MiniProj3

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```
data books;
infile 'BooksWithGroups.txt';
input linenum Text $ x1-x18 TextCoverage Genre Counter Corpus CorpGen SuperGenre group3-group7 garbage1-

run;

proc stdize data=books out = books2;
var x1-x18;
run;

*proc print data=books2;

proc glm data=books2;
  class group5;
  model x1-x18 = group5/ nouni;
  manova h=group5 / mstat=exact;

run;

proc glm data=books2;
  class group4;
  model x1-x18 = group4/ nouni;
  manova h=group4 / mstat=exact;

run;

proc glm data=books2;
  class SuperGenre;
  model x1-x18 = SuperGenre/ nouni;
  manova h=SuperGenre / mstat=exact;

run;
```

The GLM Procedure

Class Level Information

Class	Levels	Values
group5	5	1 2 3 4 5

Number of Observations Read	1000
Number of Observations Used	999

The GLM Procedure

Multivariate Analysis of Variance

Characteristic Roots and Vectors of: E Inverse * H, where
H = Type III SSCP Matrix for group5
E = Error SSCP Matrix

Characteristic Root	Percent	Characteristic Vector V'EV=1 x1	x2	x3	x4	x5
		x6	x7	x8	x9	x10
		x11	x12	x13	x14	x15
		x16	x17	x18		
3.95576140	54.51	0.02237786	-0.00193282	-0.00002848	-0.00269845	0.00035407
		0.01162860	-0.00298569	-0.00680111	-0.00546466	0.01054563
		-0.00474628	0.01377550	0.00375818	0.01347928	0.00450360
		0.01479393	-0.00263282	0.00232275		
1.56906822	21.62	0.02359861	0.00948736	-0.00016175	0.00204340	0.00296687
		-0.00276740	0.01124409	0.00879757	0.02183545	0.01833245
		0.00458621	0.00049879	-0.00374652	0.00073495	-0.00402064
		0.00118571	0.00603858	-0.00638702		
1.11762968	15.40	-0.01733916	0.00119649	0.00185100	-0.00419322	0.00415904
		0.00251012	-0.00993169	-0.00294587	0.02936198	0.00976895
		-0.00061924	-0.01398333	0.00921533	0.00831075	0.00178711
		0.00631401	0.00351296	0.00524157		
0.61427271	8.46	-0.01609390	0.00972113	-0.00863581	0.00553551	-0.00184746
		0.01291447	0.01453113	0.01984641	0.00064228	-0.00443771
		0.00846052	0.00674070	0.00542088	0.02440452	-0.00013958
		0.00695256	0.00242274	-0.00627280		
0.00000000	0.00	0.00224858	-0.00044405	-0.00307551	-0.00203566	0.00068961
		0.00193420	0.00429169	0.00653781	-0.00293558	-0.00287941
		0.00087228	0.00011364	-0.00718083	-0.01759902	0.04156682
		-0.00038494	0.00024111	-0.00044748		
0.00000000	0.00	0.00158758	-0.00069971	-0.00201996	0.00192844	-0.00472719
		-0.00294310	0.00245809	-0.00282048	-0.00352027	0.00147627
		0.00017480	0.00795417	0.00021993	0.00533036	0.00084936
		-0.00447257	0.03428683	0.00036929		
0.00000000	0.00	-0.00504607	0.00033323	-0.00603983	-0.00029601	-0.00497297
		-0.00645132	0.00411454	0.01019253	0.00063356	-0.00020969
		-0.00184728	0.00024431	-0.00308770	-0.00374146	-0.00084842
		-0.00761215	-0.00309468	0.03833669		
0.00000000	0.00	0.00218582	0.00356585	0.00280814	-0.00094367	0.00246220
		-0.01241720	0.00457176	0.00253301	0.00165296	0.00220033
		0.00706808	-0.01850425	-0.00142863	-0.01569615	-0.00011489
		0.04836702	0.00000000	0.00000000		
0.00000000	0.00	-0.00575820	-0.00475453	0.03164477	0.00088468	-0.00038244
		0.00249765	0.00243877	0.00361951	0.00059326	-0.00040586
		0.00119101	0.00157463	0.00094968	0.00461431	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	0.00635048	-0.00710326	0.00325343	0.00411745	-0.00127829
		0.00932153	-0.00685196	-0.00742023	-0.00016271	0.01044425
		0.03791445	0.00180639	0.00140127	0.00345580	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	0.00215488	-0.01026335	-0.00092845	0.03299973	0.00132429
		-0.00242297	-0.00568316	-0.00641524	0.00360533	0.00231122

		-0.00191565	-0.00381338	0.00033800	-0.00456846	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	-0.00428070	-0.00508453	-0.00239924	-0.00106277	0.00070099
		-0.01260578	-0.00489243	0.00450188	0.01252648	-0.01180070
		0.01041404	0.04079856	-0.00037664	-0.00649598	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	-0.01803218	-0.01064016	-0.00314145	-0.00210367	-0.00367171
		-0.00101199	-0.00017025	0.01091047	-0.01304711	0.03474055
		-0.00087816	0.00050847	-0.00094625	-0.00377893	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	0.00272734	-0.00652859	0.00100445	-0.00202615	0.03315737
		0.00311177	0.00037737	-0.00093500	-0.01193029	-0.00009132
		0.00023247	-0.00025188	-0.00016969	0.00178151	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	0.00634518	0.00136696	-0.00760486	-0.00142768	0.00294691
		-0.01037924	0.00576976	0.01089624	-0.00754873	0.00042426
		0.00973937	0.00244058	0.03944364	-0.01190633	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	-0.00125854	-0.03398132	0.00259822	-0.00136627	0.00257300
		0.00118900	0.03667874	-0.01079187	0.00484250	-0.00000876
		0.00000800	-0.00002583	-0.00006733	0.00017564	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	0.00484604	-0.00976323	0.00300625	0.00049569	0.00097195
		-0.01821023	0.00338588	0.01347200	-0.00623018	-0.00178039
		0.00162707	-0.00525151	-0.01368704	0.03570544	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	0.01534871	-0.01413123	-0.00374448	-0.00701813	-0.01171975
		0.02029075	-0.00545885	0.03023101	0.00970222	0.00000000
		0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
		0.00000000	0.00000000	0.00000000		

MANOVA Tests for the Hypothesis of No Overall group5 Effect
H = Type III SSCP Matrix for group5
E = Error SSCP Matrix

S=4 M=6.5 N=487.5

Statistic	Value	P-Value
Wilks' Lambda	0.02297667	<.0001
Pillai's Trace	2.31726836	<.0001
Hotelling-Lawley Trace	7.25673200	<.0001
Roy's Greatest Root	3.95576140	<.0001

The GLM Procedure

Class Level Information

Class	Levels	Values
group4	4	1 2 3 4

Number of Observations Read	1000
Number of Observations Used	999

The GLM Procedure
Multivariate Analysis of Variance

Characteristic Roots and Vectors of: E Inverse * H, where
H = Type III SSCP Matrix for group4
E = Error SSCP Matrix

Characteristic Root	Percent	Characteristic Vector V'EV=1 x1	x2	x3	x4	x5
		x6	x7	x8	x9	x10
		x11	x12	x13	x14	x15
		x16	x17	x18		
3.86419640	65.84	0.02138616	-0.00089528	-0.00182871	-0.00188239	-0.00232048
		0.01267612	0.00012255	-0.00556688	-0.00584154	0.00873795
		-0.00357162	0.01692755	0.00241646	0.01362010	0.00368507
		0.01688226	-0.00323767	-0.00089506		
1.04079790	17.73	0.00173343	0.01454528	-0.00143103	0.01429575	-0.01120303
		0.00057156	0.01560532	0.01620084	-0.00908837	-0.00591949
		0.00270434	0.01211978	-0.00051516	0.00238652	-0.00228470
		0.00091959	-0.00472589	-0.00665860		
0.96418584	16.43	0.00566420	0.00438183	-0.00232196	0.00087783	0.01956400
		0.00278419	0.00765464	0.01172698	0.02259222	0.01276781
		0.00016732	0.00303231	0.00457941	0.01023648	-0.00304674
		0.00159010	0.00941387	-0.00303154		
0.00000000	0.00	0.00139665	-0.00029899	-0.00308890	-0.00183107	0.00121155
		0.00219089	0.00423022	0.00689650	-0.00254479	-0.00295692
		0.00067500	0.00021952	-0.00664751	-0.01702747	0.04158873
		-0.00022616	0.00031713	-0.00028790		
0.00000000	0.00	-0.00240287	-0.00649256	0.03254018	-0.00035808	0.00103702
		0.00041267	-0.00005809	-0.00004173	0.00102696	0.00089460
		-0.00014663	0.00024550	0.00026523	0.00070812	0.00000927
		0.00045759	0.00043088	0.00001367		
0.00000000	0.00	-0.00526255	0.00019297	-0.00522768	-0.00002143	-0.00488080
		-0.00702310	0.00284998	0.00902399	0.00106022	-0.00011055
		-0.00285680	0.00010498	-0.00254113	-0.00470753	-0.00085905
		-0.00755078	-0.00321579	0.03870017		
0.00000000	0.00	-0.00042890	0.00447345	0.00213716	-0.00074298	0.00232541
		-0.01133786	0.00468194	0.00367700	0.00352634	0.00237638
		0.00759918	-0.01922959	-0.00033104	-0.01336411	-0.00011643
		0.04876698	-0.00002412	0.00000000		
0.00000000	0.00	-0.00134942	0.00324346	-0.00588859	-0.00147704	0.00155471
		-0.00333336	0.00538387	0.01115122	-0.00536208	-0.00179421
		0.01208198	-0.00076036	0.03908282	-0.00189068	-0.00001642
		0.00007582	-0.00065796	0.00000000		
0.00000000	0.00	0.00103988	0.00096549	-0.00262418	0.00300351	-0.00806167
		-0.00293445	0.00346271	-0.00194201	-0.00451022	0.00081689
		0.00114778	0.00819351	0.00076918	0.00559517	0.00084305
		-0.00389254	0.03377869	0.00000000		

0.00000000	0.00	0.00928337	-0.00640763	0.00325872	0.00452962	-0.00071399
		0.00878939	-0.00527325	-0.00640205	0.00120373	0.01172325
		0.03747762	0.00269367	-0.00094411	0.00246289	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	-0.00531963	-0.00393770	0.00522713	-0.00117979	-0.00035189
		-0.00419659	0.00510389	0.01258509	-0.00338194	-0.00477674
		0.00110563	-0.00959428	-0.01688816	0.04405621	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	-0.00751043	-0.00517232	-0.00204248	-0.00581876	0.00123135
		-0.01129383	-0.00278845	0.00790048	0.00877520	-0.01439583
		0.01162319	0.04013482	0.00000000	0.00000000	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	0.00088806	-0.03083442	0.00195019	-0.00839648	0.00240427
		0.00109404	0.03853103	-0.00613457	0.00056790	0.00076237
		0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	-0.01846774	-0.00918212	-0.00314524	-0.00195463	-0.00675603
		-0.00347630	-0.00083209	0.01283406	-0.01134507	0.03445235
		0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	-0.00159761	-0.02114228	-0.00007581	0.02985807	0.00458439
		-0.00138362	0.00111372	-0.00648245	0.00372240	0.00000000
		0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	-0.01248500	-0.00147561	-0.00031041	-0.00547396	0.00057004
		0.02970030	-0.00163526	0.00914015	0.00138234	0.00000000
		0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	0.02349183	-0.01258424	-0.00453683	-0.00617065	-0.00974856
		0.00803901	-0.00551690	0.03094221	0.00274459	0.00000000
		0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	-0.00382861	0.00263418	0.00023147	0.00169437	-0.02848275
		0.00646558	-0.00069010	0.00242952	0.02645008	0.00000000
		0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
		0.00000000	0.00000000	0.00000000		

MANOVA Tests for the Hypothesis of No Overall group4 Effect
H = Type III SSCP Matrix for group4
E = Error SSCP Matrix

S=3 M=7 N=488

Statistic	Value	P-Value
Wilks' Lambda	0.05128689	<.0001
Pillai's Trace	1.79529498	<.0001
Hotelling-Lawley Trace	5.86918014	<.0001
Roy's Greatest Root	3.86419640	<.0001

The GLM Procedure

Class Level Information

Class	Levels	Values
SuperGenre	5	1 2 3 4 5

Number of Observations Read 1000
Number of Observations Used 999

The GLM Procedure
Multivariate Analysis of Variance

Characteristic Roots and Vectors of: E Inverse * H, where
H = Type III SSCP Matrix for SuperGenre
E = Error SSCP Matrix

Characteristic Root	Percent	Characteristic Vector V'EV=1 x1	x2	x3	x4	x5
		x6	x7	x8	x9	x10
		x11	x12	x13	x14	x15
		x16	x17	x18		
3.46219462	86.41	0.01246561	0.00322803	0.00131719	0.00167200	-0.00104822
		0.00952995	0.00288950	-0.00003850	0.00023129	0.01529046
		-0.00268522	0.02427248	0.00778952	0.01343175	0.00249105
		0.01229608	-0.00278965	-0.00120008		
0.27370083	6.83	-0.00829853	0.00032506	0.01001566	0.01007044	0.01141726
		0.00118545	-0.00717511	-0.00770118	-0.00871868	-0.00405951
		-0.00893152	0.00189393	0.01770253	-0.01983127	0.00592478
		-0.02071230	-0.00773767	0.01749296		
0.15138981	3.78	-0.00360922	0.00443536	0.00364891	-0.00797700	-0.00757309
		-0.00634591	0.00424289	0.01219961	0.00941747	0.01615989
		0.01433415	-0.01211328	0.02185494	0.00230881	0.00508533
		0.00517243	0.00194837	0.00389861		
0.11932436	2.98	0.00654671	0.00293819	0.00860803	0.00321751	-0.01903672
		0.00275152	0.00685114	0.01740211	0.00185089	-0.00543533
		0.00879846	0.00192797	0.00435338	-0.00577753	-0.00968625
		0.01127400	-0.00122528	0.00972136		
0.00000000	0.00	0.00058129	0.00020979	-0.00088826	0.00405641	-0.00254946
		-0.00195583	0.00206079	-0.00324087	-0.00226900	0.00155439
		-0.00127683	0.00876810	0.00209543	0.00357973	0.00138399
		-0.00700880	0.03389983	0.00241276		
0.00000000	0.00	0.00421421	-0.00088953	-0.00296731	-0.00216545	-0.00385095
		0.00341427	0.00543227	0.00942011	-0.00298882	-0.00594758
		0.00198682	0.00112614	-0.01092447	-0.01713514	0.04004261
		0.00433174	0.00004931	-0.00061090		
0.00000000	0.00	-0.00806295	0.03245453	-0.00261454	0.00040995	0.00662493
		-0.00048405	-0.00294127	-0.00698325	-0.00181031	-0.00122409
		-0.00446794	-0.00000407	-0.00373599	0.00112137	0.00007518
		-0.00492470	0.00022672	-0.00280855		
0.00000000	0.00	-0.00318806	-0.02387583	0.00049611	-0.00297601	0.00854174
		-0.00014215	0.03969706	-0.00726259	-0.00195412	0.00193024

		-0.00451848	0.00132071	0.00322726	0.00039741	0.00000450
		-0.00689527	-0.00004244	0.00052571		
0.00000000	0.00	0.00652086	-0.00847752	0.00262781	0.00757326	0.00616798
		0.00942439	-0.00431996	-0.01472788	-0.00318969	0.00992919
		0.03397037	0.00618585	-0.00134768	0.00010906	0.00001224
		-0.00585187	-0.00000592	0.00007330		
0.00000000	0.00	-0.00546791	-0.00545865	0.01004165	0.00432044	0.00419037
		-0.00121861	0.00421767	0.01009140	-0.00640609	-0.00758829
		-0.00061650	-0.00654303	-0.01604810	0.04171786	-0.00013554
		-0.00875108	-0.00055832	0.00691640		
0.00000000	0.00	-0.01031262	-0.00215865	-0.00150337	-0.00513235	0.00255426
		-0.01325351	-0.00096353	0.00898187	0.00872919	-0.01316437
		0.01142174	0.04028183	0.00443393	0.00108135	-0.00003424
		-0.00605182	-0.00017362	0.00215080		
0.00000000	0.00	0.00387788	-0.00460364	0.00386287	0.00952857	-0.00723450
		0.01511379	-0.00262047	-0.00304438	0.03151634	-0.00757699
		-0.00424054	0.00215069	-0.01048191	0.00125320	-0.00004689
		-0.00727183	-0.00022916	0.00283881		
0.00000000	0.00	-0.00363059	0.00204035	-0.01503963	-0.00724727	-0.00435040
		-0.00894489	0.00064938	0.00327003	0.00136092	0.00410018
		-0.00416430	-0.00322968	-0.01043036	-0.00586821	-0.00075173
		-0.00073198	-0.00269098	0.03333569		
0.00000000	0.00	-0.00609646	0.00054554	0.00796338	0.00612910	0.01769964
		-0.01012607	0.00566630	-0.00860699	0.00381685	-0.00170787
		0.00599358	-0.01479240	0.00003411	-0.00991499	-0.00009686
		0.04077879	0.00000000	0.00000000		
0.00000000	0.00	-0.01649863	-0.01126371	0.00342392	0.00599992	-0.00268944
		0.00433382	-0.00362122	0.01385265	-0.00421768	0.03036150
		-0.00353902	-0.00023730	-0.01200549	0.00000000	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	-0.01179817	0.00285708	-0.00398400	-0.01769482	-0.00085278
		0.02585999	-0.00017309	0.01005571	-0.00076174	-0.00003933
		0.00238660	0.00016002	0.00809612	0.00000000	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	0.02237450	-0.00101420	-0.00262372	-0.00900967	0.01639222
		0.00470789	-0.00309923	0.02147308	-0.00033603	-0.00001735
		0.00105282	0.00007059	0.00357150	0.00000000	0.00000000
		0.00000000	0.00000000	0.00000000		
0.00000000	0.00	0.00028148	0.00087817	-0.02450009	0.01790388	-0.00043751
		0.00054710	0.00149146	0.01157401	-0.00167613	-0.00008654
		0.00525150	0.00035212	0.01781475	0.00000000	0.00000000
		0.00000000	0.00000000	0.00000000		

MANOVA Tests for the Hypothesis of No Overall SuperGenre Effect
H = Type III SSCP Matrix for SuperGenre
E = Error SSCP Matrix

S=4 M=6.5 N=487.5

Statistic	Value	P-Value
Wilks' Lambda	0.13652297	<.0001
Pillai's Trace	1.22886963	<.0001
Hotelling-Lawley Trace	4.00660962	<.0001

Roy's Greatest Root	3.46219462	<.0001