period;

/\* subject is not in the model statement because that is for fixed effects only \*/

random subject(sequence);

lsmeans treatment /pdiff CL E;

run;