

## **SAS\_STAT40840 - Assignment 2**

My Name is Yusen Xie

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## The CONTENTS Procedure

Data Set Name	S40840.DIAMONDS	Observations	53940
Member Type	DATA	Variables	10
Engine	V9	Indexes	0
Created	07/19/2022 01:30:22	Observation Length	80
Last Modified	07/19/2022 01:30:22	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Engine/Host Dependent Information	
Data Set Page Size	131072
Number of Data Set Pages	34
First Data Page	1
Max Obs per Page	1635
Obs in First Data Page	1594
Number of Data Set Repairs	0
Filename	/home/u61605414/sasuser.v94/diamonds.sas7bdat
Release Created	9.0401M6
Host Created	Linux
Inode Number	81004067
Access Permission	rw-r--r--
Owner Name	u61605414
File Size	4MB
File Size (bytes)	4587520

Alphabetic List of Variables and Attributes						
#	Variable	Type	Len	Format	Informat	Label
1	carat	Num	8	BEST12.	BEST32.	carat of diamond
4	clarity	Char	6	\$6.	\$6.	clarity of the diamond
3	color	Char	3	\$3.	\$3.	color of the diamond
2	cut	Char	11	\$11.	\$11.	quality of the diamond
5	depth	Num	8	BEST12.	BEST32.	The height of a diamond
7	price	Num	8	BEST12.	BEST32.	The price of the diamond
6	table	Num	8	BEST12.	BEST32.	The width of the diamonds table
8	x	Num	8	BEST12.	BEST32.	length mm

**The CONTENTS Procedure**

Alphabetic List of Variables and Attributes						
#	Variable	Type	Len	Format	Informat	Label
9	y	Num	8	BEST12.	BEST32.	width mm
10	z	Num	8	BEST12.	BEST32.	depth mm

## The CONTENTS Procedure

Alphabetic List of Variables and Attributes						
#	Variable	Type	Len	Format	Informat	Label
1	carat	Num	8	BEST12.	BEST32.	carat of diamond
4	clarity	Char	6	\$6.	\$6.	clarity of the diamond
3	color	Char	3	\$3.	\$3.	color of the diamond
2	cut	Char	11	\$11.	\$11.	quality of the diamond
5	depth	Num	8	BEST12.	BEST32.	The height of a diamond
7	price	Num	8	BEST12.	BEST32.	The price of the diamond
6	table	Num	8	BEST12.	BEST32.	The width of the diamonds table
8	x	Num	8	BEST12.	BEST32.	length mm
9	y	Num	8	BEST12.	BEST32.	width mm
10	z	Num	8	BEST12.	BEST32.	depth mm

**Q3.**

Tuesday, July 19, 2022 01:30:21 AM 5

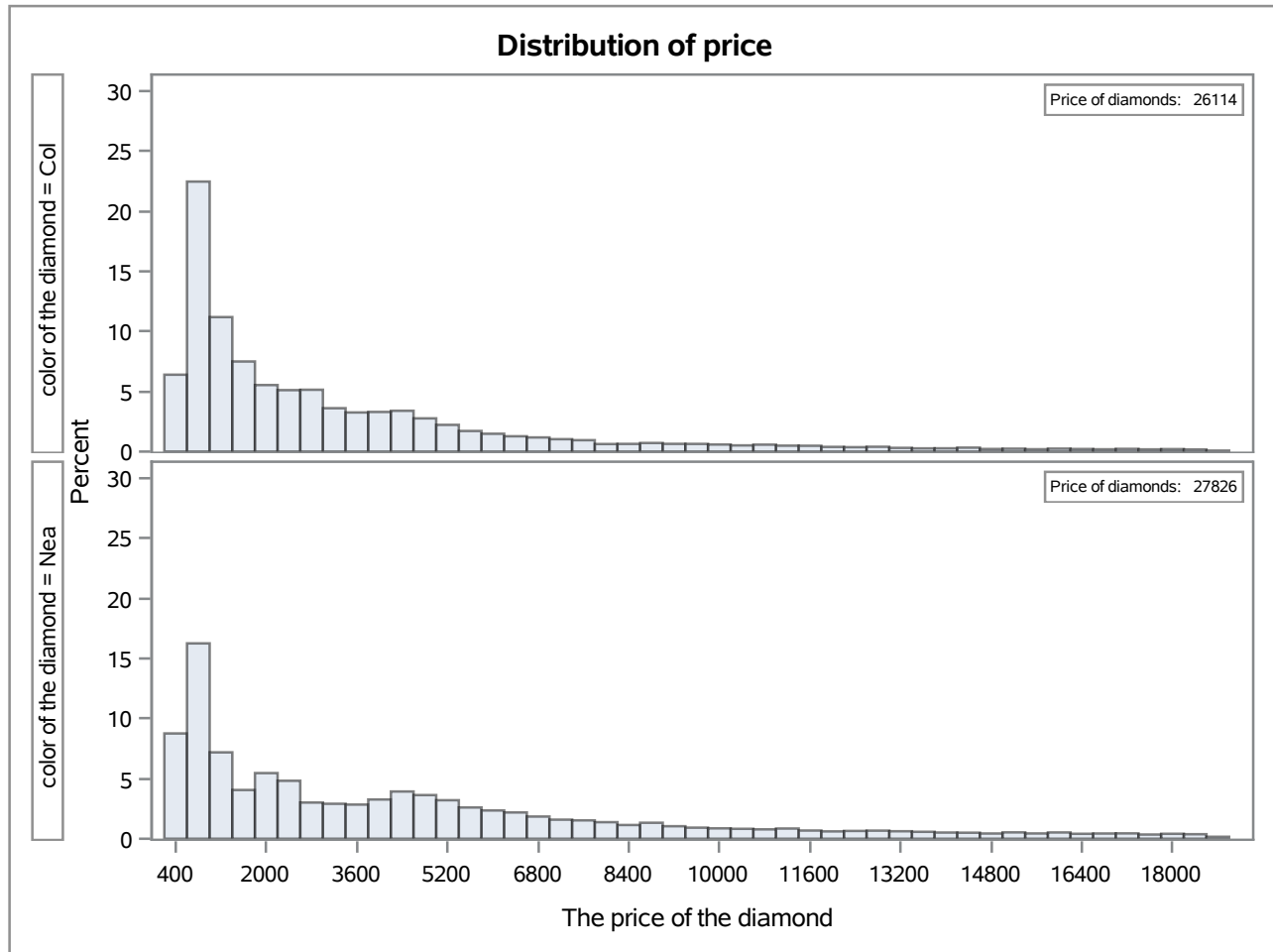
Obs	carat	cut	color	clarity	depth	table	price	x	y	z
1	0.23	L	Col	SI2	61.5	55	326	3.95	3.98	2.43
2	0.21	M	Col	SI1	59.8	61	326	3.89	3.84	2.31
3	0.23	D	Col	VS1	56.9	65	327	4.05	4.07	2.31
4	0.29	M	Nea	VS2	62.4	58	334	4.2	4.23	2.63
5	0.31	D	Nea	SI2	63.3	58	335	4.34	4.35	2.75

**The UNIVARIATE Procedure**  
**Variable: price (The price of the diamond)**

Quantiles (Definition 5)	
Level	Quantile
100% Max	18823.0
99%	17379.0
95%	13108.0
90%	9821.0
75% Q3	5324.5
50% Median	2401.0
25% Q1	950.0
10%	646.0
5%	544.0
1%	429.0
0% Min	326.0

Extreme Observations			
Lowest		Highest	
Value	Obs	Value	Obs
326	2	18803	27746
326	1	18804	27747
327	3	18806	27748
334	4	18818	27749
335	5	18823	27750

## The UNIVARIATE Procedure



*Using color as a dividing criterion, it was found that as Colourless and Near Colourless declined, so did its price*

**The FREQ Procedure**

Number of Variable Levels		
Variable	Label	Levels
<b>carat</b>	carat of diamond	273
<b>color</b>	color of the diamond	2



## The FREQ Procedure

carat of diamond				
carat	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0.2	12	0.02	12	0.02
0.21	9	0.02	21	0.04
0.22	5	0.01	26	0.05
0.23	293	0.54	319	0.59
0.24	254	0.47	573	1.06
0.25	212	0.39	785	1.46
0.26	253	0.47	1038	1.92
0.27	233	0.43	1271	2.36
0.28	198	0.37	1469	2.72
0.29	130	0.24	1599	2.96
0.3	2604	4.83	4203	7.79
0.31	2249	4.17	6452	11.96
0.32	1840	3.41	8292	15.37
0.33	1189	2.20	9481	17.58
0.34	910	1.69	10391	19.26
0.35	667	1.24	11058	20.50
0.36	572	1.06	11630	21.56
0.37	394	0.73	12024	22.29
0.38	670	1.24	12694	23.53
0.39	398	0.74	13092	24.27
0.4	1299	2.41	14391	26.68
0.41	1382	2.56	15773	29.24
0.42	706	1.31	16479	30.55
0.43	488	0.90	16967	31.46
0.44	212	0.39	17179	31.85
0.45	110	0.20	17289	32.05
0.46	178	0.33	17467	32.38
0.47	99	0.18	17566	32.57
0.48	63	0.12	17629	32.68
0.49	45	0.08	17674	32.77
0.5	1258	2.33	18932	35.10
0.51	1127	2.09	20059	37.19
0.52	817	1.51	20876	38.70
0.53	709	1.31	21585	40.02
0.54	625	1.16	22210	41.18

## The FREQ Procedure

carat of diamond				
carat	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0.55	496	0.92	22706	42.09
0.56	492	0.91	23198	43.01
0.57	430	0.80	23628	43.80
0.58	310	0.57	23938	44.38
0.59	282	0.52	24220	44.90
0.6	228	0.42	24448	45.32
0.61	204	0.38	24652	45.70
0.62	135	0.25	24787	45.95
0.63	102	0.19	24889	46.14
0.64	80	0.15	24969	46.29
0.65	65	0.12	25034	46.41
0.66	48	0.09	25082	46.50
0.67	48	0.09	25130	46.59
0.68	25	0.05	25155	46.64
0.69	26	0.05	25181	46.68
0.7	1981	3.67	27162	50.36
0.71	1294	2.40	28456	52.75
0.72	764	1.42	29220	54.17
0.73	492	0.91	29712	55.08
0.74	322	0.60	30034	55.68
0.75	249	0.46	30283	56.14
0.76	251	0.47	30534	56.61
0.77	251	0.47	30785	57.07
0.78	187	0.35	30972	57.42
0.79	155	0.29	31127	57.71
0.8	284	0.53	31411	58.23
0.81	200	0.37	31611	58.60
0.82	140	0.26	31751	58.86
0.83	131	0.24	31882	59.11
0.84	64	0.12	31946	59.23
0.85	62	0.11	32008	59.34
0.86	34	0.06	32042	59.40
0.87	31	0.06	32073	59.46
0.88	23	0.04	32096	59.50
0.89	21	0.04	32117	59.54

## The FREQ Procedure

carat of diamond				
carat	Frequency	Percent	Cumulative Frequency	Cumulative Percent
0.9	1485	2.75	33602	62.30
0.91	570	1.06	34172	63.35
0.92	226	0.42	34398	63.77
0.93	142	0.26	34540	64.03
0.94	59	0.11	34599	64.14
0.95	65	0.12	34664	64.26
0.96	103	0.19	34767	64.45
0.97	59	0.11	34826	64.56
0.98	31	0.06	34857	64.62
0.99	23	0.04	34880	64.66
1	1558	2.89	36438	67.55
1.01	2242	4.16	38680	71.71
1.02	883	1.64	39563	73.35
1.03	523	0.97	40086	74.32
1.04	475	0.88	40561	75.20
1.05	361	0.67	40922	75.87
1.06	373	0.69	41295	76.56
1.07	342	0.63	41637	77.19
1.08	246	0.46	41883	77.65
1.09	287	0.53	42170	78.18
1.1	278	0.52	42448	78.69
1.11	308	0.57	42756	79.27
1.12	251	0.47	43007	79.73
1.13	246	0.46	43253	80.19
1.14	207	0.38	43460	80.57
1.15	149	0.28	43609	80.85
1.16	172	0.32	43781	81.17
1.17	110	0.20	43891	81.37
1.18	123	0.23	44014	81.60
1.19	126	0.23	44140	81.83
1.2	645	1.20	44785	83.03
1.21	473	0.88	45258	83.90
1.22	300	0.56	45558	84.46
1.23	279	0.52	45837	84.98
1.24	236	0.44	46073	85.42

## The FREQ Procedure

carat of diamond				
carat	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1.25	187	0.35	46260	85.76
1.26	146	0.27	46406	86.03
1.27	134	0.25	46540	86.28
1.28	106	0.20	46646	86.48
1.29	101	0.19	46747	86.66
1.3	122	0.23	46869	86.89
1.31	133	0.25	47002	87.14
1.32	89	0.16	47091	87.30
1.33	87	0.16	47178	87.46
1.34	68	0.13	47246	87.59
1.35	77	0.14	47323	87.73
1.36	50	0.09	47373	87.83
1.37	46	0.09	47419	87.91
1.38	26	0.05	47445	87.96
1.39	36	0.07	47481	88.03
1.4	50	0.09	47531	88.12
1.41	40	0.07	47571	88.19
1.42	25	0.05	47596	88.24
1.43	19	0.04	47615	88.27
1.44	18	0.03	47633	88.31
1.45	15	0.03	47648	88.34
1.46	18	0.03	47666	88.37
1.47	21	0.04	47687	88.41
1.48	7	0.01	47694	88.42
1.49	11	0.02	47705	88.44
1.5	793	1.47	48498	89.91
1.51	807	1.50	49305	91.41
1.52	381	0.71	49686	92.11
1.53	220	0.41	49906	92.52
1.54	174	0.32	50080	92.84
1.55	124	0.23	50204	93.07
1.56	109	0.20	50313	93.28
1.57	106	0.20	50419	93.47
1.58	89	0.16	50508	93.64
1.59	89	0.16	50597	93.80

## The FREQ Procedure

carat of diamond				
carat	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1.6	95	0.18	50692	93.98
1.61	64	0.12	50756	94.10
1.62	61	0.11	50817	94.21
1.63	50	0.09	50867	94.30
1.64	43	0.08	50910	94.38
1.65	32	0.06	50942	94.44
1.66	30	0.06	50972	94.50
1.67	25	0.05	50997	94.54
1.68	19	0.04	51016	94.58
1.69	24	0.04	51040	94.62
1.7	215	0.40	51255	95.02
1.71	119	0.22	51374	95.24
1.72	57	0.11	51431	95.35
1.73	52	0.10	51483	95.44
1.74	40	0.07	51523	95.52
1.75	50	0.09	51573	95.61
1.76	28	0.05	51601	95.66
1.77	17	0.03	51618	95.70
1.78	12	0.02	51630	95.72
1.79	15	0.03	51645	95.75
1.8	21	0.04	51666	95.78
1.81	9	0.02	51675	95.80
1.82	13	0.02	51688	95.82
1.83	18	0.03	51706	95.86
1.84	4	0.01	51710	95.87
1.85	3	0.01	51713	95.87
1.86	9	0.02	51722	95.89
1.87	7	0.01	51729	95.90
1.88	4	0.01	51733	95.91
1.89	4	0.01	51737	95.92
1.9	7	0.01	51744	95.93
1.91	12	0.02	51756	95.95
1.92	2	0.00	51758	95.95
1.93	6	0.01	51764	95.97
1.94	3	0.01	51767	95.97

## The FREQ Procedure

carat of diamond				
carat	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1.95	3	0.01	51770	95.98
1.96	4	0.01	51774	95.98
1.97	4	0.01	51778	95.99
1.98	5	0.01	51783	96.00
1.99	3	0.01	51786	96.01
2	265	0.49	52051	96.50
2.01	440	0.82	52491	97.31
2.02	177	0.33	52668	97.64
2.03	122	0.23	52790	97.87
2.04	86	0.16	52876	98.03
2.05	67	0.12	52943	98.15
2.06	60	0.11	53003	98.26
2.07	50	0.09	53053	98.36
2.08	41	0.08	53094	98.43
2.09	45	0.08	53139	98.52
2.1	52	0.10	53191	98.61
2.11	43	0.08	53234	98.69
2.12	25	0.05	53259	98.74
2.13	21	0.04	53280	98.78
2.14	48	0.09	53328	98.87
2.15	22	0.04	53350	98.91
2.16	25	0.05	53375	98.95
2.17	18	0.03	53393	98.99
2.18	31	0.06	53424	99.04
2.19	22	0.04	53446	99.08
2.2	32	0.06	53478	99.14
2.21	23	0.04	53501	99.19
2.22	27	0.05	53528	99.24
2.23	13	0.02	53541	99.26
2.24	16	0.03	53557	99.29
2.25	18	0.03	53575	99.32
2.26	15	0.03	53590	99.35
2.27	12	0.02	53602	99.37
2.28	20	0.04	53622	99.41
2.29	17	0.03	53639	99.44

## The FREQ Procedure

carat of diamond				
carat	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2.3	21	0.04	53660	99.48
2.31	13	0.02	53673	99.51
2.32	16	0.03	53689	99.53
2.33	9	0.02	53698	99.55
2.34	5	0.01	53703	99.56
2.35	7	0.01	53710	99.57
2.36	8	0.01	53718	99.59
2.37	6	0.01	53724	99.60
2.38	8	0.01	53732	99.61
2.39	7	0.01	53739	99.63
2.4	13	0.02	53752	99.65
2.41	5	0.01	53757	99.66
2.42	8	0.01	53765	99.68
2.43	6	0.01	53771	99.69
2.44	4	0.01	53775	99.69
2.45	4	0.01	53779	99.70
2.46	3	0.01	53782	99.71
2.47	3	0.01	53785	99.71
2.48	9	0.02	53794	99.73
2.49	3	0.01	53797	99.73
2.5	17	0.03	53814	99.77
2.51	17	0.03	53831	99.80
2.52	9	0.02	53840	99.81
2.53	8	0.01	53848	99.83
2.54	9	0.02	53857	99.85
2.55	3	0.01	53860	99.85
2.56	3	0.01	53863	99.86
2.57	3	0.01	53866	99.86
2.58	3	0.01	53869	99.87
2.59	1	0.00	53870	99.87
2.6	3	0.01	53873	99.88
2.61	3	0.01	53876	99.88
2.63	3	0.01	53879	99.89
2.64	1	0.00	53880	99.89
2.65	1	0.00	53881	99.89

## The FREQ Procedure

carat of diamond				
carat	Frequency	Percent	Cumulative Frequency	Cumulative Percent
2.66	3	0.01	53884	99.90
2.67	1	0.00	53885	99.90
2.68	2	0.00	53887	99.90
2.7	1	0.00	53888	99.90
2.71	1	0.00	53889	99.91
2.72	3	0.01	53892	99.91
2.74	3	0.01	53895	99.92
2.75	2	0.00	53897	99.92
2.77	1	0.00	53898	99.92
2.8	2	0.00	53900	99.93
3	8	0.01	53908	99.94
3.01	14	0.03	53922	99.97
3.02	1	0.00	53923	99.97
3.04	2	0.00	53925	99.97
3.05	1	0.00	53926	99.97
3.11	1	0.00	53927	99.98
3.22	1	0.00	53928	99.98
3.24	1	0.00	53929	99.98
3.4	1	0.00	53930	99.98
3.5	1	0.00	53931	99.98
3.51	1	0.00	53932	99.99
3.65	1	0.00	53933	99.99
3.67	1	0.00	53934	99.99
4	1	0.00	53935	99.99
4.01	2	0.00	53937	99.99
4.13	1	0.00	53938	100.00
4.5	1	0.00	53939	100.00
5.01	1	0.00	53940	100.00

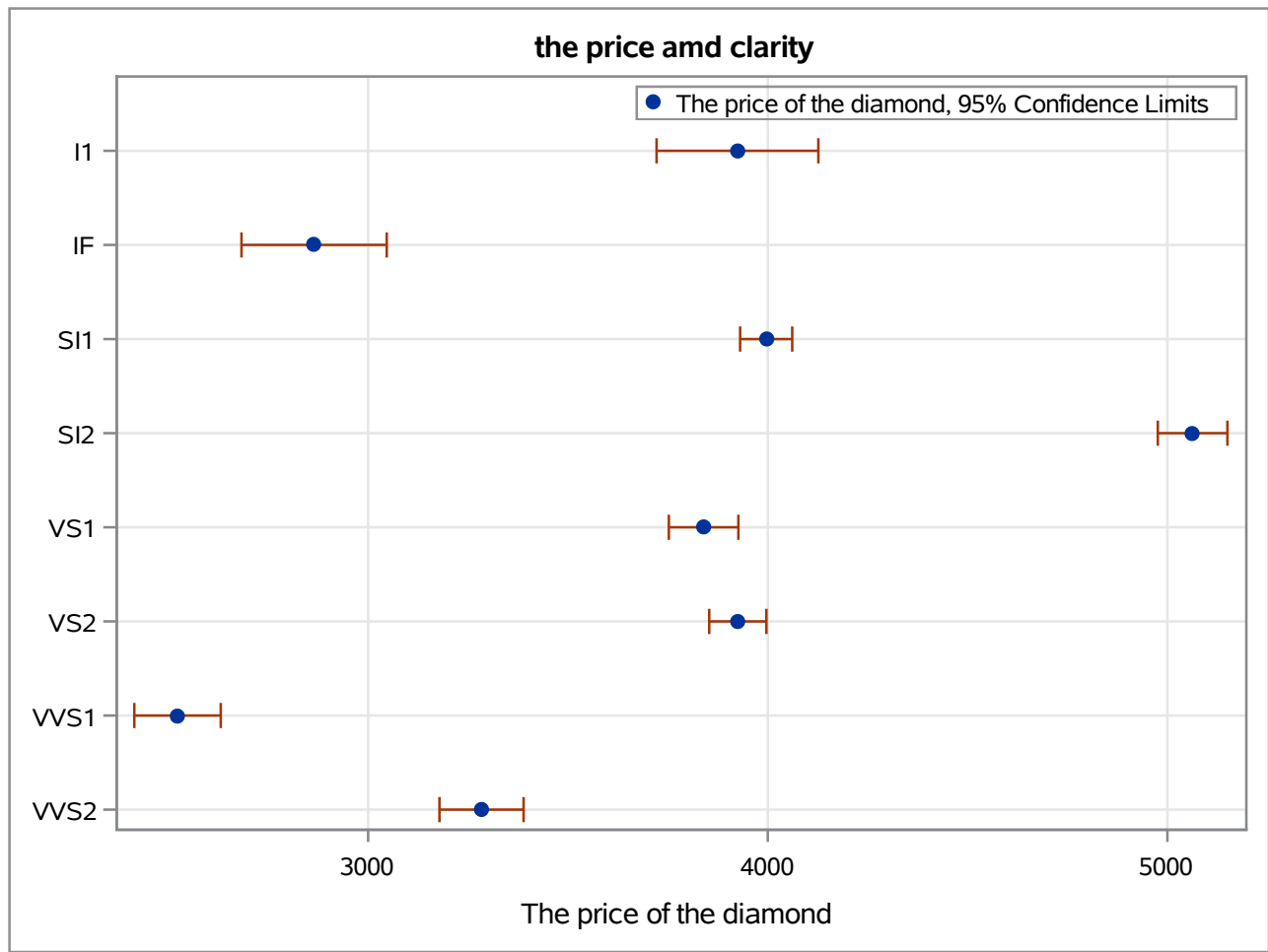
color of the diamond				
color	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Col	26114	48.41	26114	48.41
Nea	27826	51.59	53940	100.00



*i regard that colourless plus light is the least frequent*

## The MEANS Procedure

color of the diamond	clarity of the diamond	N Obs	Variable	Label	N	Mean	Std Dev	Minimum	Maximum
Col	I1	7	carat price	carat of diamond The price of the diamond	7 7	2.6257143 11805.71	0.5652096 2087.09	2.0000000 10340.00	3.4000000 15964.00
	IF	102	carat price	carat of diamond The price of the diamond	102 102	1.0941176 13734.40	0.1093125 2648.13	1.0000000 10029.00	1.5100000 18700.00
	SI1	411	carat price	carat of diamond The price of the diamond	411 411	1.6083942 12800.71	0.1545847 1915.44	1.4400000 10046.00	2.2100000 18759.00
	SI2	371	carat price	carat of diamond The price of the diamond	371 371	1.9239623 14412.92	0.2456952 2932.30	1.0100000 10011.00	2.7100000 18784.00
	VS1	196	carat price	carat of diamond The price of the diamond	196 196	1.4087245 13819.48	0.1608787 2925.34	1.0300000 10009.00	1.9300000 18780.00
	VS2	338	carat price	carat of diamond The price of the diamond	338 338	1.5140237 14201.96	0.1146188 2008.88	1.1000000 10006.00	2.0000000 18791.00
	VVS1	142	carat price	carat of diamond The price of the diamond	142 142	1.1398592 12580.68	0.1157522 2047.13	1.0000000 10019.00	1.5100000 18777.00
	VVS2	231	carat price	carat of diamond The price of the diamond	231 231	1.1788312 12101.59	0.1370335 2006.90	1.0000000 10003.00	1.5500000 18614.00
Nea	I1	23	carat price	carat of diamond The price of the diamond	23 23	3.3013043 13175.74	0.7152196 2775.68	2.3400000 10076.00	5.0100000 18531.00
	IF	66	carat price	carat of diamond The price of the diamond	66 66	1.4474242 12907.53	0.2488949 2498.27	1.0900000 10053.00	2.2900000 18806.00
	SI1	773	carat price	carat of diamond The price of the diamond	773 773	1.9180983 14037.76	0.2570229 2781.99	1.4900000 10012.00	2.5700000 18818.00
	SI2	868	carat price	carat of diamond The price of the diamond	868 868	2.1421774 14221.46	0.2216520 2268.29	1.5000000 10009.00	3.0400000 18804.00
	VS1	551	carat price	carat of diamond The price of the diamond	551 551	1.6691652 13319.24	0.2471070 2412.24	1.2100000 10011.00	2.5900000 18795.00
	VS2	817	carat price	carat of diamond The price of the diamond	817 817	1.7767931 13661.73	0.2693470 2489.44	1.0100000 10002.00	3.5100000 18823.00
	VVS1	105	carat price	carat of diamond The price of the diamond	105 105	1.4388571 12826.74	0.2208389 2441.76	1.1400000 10113.00	2.3100000 18445.00
	VVS2	221	carat price	carat of diamond The price of the diamond	221 221	1.4898190 12896.53	0.1974818 2318.99	1.1200000 10004.00	2.0700000 18768.00



*From the image, the price of si2 is the highest, and most of the price of clarity is in 3000-4000, only the price of ws1 is less than 3000. In general, the higher the clarity of a diamond, the higher its price.*