Name: Praful Patil, Sanjana Belde, Sreejanya Onteddu, Tuasi Smrithi Yaralagadda
NetID: PVP220001, SXB220133, SXO220000, TXY220003

Group No: 13 Assignment 3

1) a) Reading Data

```
libname clasdata "H:\Assignment_3";

/* 1) a) Reading Data */
data clasdata.lap;
   SET clasdata.laptop;
run;
proc print data = clasdata.lap;
run;
```

OUTPUT

The SAS System

Obs	brand	operating_system	RAM_nth	storage_nth	storage_type	cpu_benchmark	gpu_class	screen_size	PPI	warranty	refurbished	price
1	LENOVO	WINDOWS	2	6.906890596	SSD	2501	4	15.6	141	0	YES	235.99
2	ASUS	WINDOWS	2	7	SSD	3048	3	15.6	141	1	YES	236.99
3	LENOVO	WINDOWS	2	7	SSD	3685	3	15.6	94	0	YES	259.99
4	HP	WINDOWS	2	7	SSD	2689	4	15.6	94	0	YES	223.49
5	DELL	WINDOWS	3	7	SSD	3256	3	14	157	0	YES	374.49
6	ASUS	WINDOWS	4	10.96578428	SSD	23322	1	16	142	0	YES	2396.49
7	LENOVO	WINDOWS	3	7.491853096	SSD	3035	4	14	105	0	YES	151.99
8	LENOVO	WINDOWS	4	7.491853096	SSD	6908	3	14	157	0	YES	428.49
9	LENOVO	WINDOWS	4	7.491853096	SSD	2743	4	14	118	0	YES	296.99
10	ASUS	WINDOWS	4	9.965784285	SSD	23697	2	14	162	1	YES	1410.49
11	ASUS	WINDOWS	4	9.965784285	SSD	24382	1	14	216	1	YES	1673.49
12	ACER	WINDOWS	3	9.965784285	SSD	11176	2	15.6	141	1	YES	1137.49
13	LENOVO	WINDOWS	4	9.965784285	SSD	12285	2	15.6	141	0	YES	1204.99
14	LENOVO	WINDOWS	4	9.965784285	SSD	15381	2	15.6	141	1	YES	1311.49
15	LENOVO	WINDOWS	5	9.965784285	SSD	16079	2	15.6	141	1	YES	1745.99
16	MSI	WINDOWS	4	9.965784285	SSD	19865	2	15.6	141	2	YES	1017.99
17	ASUS	WINDOWS	4	9.965784285	SSD	21223	2	16	142	1	YES	1209.49
18	ASUS	WINDOWS	4	9.965784285	SSD	21366	1	15.6	141	1	YES	1399.49
19	ASUS	WINDOWS	4	9.965784285	SSD	21366	1	17.3	127	1	YES	1521.49
20	ASUS	WINDOWS	4	9.965784285	SSD	21366	1	15.6	141	1	YES	1472.49
21	ASUS	WINDOWS	4	9.965784285	SSD	22153	1	15.6	188	1	YES	1832.99
22	MEDION	WINDOWS	5	9.965784285	SSD	21366	1	17.3	170	2	YES	1616.49
23	RAZER	WINDOWS	4	9.965784285	SSD	23079	1	14	210	1	YES	1971.99
24	MSI	WINDOWS	4	9.965784285	SSD	29151	1	17.3	127	2	YES	2107.49
25	LENOVO	WINDOWS	3	7.906890596	SSD	2512	4	14	112	0	YES	175.99
26	LENOVO	WINDOWS	3	7.906890596	SSD	3256	3	14	157	0	YES	285.49
27	LENOVO	WINDOWS	4	7.906890596	SSD	3256	3	14	157	0	YES	313.49
28	HP	WINDOWS	3	7.906890596	SSD	2501	4	14	112	0	YES	254.49
29	HP	WINDOWS	3	7.906890596	SSD	3256	4	12.5	176	0	YES	303.49

1) a) i) & ii) Cleaning Data

```
DATA clasdata.lap;
    SET clasdata.lap;
    IF NOT (brand IN ('ACER', 'APPLE', 'ASUS', 'DELL', 'DYNABOOK', 'HP', 'LENOVO')) THEN brand = 'OTHER';
    IF operating_system NE 'WINDOWS' THEN operating_system = 'OTHERS';
RUN;
proc print data= clasdata.lap;
run;
```

Name: Praful Patil, Sanjana Belde, Sreejanya Onteddu, Tuasi Smrithi Yaralagadda
NetID: PVP220001, SXB220133, SXO220000, TXY220003

Group No: 13 Assignment 3

OUTPUT

35	OTHER	WINDOWS	3	8	SSD	7763	2	17.3	127	2	YES	899.99
36	ASUS	WINDOWS	3	8	SSD	7763	2	15.6	141	1	YES	494.99
37	LENOVO	WINDOWS	3	8	SSD	7763	2	17.3	127	1	YES	799.99
38	LENOVO	WINDOWS	4	8	SSD	11176	2	15.6	141	0	YES	1354.99
39	ASUS	WINDOWS	3	8	SSD	7088	3	15.6	141	1	YES	356.49
40	LENOVO	WINDOWS	3	8	SSD	7088	3	15.6	141	1	YES	347.99
41	HP	WINDOWS	3	8	SSD	3011	3	14	157	0	YES	459.49
42	LENOVO	WINDOWS	3	8	SSD	3256	3	12.5	117	0	YES	218.49
43	HP	WINDOWS	3	8	SSD	3011	3	14	157	0	YES	299.49
44	DELL	WINDOWS	3	8	SSD	2743	4	12.5	117	0	YES	206.99
45	HP	WINDOWS	3	8	SSD	2501	4	14	105	0	YES	395.99
46	LENOVO	WINDOWS	3	8	SSD	2743	4	12.5	117	0	YES	217.49
47	LENOVO	WINDOWS	3	8	SSD	3393	3	14	157	0	YES	577.49
48	HP	WINDOWS	3	8	SSD	3393	3	14	157	0	YES	486.99
49	HP	WINDOWS	3	8	SSD	3256	3	12.5	176	0	YES	253.99
50	LENOVO	WINDOWS	3	8	SSD	6783	3	14	157	3	YES	758.99
51	ASUS	WINDOWS	4	10.96578428	SSD	21223	2	16	189	1	YES	1458.49
52	ASUS	WINDOWS	5	10.96578428	SSD	21491	1	15.6	141	1	YES	2523.99
53	ASUS	WINDOWS	5	10.96578428	SSD	23079	1	17.3	127	1	YES	2449.49
54	ASUS	WINDOWS	5	9.965784285	SSD	23079	1	15.6	188	1	YES	2311.49
55	HP	OTHERS	2	5	EMMC	1115	4	14	157	1	YES	95.99
56	OTHER	WINDOWS	3	8.906890596	SSD	2102	4	15.6	94	0	YES	199.99
57	LENOVO	WINDOWS	4	9	SSD	12285	2	17.3	127	1	YES	918.49
58	ASUS	WINDOWS	3	9	SSD	7966	2	15.6	141	1	YES	472.99
59	OTHER	WINDOWS	3	9	SSD	21223	2	15.6	141	1	YES	623.49
60	OTHER	WINDOWS	4	9	SSD	21366	2	17.3	127	2	YES	825.49
61	LENOVO	WINDOWS	5	9	SSD	21366	2	15.6	282	1	YES	1310.99
62	LENOVO	WINDOWS	4	9	SSD	21366	2	15.6	188	1	YES	1147.49
63	OTHER	WINDOWS	4	9	SSD	21223	2	17.3	127	2	YES	1137.49
64	LENOVO	WINDOWS	4	9	SSD	10505	3	15.6	141	1	YES	799.99
65	LENOVO	WINDOWS	4	9	SSD	10076	2	15.6	141	3	YES	990.49
66	OTHER	WINDOWS	2	7	SSD	2152	4	13.3	166	1	NO	329.99

1) b) Understanding data types

```
PROC CONTENTS DATA = clasdata.lap;
run;
```

Name: Praful Patil, Sanjana Belde, Sreejanya Onteddu, Tuasi Smrithi Yaralagadda
NetID: PVP220001, SXB220133, SXO220000, TXY220003

Group No: 13 Assignment 3

OUTPUT

Alphabetic List of Variables and Attributes

#	Variable	Type	Len	Format	Informat
9	PPI	Num	8	BEST12.	BEST32.
3	RAM_nth	Num	8	BEST12.	BEST32.
1	brand	Char	10	$10.	$10.
6	cpu_benchmark	Num	8	BEST12.	BEST32.
7	gpu_class	Num	8	BEST12.	BEST32.
2	operating_system	Char	8	$8.	$8.
12	price	Num	8	BEST12.	BEST32.
11	refurbished	Char	3	$3.	$3.
8	screen_size	Num	8	BEST12.	BEST32.
4	storage_nth	Num	8	BEST12.	BEST32.
5	storage_type	Char	4	$4.	$4.
10	warranty	Num	8	BEST12.	BEST32.

1) c) Variable Frequencies

```
PROC FREQ DATA=clasdata.lap;
    TABLES brand operating_system refurbished;
RUN;
```

OUTPUT

The SAS System

The FREQ Procedure

brand	Frequency	Percent	Cumulative Frequency	Cumulative Percent
ACER	77	7.69	77	7.69
APPLE	36	3.60	113	11.29
ASUS	145	14.49	258	25.77
DELL	97	9.69	355	35.46
DYNABOOK	62	6.19	417	41.66
HP	94	9.39	511	51.05
LENOVO	322	32.17	833	83.22
OTHER	168	16.78	1001	100.00

operating_system	Frequency	Percent	Cumulative Frequency	Cumulative Percent
OTHERS	82	8.19	82	8.19
WINDOWS	919	91.81	1001	100.00

refurbished	Frequency	Percent	Cumulative Frequency	Cumulative Percent
NO	885	88.41	885	88.41
YES	116	11.59	1001	100.00

Name: Praful Patil, Sanjana Belde, Sreejanya Onteddu, Tuasi Smrithi Yaralagadda
NetID: PVP220001, SXB220133, SXO220000, TXY220003

Group No: 13 Assignment 3

1) d) i) ii) iii) Creating categorical variables

```
DATA clasdata.lap;
    SET clasdata.lap;
if brand='APPLE' then Apple=1; else Apple=0;
if brand='DELL' then Dell=1; else Dell=0;
if brand='ASUS' then Asus=1; else Asus=0;
if brand='ACER' then Acer=1; else Acer=0;
if brand='DYNABOOK' then DB=1; else DB=0;
if brand='HP' then HP=1; else HP=0;
if brand='LENOVO' then Lenovo=1; else Lenovo=0;
if operating_system='WINDOWS' then is_windows=1; else is_windows=0;
if refurbished='YES' then is_refurbished=1; else is_refurbished=0;
ram_gb = ram_nth**2;
storage_gb = storage_nth**2;
proc print data= clasdata.lap;
run;
```

OUTPUT

The SAS System

	gpu_class	screen_size	PPI	warranty	refurbished	price	Apple	Dell	Asus	Acer	DB	HP	Lenovo	is_windows	is_refurbished	ram_gb	storage_gb
	4	15.6	141	0	YES	235.99	0	0	0	0	0	0	1	1	1	4	47.705
	3	15.6	141	1	YES	236.99	0	0	1	0	0	0	0	1	1	4	49.000
	3	15.6	94	0	YES	259.99	0	0	0	0	0	0	1	1	1	4	49.000
	4	15.6	94	0	YES	223.49	0	0	0	0	0	1	0	1	1	4	49.000
	3	14	157	0	YES	374.49	0	1	0	0	0	0	0	1	1	9	49.000
	1	16	142	0	YES	2396.49	0	0	1	0	0	0	0	1	1	16	120.248
	4	14	105	0	YES	151.99	0	0	0	0	0	0	1	1	1	9	56.128
	3	14	157	0	YES	428.49	0	0	0	0	0	0	1	1	1	16	56.128
	4	14	118	0	YES	296.99	0	0	0	0	0	0	1	1	1	16	56.128
	2	14	162	1	YES	1410.49	0	0	1	0	0	0	0	1	1	16	99.317
	1	14	216	1	YES	1673.49	0	0	1	0	0	0	0	1	1	16	99.317
	2	15.6	141	1	YES	1137.49	0	0	0	1	0	0	0	1	1	9	99.317
	2	15.6	141	0	YES	1204.99	0	0	0	0	0	0	1	1	1	16	99.317
	2	15.6	141	1	YES	1311.49	0	0	0	0	0	0	1	1	1	16	99.317
	2	15.6	141	1	YES	1745.99	0	0	0	0	0	0	1	1	1	25	99.317
	2	15.6	141	2	YES	1017.99	0	0	0	0	0	0	0	1	1	16	99.317
	2	16	142	1	YES	1209.49	0	0	1	0	0	0	0	1	1	16	99.317
	1	15.6	141	1	YES	1399.49	0	0	1	0	0	0	0	1	1	16	99.317
	1	17.3	127	1	YES	1521.49	0	0	1	0	0	0	0	1	1	16	99.317
	1	15.6	141	1	YES	1472.49	0	0	1	0	0	0	0	1	1	16	99.317
	1	15.6	188	1	YES	1832.99	0	0	1	0	0	0	0	1	1	16	99.317
	1	17.3	170	2	YES	1616.49	0	0	0	0	0	0	0	1	1	25	99.317
	1	14	210	1	YES	1971.99	0	0	0	0	0	0	0	1	1	16	99.317

Name: Praful Patil, Sanjana Belde, Sreejanya Onteddu, Tuasi Smrithi Yaralagadda
NetID: PVP220001, SXB220133, SXO220000, TXY220003

Group No: 13 Assignment 3

1) e) Running Reg model

```
proc reg data=clasdata.lap;
   model Price = cpu_benchmark gpu_class screen_size ppi warranty apple dell asus db hp lenovo is_windows is_refurbished ram_gb storage_gb;
run;
```

OUTPUT

The REG Procedure
Model: MODEL1
Dependent Variable: price

Number of Observations Read	1001
Number of Observations Used	1001

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	481384366	32092291	216.77	<.0001
Error	985	145829863	148051		
Corrected Total	1000	627214229			

Root MSE	384.77347	R-Square	0.7675
Dependent Mean	1071.41904	Adj R-Sq	0.7640
Coeff Var	35.91251		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	174.08071	271.29323	0.64	0.5212
cpu_benchmark	1	0.01617	0.00329	4.92	<.0001
gpu_class	1	-259.11159	32.66215	-7.93	<.0001
screen_size	1	4.97873	12.86350	0.39	0.6988
PPI	1	4.61086	0.45751	10.08	<.0001
warranty	1	126.34691	15.62228	8.09	<.0001
Apple	1	-109.27916	102.72638	-1.06	0.2877
Dell	1	199.80393	48.59730	4.11	<.0001
Asus	1	-48.67265	41.44192	-1.17	0.2405
DB	1	-39.79318	56.76693	-0.70	0.4835
HP	1	123.63632	48.30390	2.56	0.0106
Lenovo	1	-3.23815	33.78214	-0.10	0.9237
is_windows	1	-204.31930	69.40569	-2.94	0.0033
is_refurbished	1	-141.06146	40.39215	-3.49	0.0005
ram_gb	1	54.20898	3.95587	13.70	<.0001
storage_gb	1	-0.44786	1.51396	-0.30	0.7674

Name: Praful Patil, Sanjana Belde, Sreejanya Onteddu, Tuasi Smrithi Yaralagadda
NetID: PVP220001, SXB220133, SXO220000, TXY220003

Group No: 13 Assignment 3

1) e) i)

- APPLE: Price will be **$109.28 lesser** if the product is Apple when compared to OTHERS and the Parameter estimate is **not significant** at 5% significance level
- DELL: Price will be **$199.80 more** if the product is Dell when compared to OTHERS and the Parameter estimate **is significant** at 5% significance level
- Asus: Price will be **$48.67 lesser** if the product is Asus when compared to OTHERS and the Parameter estimate is **not significant** at 5% significance level
- DB: Price will be **$39.793 lesser** if the product is DB when compared to OTHERS and the Parameter estimate is **not significant** at 5% significance level
- HP: Price will be **$123.63 more** if the product is HP when compared to OTHERS and the Parameter estimate **is significant** at 5% significance level
- Lenovo: Price will be **$3.238 less** if the product is Lenovo when compared to OTHERS and the Parameter estimate is **not significant** at 5% significance level

1) e) ii)

- Operating System: Price will be **$204.31 lesser** if the Operating Sytem is Windows when compared to others and the parameter estimate **is Significant** at 5% significance level
- PPI: Price will be **$4.61 more** for every pixcel per inch increase and the parameter estimate **is Significant** at 5% significance level
- Warranty: Price will be **$126.34 more** for increase of warranty each year and the parameter estimate **is Significant** at 5% significance level
- Total RAM (ram_gb): For every additional GB of RAM, the price will **increase by $51.02**, and this parameter estimate **is significant** at the 5% significance level.
- Total Storage (storage_gb): For every additional GB of storage, the price will **decrease by $0.44** (or 44 cents). However, this parameter estimate **is not significant** at the 5% significance level.
- CPU Benchmark (cpu_benchmark): For every unit increase in the CPU benchmark score, the price will **increase by $0.0161** (or 1.61 cents), and this parameter estimate **is significant** at the 5% significance level.

Name: Praful Patil, Sanjana Belde, Sreejanya Onteddu, Tuasi Smrithi Yaralagadda
NetID: PVP220001, SXB220133, SXO220000, TXY220003

Group No: 13 Assignment 3

- GPU Class (gpu_class): An increase in GPU class will **decrease the price by $259.11**, and this parameter estimate **is significant** at the 5% significance level.

- Screen Size (screen_size): For every inch increase in screen size, the price will **increase by $4.91**. However, this parameter estimate **is not significant** at the 5% significance level.

- Refurbished (is_refurbished): If the item is refurbished, the price **will be $141.02 less** than if it's not refurbished, and this parameter estimate **is significant** at the 5% significance level.

1) e) iii)
The adjusted **R^2 value of 0.7640** indicates that 76.40% of the variability in the dependent variable is explained by the independent variables in the model, after adjusting for the number of predictors. The remaining 23.60% is unexplained by the model.

1) f) Taking log transformation of required variables

```
data clasdata.laplog;
set clasdata.lap;
lprice=log(price);
lscreen=log(screen_size);
lwarranty = log(warranty);

proc print data=clasdata.laplog;
run;
```

OUTPUT

rbished	ram_gb	storage_gb	lprice	lscreen	lwarranty
1	4	47.705	5.46379	2.74727	.
1	4	49.000	5.46802	2.74727	0.00000
1	4	49.000	5.56064	2.74727	.
1	4	49.000	5.40937	2.74727	.
1	9	49.000	5.92557	2.63906	.
1	16	120.248	7.78176	2.77259	.
1	9	56.128	5.02381	2.63906	.
1	16	56.128	6.06027	2.63906	.
1	16	56.128	5.69370	2.63906	.
1	16	99.317	7.25169	2.63906	0.00000
1	16	99.317	7.42267	2.63906	0.00000
1	9	99.317	7.03658	2.74727	0.00000
1	16	99.317	7.09423	2.74727	.
1	16	99.317	7.17892	2.74727	0.00000
1	25	99.317	7.46508	2.74727	0.00000
1	16	99.317	6.92559	2.74727	0.69315
1	16	99.317	7.09795	2.77259	0.00000
1	16	99.317	7.24386	2.74727	0.00000
1	16	99.317	7.32745	2.85071	0.00000
1	16	99.317	7.29471	2.74727	0.00000

Name: Praful Patil, Sanjana Belde, Sreejanya Onteddu, Tuasi Smrithi Yaralagadda
NetID: PVP220001, SXB220133, SXO220000, TXY220003

Group No: 13 Assignment 3

1) g) Running log - log model

```
/* 1) g) Running log - log model*/
proc reg data= clasdata.laplog;
model lprice= lscreen lwarranty cpu_benchmark gpu_class ppi apple dell asus db hp lenovo is_windows is_refurbished ram_gb storage_gb;
run;
```

OUTPUT:

Model: MODEL1
Dependent Variable: lprice

Number of Observations Read	1001
Number of Observations Used	868
Number of Observations with Missing Values	133

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	376.21975	25.08132	296.48	<.0001
Error	852	72.07767	0.08460		
Corrected Total	867	448.29742			

Root MSE	0.29086	R-Square	0.8392
Dependent Mean	6.78391	Adj R-Sq	0.8364
Coeff Var	4.28747		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	6.42144	0.45048	14.25	<.0001
lscreen	1	-0.40501	0.15346	-2.64	0.0085
lwarranty	1	0.20614	0.02556	8.07	<.0001
cpu_benchmark	1	0.00002090	0.00000262	7.98	<.0001
gpu_class	1	-0.18474	0.02678	-6.90	<.0001
PPI	1	0.00230	0.00036991	6.22	<.0001
Apple	1	0.45517	0.08516	5.34	<.0001
Dell	1	0.41473	0.03854	10.76	<.0001
Asus	1	0.06451	0.03694	1.75	0.0811
DB	1	0.24710	0.04507	5.48	<.0001
HP	1	0.32760	0.04011	8.17	<.0001
Lenovo	1	0.23555	0.02763	8.52	<.0001
is_windows	1	0.06652	0.06221	1.07	0.2852
is_refurbished	1	-0.23107	0.03705	-6.24	<.0001
ram_gb	1	0.03890	0.00327	11.90	<.0001
storage_gb	1	0.00717	0.00126	5.70	<.0001

1) g)

For screen size (lscreen):

The parameter estimate is -0.4051. This means that for a 1% increase in screen size, the price is expected to decrease by approximately 0.4051%

Group No: 13 Assignment 3

when all other factors are held constant. The negative value indicates an inverse relationship.

For warranty:

The parameter estimate is 0.20614. This suggests that for a 1% increase in warranty length (in years, presumably), we can expect the price to increase by approximately 0.20614% when holding all other variables constant.

The adjusted R-squared is 0.8364. This means that 83.64% of the variability in the log-transformed price can be explained by the log-transformed independent variables in the model, adjusting for the number of predictors.

1) h) Log - Log model offers the highest R-Squared value of 0.8364 when compared to the normal model without log transformation of parameters which is 0.7604

2) a)

```
proc glm data= clasdata.laplog;
 class brand operating_system refurbished;
 model lprice=lscreen lwarranty cpu_benchmark gpu_class ppi operating_system brand refurbished ram_gb storage_gb /solution;
 run;
```

OUTPUT

Parameter	Estimate		Standard Error	t Value	Pr > |t|
Intercept	6.342811059	B	0.46040661	13.78	<.0001
lscreen	-0.443779077		0.15327747	-2.90	0.0039
lwarranty	0.217375576		0.02570764	8.46	<.0001
cpu_benchmark	0.000021307		0.00000261	8.17	<.0001
gpu_class	-0.194322426		0.02684595	-7.24	<.0001
PPI	0.002284068		0.00036822	6.20	<.0001
operating_system OTHERS	-0.081297118	B	0.06211539	-1.31	0.1910
operating_system WINDOWS	0.000000000	B	.	.	.
brand ACER	0.139353200	B	0.04628588	3.01	0.0027
brand APPLE	0.516471103	B	0.08717353	5.92	<.0001
brand ASUS	0.112037735	B	0.04001289	2.80	0.0052
brand DELL	0.462384333	B	0.04149583	11.14	<.0001
brand DYNABOOK	0.300082864	B	0.04819085	6.23	<.0001
brand HP	0.375479265	B	0.04296842	8.74	<.0001
brand LENOVO	0.283522001	B	0.03178401	8.92	<.0001
brand OTHER	0.000000000	B	.	.	.
refurbished NO	0.224604999	B	0.03693897	6.08	<.0001
refurbished YES	0.000000000	B	.	.	.
ram_gb	0.038465397		0.00325636	11.81	<.0001
storage_gb	0.007209078		0.00125358	5.75	<.0001

Name: Praful Patil, Sanjana Belde, Sreejanya Onteddu, Tuasi Smrithi Yaralagadda
NetID: PVP220001, SXB220133, SXO220000, TXY220003

Group No: 13 Assignment 3

Output with default Reference Cases

- Brand: Default Reference case is **OTHER.**
- Operating_System: Default Reference case is **WINDOWS.**
- Refurbished: Default Reference case is **YES.**

2) b)

```
/* 2) b) Running proc glm by changing ref*/
proc glm data= clasdata.laplog;
class brand (ref = 'OTHER') operating_system (ref = 'OTHERS') refurbished (ref = 'NO');
model lprice=lscreen lwarranty cpu_benchmark gpu_class ppi operating_system brand refurbished ram_gb storage_gb /solution;
run;
```

OUTPUT

Parameter	Estimate		Standard Error	t Value	Pr > |t|
Intercept	6.486118940	B	0.44887951	14.45	<.0001
lscreen	-0.443779077		0.15327747	-2.90	0.0039
lwarranty	0.217375576		0.02570764	8.46	<.0001
cpu_benchmark	0.000021307		0.00000261	8.17	<.0001
gpu_class	-0.194322426		0.02684595	-7.24	<.0001
PPI	0.002284068		0.00036822	6.20	<.0001
operating_system WINDOWS	0.081297118	B	0.06211539	1.31	0.1910
operating_system OTHERS	0.000000000	B	.	.	.
brand ACER	0.139353200	B	0.04628588	3.01	0.0027
brand APPLE	0.516471103	B	0.08717353	5.92	<.0001
brand ASUS	0.112037735	B	0.04001289	2.80	0.0052
brand DELL	0.462384333	B	0.04149583	11.14	<.0001
brand DYNABOOK	0.300082864	B	0.04819085	6.23	<.0001
brand HP	0.375479265	B	0.04296842	8.74	<.0001
brand LENOVO	0.283522001	B	0.03178401	8.92	<.0001
brand OTHER	0.000000000	B	.	.	.
refurbished YES	-0.224604999	B	0.03693897	-6.08	<.0001
refurbished NO	0.000000000	B	.	.	.
ram_gb	0.038465397		0.00325636	11.81	<.0001
storage_gb	0.007209078		0.00125358	5.75	<.0001