SAS Output for Problem 1

Model Information	
Data Set	WORK.NEWPUB2
Response Variable	pubs
Number of Response Levels	3
Model	cumulative logit
Optimization Technique	Fisher's scoring

Number of Observations Read	915
Number of Observations Used	915

Response Profile		
Ordered Value	pubs	Total Frequency
1	0	275
2	1	246
3	2	394

Probabilities modeled are cumulated over the lower Ordered Values.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Score Test for the Proportional Odds Assumption		
Chi-Square	DF	Pr > ChiSq
5.7017	5	0.3363

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	1975.419	1908.383
SC	1985.057	1942.115
-2 Log L	1971.419	1894.383

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	1975.419	1908.383
SC	1985.057	1942.115
-2 Log L	1971.419	1894.383

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	77.0364	5	<.0001
Score	70.3467	5	<.0001
Wald	63.6918	5	<.0001

Analysis of Maximum Likelihood Estimates						
Parameter		DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	0	1	-0.1593	0.2509	0.4033	0.5254
Intercept	1	1	1.0400	0.2532	16.8732	<.0001
fem		1	0.2138	0.1329	2.5851	0.1079
mar		1	-0.2998	0.1509	3.9481	0.0469
kid5		1	0.2518	0.0946	7.0803	0.0078
ment		1	-0.0572	0.00857	44.5885	<.0001
phd		1	-0.0885	0.0666	1.7676	0.1837

SAS Output for Problem 1 (continued)

Model Information	
Data Set	WORK.NEWPUB2
Response Variable	pubs
Number of Response Levels	3
Model	generalized logit
Optimization Technique	Newton-Raphson

Number of Observations Read	915
Number of Observations Used	915

Response Profile		
Ordered Value	pubs	Total Frequency
1	2	394
2	1	246
3	0	275

Logits modeled use pubs=0 as the reference category.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	1975.419	1910.263
SC	1985.057	1968.090
-2 Log L	1971.419	1886.263

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	85.1560	10	<.0001
Score	72.2969	10	<.0001
Wald	64.7448	10	<.0001

Type 3 Analysis of Effects			
Effect	DF	Wald Chi-Square	Pr > ChiSq
fem	2	2.5280	0.2825
mar	2	4.3792	0.1120
kid5	2	7.5178	0.0233
ment	2	45.6700	<.0001
phd	2	3.1551	0.2065

Analysis of Maximum Likelihood Estimates						
Parameter	pubs	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	2	1	-0.5792	0.3288	3.1027	0.0782
Intercept	1	1	-0.2496	0.3498	0.5093	0.4755
fem	2	1	-0.2633	0.1744	2.2781	0.1312
fem	1	1	-0.2349	0.1896	1.5346	0.2154
mar	2	1	0.4121	0.1982	4.3221	0.0376
mar	1	1	0.2009	0.2153	0.8701	0.3509
kid5	2	1	-0.3384	0.1238	7.4723	0.0063
kid5	1	1	-0.2103	0.1325	2.5191	0.1125
ment	2	1	0.0898	0.0135	44.1513	<.0001
ment	1	1	0.0635	0.0144	19.5222	<.0001
phd	2	1	0.0861	0.0875	0.9690	0.3249
phd	1	1	-0.0666	0.0945	0.4963	0.4811

SAS Output for Problem 4

(AG,AP,GP)

The GENMOD Procedure

Model Information	
Data Set	WORK.JOBS
Distribution	Poisson
Link Function	Log
Dependent Variable	count

Number of Observations Read	12
Number of Observations Used	12

Class Level Information			
Class	Value	Design Variables	
gender	fema	1	
	male	0	
program	cosmetol	1	0
	plumbing	0	1
	welding	0	0
accept	no	0	
	yes	1	

Analysis Of Maximum Likelihood Parameter Estimates								
Parameter			DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept			1	5.8475	0.0533	5.7431	5.9519	12058.0	<.0001
gender	fema		1	-3.5816	0.1909	-3.9559	-3.2074	351.83	<.0001
program	cosmetol		1	0.5318	0.0669	0.4007	0.6630	63.17	<.0001
program	plumbing		1	0.3832	0.0686	0.2488	0.5177	31.20	<.0001
gender*program	fema	cosmetol	1	3.4318	0.1955	3.0487	3.8150	308.18	<.0001
gender*program	fema	plumbing	1	1.0856	0.1787	0.7354	1.4358	36.91	<.0001
accept	yes		1	0.5184	0.0669	0.3872	0.6495	60.04	<.0001
gender*accept	fema	yes	1	0.6614	0.1374	0.3921	0.9306	23.18	<.0001
program*accept	cosmetol	yes	1	-3.5482	0.1582	-3.8582	-3.2382	503.30	<.0001
program*accept	plumbing	yes	1	0.0065	0.0858	-0.1617	0.1747	0.01	0.9394
Scale			0	1.0000	0.0000	1.0000	1.0000		

Note: The scale parameter was held fixed.

(AGP)

The GENMOD Procedure

Model Information	
Data Set	WORK.JOBS
Distribution	Poisson
Link Function	Log
Dependent Variable	count

Number of Observations Read	12
Number of Observations Used	12

Class Level Information			
Class	Value	Design Variables	
gender	fema	1	
	male	0	
program	cosmetol	1	0
	plumbing	0	1
	welding	0	0
accept	no	0	
	yes	1	

Analysis Of Maximum Likelihood Parameter Estimates										
Parameter				DF	Estimate	Standard Error	Wald 95% Confidence Limits		Wald Chi-Square	Pr > ChiSq
Intercept				1	5.8377	0.0540	5.7319	5.9436	11689.1	<.0001
gender	fema			1	-3.2728	0.2826	-3.8266	-2.7190	134.16	<.0001
program	cosmetol			1	0.5287	0.0681	0.3953	0.6622	60.33	<.0001
program	plumbing			1	0.4142	0.0696	0.2778	0.5506	35.43	<.0001
gender*program	fema	cosmetol		1	3.1505	0.2890	2.5841	3.7168	118.87	<.0001
gender*program	fema	plumbing		1	0.4549	0.3377	-0.2070	1.1167	1.81	0.1780
accept	yes			1	0.5339	0.0680	0.4006	0.6672	61.63	<.0001
gender*accept	fema	yes		1	0.2334	0.3424	-0.4378	0.9045	0.46	0.4955
program*accept	cosmetol	yes		1	-3.3168	0.1847	-3.6789	-2.9548	322.42	<.0001
program*accept	plumbing	yes		1	-0.0429	0.0879	-0.2152	0.1294	0.24	0.6256
gender*progra*accept	fema	cosmetol	yes	1	-0.0057	0.4168	-0.8226	0.8112	0.00	0.9891
gender*progra*accept	fema	plumbing	yes	1	0.8389	0.3992	0.0564	1.6213	4.42	0.0356
Scale				0	1.0000	0.0000	1.0000	1.0000		

Note: The scale parameter was held fixed.

SAS Output for Problem 5

The LOGISTIC Procedure

Model Information	
Data Set	WORK.LABOR4
Response Variable	y
Number of Response Levels	2
Model	binary logit
Optimization Technique	Fisher's scoring

Number of Observations Read	753
Number of Observations Used	753

Response Profile		
Ordered Value	y	Total Frequency
1	1	428
2	0	325

Probability modeled is y=1.

Model Convergence Status
Convergence criterion (GCONV=1E-8) satisfied.

Deviance and Pearson Goodness-of-Fit Statistics				
Criterion	Value	DF	Value/DF	Pr > ChiSq
Deviance	770.1837	748	1.0297	0.2792
Pearson	666.6324	748	0.8912	0.9849

Number of unique profiles: 753

Model Fit Statistics		
Criterion	Intercept Only	Intercept and Covariates
AIC	1031.746	780.184
SC	1036.370	803.304
-2 Log L	1029.746	770.184

Testing Global Null Hypothesis: BETA=0			
Test	Chi-Square	DF	Pr > ChiSq
Likelihood Ratio	259.5627	4	<.0001
Score	142.3681	4	<.0001
Wald	114.2239	4	<.0001

Analysis of Maximum Likelihood Estimates					
Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	3.0346	0.5669	28.6491	<.0001
k5	1	-1.5344	0.2190	49.0824	<.0001
age	1	-0.0721	0.0126	32.6094	<.0001
lwg1	1	2.1627	0.3007	51.7217	<.0001
lwg2	1	4.5753	0.5495	69.3331	<.0001