```
options nodate nonumber;
title;
data new;
  input Detergent $ Temperature $ CleanRating;
cards;
Super Cold 4
Super Cold 5
Super Cold 6
Super Cold 5
Super Warm 7
Super Warm 9
Super Warm 8
Super Warm 12
Super Hot  10
Super Hot  12
Super Hot  11
Super Hot  9
Best  Cold 6
Best  Cold 6
Best  Cold 4
Best  Cold 4
Best  Warm 13
Best  Warm 15
Best  Warm 12
Best  Warm 12
Best  Hot  12
Best  Hot  13
Best  Hot  10
Best  Hot  13
run;
proc means data=new;
  class Detergent Temperature;
  types Detergent Temperature Detergent*Temperature;
  var CleanRating;
run;

proc glm data=new;
  class Detergent Temperature;
  model CleanRating=Detergent Temperature Detergent*Temperature;
run;
proc glm data=new;
  class Detergent Temperature;
  model CleanRating=Detergent Temperature;
  lsmeans Temperature/tdiff pdiff cl adjust=bon;
run;
```

The MEANS Procedure

Analysis Variable : CleanRating

Temperature	N Obs	N	Mean	Std Dev	Minimum	Maximum
Cold	8	8	5.0000000	0.9258201	4.0000000	6.0000000
Hot	8	8	11.2500000	1.4880476	9.0000000	13.0000000
Warm	8	8	11.0000000	2.7255406	7.0000000	15.0000000

Analysis Variable : CleanRating

Detergent	N Obs	N	Mean	Std Dev	Minimum	Maximum
Best	12	12	10.0000000	3.9080337	4.0000000	15.0000000
Super	12	12	8.1666667	2.7906771	4.0000000	12.0000000

Analysis Variable : CleanRating

Detergent	Temperature	N Obs	N	Mean	Std Dev	Minimum	Maximum
Best	Cold	4	4	5.0000000	1.1547005	4.0000000	6.0000000
	Hot	4	4	12.0000000	1.4142136	10.0000000	13.0000000
	Warm	4	4	13.0000000	1.4142136	12.0000000	15.0000000
Super	Cold	4	4	5.0000000	0.8164966	4.0000000	6.0000000
	Hot	4	4	10.5000000	1.2909944	9.0000000	12.0000000
	Warm	4	4	9.0000000	2.1602469	7.0000000	12.0000000

The GLM Procedure

Class Level Information

Class	Levels	Values
Detergent	2	Best Super
Temperature	3	Cold Hot Warm

Number of Observations Read	24
Number of Observations Used	24

The GLM Procedure

Dependent Variable: CleanRating

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	236.8333333	47.3666667	23.04	<.0001
Error	18	37.0000000	2.0555556		
Corrected Total	23	273.8333333			

R-Square	Coeff Var	Root MSE	CleanRating Mean
0.864881	15.78408	1.433721	9.083333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Detergent	1	20.1666667	20.1666667	9.81	0.0058
Temperature	2	200.3333333	100.1666667	48.73	<.0001
Detergent*Temperatur	2	16.3333333	8.1666667	3.97	0.0372

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Detergent	1	20.1666667	20.1666667	9.81	0.0058
Temperature	2	200.3333333	100.1666667	48.73	<.0001
Detergent*Temperatur	2	16.3333333	8.1666667	3.97	0.0372

The GLM Procedure

Class Level Information

Class	Levels	Values
Detergent	2	Best Super
Temperature	3	Cold Hot Warm

Number of Observations Read	24
Number of Observations Used	24

The GLM Procedure

Dependent Variable: CleanRating

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	220.5000000	73.5000000	27.56	<.0001
Error	20	53.3333333	2.6666667		
Corrected Total	23	273.8333333			

R-Square	Coeff Var	Root MSE	CleanRating Mean
0.805234	17.97791	1.632993	9.083333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
Detergent	1	20.1666667	20.1666667	7.56	0.0123
Temperature	2	200.3333333	100.1666667	37.56	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
Detergent	1	20.1666667	20.1666667	7.56	0.0123
Temperature	2	200.3333333	100.1666667	37.56	<.0001

The GLM Procedure
Least Squares Means
Adjustment for Multiple Comparisons: Bonferroni

Temperature	CleanRating LSMEAN	LSMEAN Number
Cold	5.0000000	1
Hot	11.2500000	2
Warm	11.0000000	3

Least Squares Means for Effect Temperature
t for HO: LSMean(i)=LSMean(j) / Pr > |t|

Dependent Variable: CleanRating

i/j	1	2	3
1		-7.65466	-7.34847
		<.0001	<.0001
2	7.654655		0.306186
	<.0001		1.0000
3	7.348469	-0.30619	
	<.0001	1.0000	

Temperature	CleanRating LSMEAN	95% Confidence Limits	
Cold	5.000000	3.795668	6.204332
Hot	11.250000	10.045668	12.454332
Warm	11.000000	9.795668	12.204332

Least Squares Means for Effect Temperature

i	j	Difference Between Means	Simultaneous 95% Confidence Limits for LSMean(i)-LSMean(j)	
1	2	-6.250000	-8.383167	-4.116833
1	3	-6.000000	-8.133167	-3.866833
2	3	0.250000	-1.883167	2.383167