

RWorksheet_Suero

Jiruel Suero BSIT 2-C

2023-11-22

1. Use the dataset mpg Download and open the mpg file. Upload it to your OWN environment

1a. Show your solutions on how to import a csv file into the environment.

```
library(readr)
```

```
mpg<- read.csv("mpg.csv")
```

```
mpg
```

##	X	manufacturer	model	displ	year	cyl	trans	drv	cty
## 1	1	audi	a4	1.8	1999	4	auto(l5)	f	18
## 2	2	audi	a4	1.8	1999	4	manual(m5)	f	21
## 3	3	audi	a4	2.0	2008	4	manual(m6)	f	20
## 4	4	audi	a4	2.0	2008	4	auto(av)	f	21
## 5	5	audi	a4	2.8	1999	6	auto(l5)	f	16
## 6	6	audi	a4	2.8	1999	6	manual(m5)	f	18
## 7	7	audi	a4	3.1	2008	6	auto(av)	f	18
## 8	8	audi	a4 quattro	1.8	1999	4	manual(m5)	4	18
## 9	9	audi	a4 quattro	1.8	1999	4	auto(l5)	4	16
## 10	10	audi	a4 quattro	2.0	2008	4	manual(m6)	4	20
## 11	11	audi	a4 quattro	2.0	2008	4	auto(s6)	4	19
## 12	12	audi	a4 quattro	2.8	1999	6	auto(l5)	4	15
## 13	13	audi	a4 quattro	2.8	1999	6	manual(m5)	4	17
## 14	14	audi	a4 quattro	3.1	2008	6	auto(s6)	4	17
## 15	15	audi	a4 quattro	3.1	2008	6	manual(m6)	4	15
## 16	16	audi	a6 quattro	2.8	1999	6	auto(l5)	4	15
## 17	17	audi	a6 quattro	3.1	2008	6	auto(s6)	4	17
## 18	18	audi	a6 quattro	4.2	2008	8	auto(s6)	4	16
## 19	19	chevrolet	c1500 suburban 2wd	5.3	2008	8	auto(l4)	r	14
## 20	20	chevrolet	c1500 suburban 2wd	5.3	2008	8	auto(l4)	r	11
## 21	21	chevrolet	c1500 suburban 2wd	5.3	2008	8	auto(l4)	r	14
## 22	22	chevrolet	c1500 suburban 2wd	5.7	1999	8	auto(l4)	r	13
## 23	23	chevrolet	c1500 suburban 2wd	6.0	2008	8	auto(l4)	r	12
## 24	24	chevrolet	corvette	5.7	1999	8	manual(m6)	r	16
## 25	25	chevrolet	corvette	5.7	1999	8	auto(l4)	r	15
## 26	26	chevrolet	corvette	6.2	2008	8	manual(m6)	r	16
## 27	27	chevrolet	corvette	6.2	2008	8	auto(s6)	r	15
## 28	28	chevrolet	corvette	7.0	2008	8	manual(m6)	r	15
## 29	29	chevrolet	k1500 tahoe 4wd	5.3	2008	8	auto(l4)	4	14
## 30	30	chevrolet	k1500 tahoe 4wd	5.3	2008	8	auto(l4)	4	11
## 31	31	chevrolet	k1500 tahoe 4wd	5.7	1999	8	auto(l4)	4	11
## 32	32	chevrolet	k1500 tahoe 4wd	6.5	1999	8	auto(l4)	4	14
## 33	33	chevrolet	malibu	2.4	1999	4	auto(l4)	f	19
## 34	34	chevrolet	malibu	2.4	2008	4	auto(l4)	f	22

## 35	35	chevrolet	malibu	3.1	1999	6	auto(14)	f	18
## 36	36	chevrolet	malibu	3.5	2008	6	auto(14)	f	18
## 37	37	chevrolet	malibu	3.6	2008	6	auto(s6)	f	17
## 38	38	dodge	caravan 2wd	2.4	1999	4	auto(13)	f	18
## 39	39	dodge	caravan 2wd	3.0	1999	6	auto(14)	f	17
## 40	40	dodge	caravan 2wd	3.3	1999	6	auto(14)	f	16
## 41	41	dodge	caravan 2wd	3.3	1999	6	auto(14)	f	16
## 42	42	dodge	caravan 2wd	3.3	2008	6	auto(14)	f	17
## 43	43	dodge	caravan 2wd	3.3	2008	6	auto(14)	f	17
## 44	44	dodge	caravan 2wd	3.3	2008	6	auto(14)	f	11
## 45	45	dodge	caravan 2wd	3.8	1999	6	auto(14)	f	15
## 46	46	dodge	caravan 2wd	3.8	1999	6	auto(14)	f	15
## 47	47	dodge	caravan 2wd	3.8	2008	6	auto(16)	f	16
## 48	48	dodge	caravan 2wd	4.0	2008	6	auto(16)	f	16
## 49	49	dodge	dakota pickup 4wd	3.7	2008	6	manual(m6)	4	15
## 50	50	dodge	dakota pickup 4wd	3.7	2008	6	auto(14)	4	14
## 51	51	dodge	dakota pickup 4wd	3.9	1999	6	auto(14)	4	13
## 52	52	dodge	dakota pickup 4wd	3.9	1999	6	manual(m5)	4	14
## 53	53	dodge	dakota pickup 4wd	4.7	2008	8	auto(15)	4	14
## 54	54	dodge	dakota pickup 4wd	4.7	2008	8	auto(15)	4	14
## 55	55	dodge	dakota pickup 4wd	4.7	2008	8	auto(15)	4	9
## 56	56	dodge	dakota pickup 4wd	5.2	1999	8	manual(m5)	4	11
## 57	57	dodge	dakota pickup 4wd	5.2	1999	8	auto(14)	4	11
## 58	58	dodge	durango 4wd	3.9	1999	6	auto(14)	4	13
## 59	59	dodge	durango 4wd	4.7	2008	8	auto(15)	4	13
## 60	60	dodge	durango 4wd	4.7	2008	8	auto(15)	4	9
## 61	61	dodge	durango 4wd	4.7	2008	8	auto(15)	4	13
## 62	62	dodge	durango 4wd	5.2	1999	8	auto(14)	4	11
## 63	63	dodge	durango 4wd	5.7	2008	8	auto(15)	4	13
## 64	64	dodge	durango 4wd	5.9	1999	8	auto(14)	4	11
## 65	65	dodge	ram 1500 pickup 4wd	4.7	2008	8	manual(m6)	4	12
## 66	66	dodge	ram 1500 pickup 4wd	4.7	2008	8	auto(15)	4	9
## 67	67	dodge	ram 1500 pickup 4wd	4.7	2008	8	auto(15)	4	13
## 68	68	dodge	ram 1500 pickup 4wd	4.7	2008	8	auto(15)	4	13
## 69	69	dodge	ram 1500 pickup 4wd	4.7	2008	8	manual(m6)	4	12
## 70	70	dodge	ram 1500 pickup 4wd	4.7	2008	8	manual(m6)	4	9
## 71	71	dodge	ram 1500 pickup 4wd	5.2	1999	8	auto(14)	4	11
## 72	72	dodge	ram 1500 pickup 4wd	5.2	1999	8	manual(m5)	4	11
## 73	73	dodge	ram 1500 pickup 4wd	5.7	2008	8	auto(15)	4	13
## 74	74	dodge	ram 1500 pickup 4wd	5.9	1999	8	auto(14)	4	11
## 75	75	ford	expedition 2wd	4.6	1999	8	auto(14)	r	11
## 76	76	ford	expedition 2wd	5.4	1999	8	auto(14)	r	11
## 77	77	ford	expedition 2wd	5.4	2008	8	auto(16)	r	12
## 78	78	ford	explorer 4wd	4.0	1999	6	auto(15)	4	14
## 79	79	ford	explorer 4wd	4.0	1999	6	manual(m5)	4	15
## 80	80	ford	explorer 4wd	4.0	1999	6	auto(15)	4	14
## 81	81	ford	explorer 4wd	4.0	2008	6	auto(15)	4	13
## 82	82	ford	explorer 4wd	4.6	2008	8	auto(16)	4	13
## 83	83	ford	explorer 4wd	5.0	1999	8	auto(14)	4	13
## 84	84	ford	f150 pickup 4wd	4.2	1999	6	auto(14)	4	14
## 85	85	ford	f150 pickup 4wd	4.2	1999	6	manual(m5)	4	14
## 86	86	ford	f150 pickup 4wd	4.6	1999	8	manual(m5)	4	13
## 87	87	ford	f150 pickup 4wd	4.6	1999	8	auto(14)	4	13
## 88	88	ford	f150 pickup 4wd	4.6	2008	8	auto(14)	4	13

## 89	89	ford	f150 pickup 4wd	5.4	1999	8	auto(14)	4	11
## 90	90	ford	f150 pickup 4wd	5.4	2008	8	auto(14)	4	13
## 91	91	ford	mustang	3.8	1999	6	manual(m5)	r	18
## 92	92	ford	mustang	3.8	1999	6	auto(14)	r	18
## 93	93	ford	mustang	4.0	2008	6	manual(m5)	r	17
## 94	94	ford	mustang	4.0	2008	6	auto(15)	r	16
## 95	95	ford	mustang	4.6	1999	8	auto(14)	r	15
## 96	96	ford	mustang	4.6	1999	8	manual(m5)	r	15
## 97	97	ford	mustang	4.6	2008	8	manual(m5)	r	15
## 98	98	ford	mustang	4.6	2008	8	auto(15)	r	15
## 99	99	ford	mustang	5.4	2008	8	manual(m6)	r	14
## 100	100	honda	civic	1.6	1999	4	manual(m5)	f	28
## 101	101	honda	civic	1.6	1999	4	auto(14)	f	24
## 102	102	honda	civic	1.6	1999	4	manual(m5)	f	25
## 103	103	honda	civic	1.6	1999	4	manual(m5)	f	23
## 104	104	honda	civic	1.6	1999	4	auto(14)	f	24
## 105	105	honda	civic	1.8	2008	4	manual(m5)	f	26
## 106	106	honda	civic	1.8	2008	4	auto(15)	f	25
## 107	107	honda	civic	1.8	2008	4	auto(15)	f	24
## 108	108	honda	civic	2.0	2008	4	manual(m6)	f	21
## 109	109	hyundai	sonata	2.4	1999	4	auto(14)	f	18
## 110	110	hyundai	sonata	2.4	1999	4	manual(m5)	f	18
## 111	111	hyundai	sonata	2.4	2008	4	auto(14)	f	21
## 112	112	hyundai	sonata	2.4	2008	4	manual(m5)	f	21
## 113	113	hyundai	sonata	2.5	1999	6	auto(14)	f	18
## 114	114	hyundai	sonata	2.5	1999	6	manual(m5)	f	18
## 115	115	hyundai	sonata	3.3	2008	6	auto(15)	f	19
## 116	116	hyundai	tiburon	2.0	1999	4	auto(14)	f	19
## 117	117	hyundai	tiburon	2.0	1999	4	manual(m5)	f	19
## 118	118	hyundai	tiburon	2.0	2008	4	manual(m5)	f	20
## 119	119	hyundai	tiburon	2.0	2008	4	auto(14)	f	20
## 120	120	hyundai	tiburon	2.7	2008	6	auto(14)	f	17
## 121	121	hyundai	tiburon	2.7	2008	6	manual(m6)	f	16
## 122	122	hyundai	tiburon	2.7	2008	6	manual(m5)	f	17
## 123	123	jeep	grand cherokee 4wd	3.0	2008	6	auto(15)	4	17
## 124	124	jeep	grand cherokee 4wd	3.7	2008	6	auto(15)	4	15
## 125	125	jeep	grand cherokee 4wd	4.0	1999	6	auto(14)	4	15
## 126	126	jeep	grand cherokee 4wd	4.7	1999	8	auto(14)	4	14
## 127	127	jeep	grand cherokee 4wd	4.7	2008	8	auto(15)	4	9
## 128	128	jeep	grand cherokee 4wd	4.7	2008	8	auto(15)	4	14
## 129	129	jeep	grand cherokee 4wd	5.7	2008	8	auto(15)	4	13
## 130	130	jeep	grand cherokee 4wd	6.1	2008	8	auto(15)	4	11
## 131	131	land rover	range rover	4.0	1999	8	auto(14)	4	11
## 132	132	land rover	range rover	4.2	2008	8	auto(s6)	4	12
## 133	133	land rover	range rover	4.4	2008	8	auto(s6)	4	12
## 134	134	land rover	range rover	4.6	1999	8	auto(14)	4	11
## 135	135	lincoln	navigator 2wd	5.4	1999	8	auto(14)	r	11
## 136	136	lincoln	navigator 2wd	5.4	1999	8	auto(14)	r	11
## 137	137	lincoln	navigator 2wd	5.4	2008	8	auto(16)	r	12
## 138	138	mercury	mountaineer 4wd	4.0	1999	6	auto(15)	4	14
## 139	139	mercury	mountaineer 4wd	4.0	2008	6	auto(15)	4	13
## 140	140	mercury	mountaineer 4wd	4.6	2008	8	auto(16)	4	13
## 141	141	mercury	mountaineer 4wd	5.0	1999	8	auto(14)	4	13
## 142	142	nissan	altima	2.4	1999	4	manual(m5)	f	21

## 143 143	nissan	altima	2.4 1999	4	auto(14)	f	19
## 144 144	nissan	altima	2.5 2008	4	auto(av)	f	23
## 145 145	nissan	altima	2.5 2008	4	manual(m6)	f	23
## 146 146	nissan	altima	3.5 2008	6	manual(m6)	f	19
## 147 147	nissan	altima	3.5 2008	6	auto(av)	f	19
## 148 148	nissan	maxima	3.0 1999	6	auto(14)	f	18
## 149 149	nissan	maxima	3.0 1999	6	manual(m5)	f	19
## 150 150	nissan	maxima	3.5 2008	6	auto(av)	f	19
## 151 151	nissan	pathfinder 4wd	3.3 1999	6	auto(14)	4	14
## 152 152	nissan	pathfinder 4wd	3.3 1999	6	manual(m5)	4	15
## 153 153	nissan	pathfinder 4wd	4.0 2008	6	auto(15)	4	14
## 154 154	nissan	pathfinder 4wd	5.6 2008	8	auto(s5)	4	12
## 155 155	pontiac	grand prix	3.1 1999	6	auto(14)	f	18
## 156 156	pontiac	grand prix	3.8 1999	6	auto(14)	f	16
## 157 157	pontiac	grand prix	3.8 1999	6	auto(14)	f	17
## 158 158	pontiac	grand prix	3.8 2008	6	auto(14)	f	18
## 159 159	pontiac	grand prix	5.3 2008	8	auto(s4)	f	16
## 160 160	subaru	forester awd	2.5 1999	4	manual(m5)	4	18
## 161 161	subaru	forester awd	2.5 1999	4	auto(14)	4	18
## 162 162	subaru	forester awd	2.5 2008	4	manual(m5)	4	20
## 163 163	subaru	forester awd	2.5 2008	4	manual(m5)	4	19
## 164 164	subaru	forester awd	2.5 2008	4	auto(14)	4	20
## 165 165	subaru	forester awd	2.5 2008	4	auto(14)	4	18
## 166 166	subaru	impreza awd	2.2 1999	4	auto(14)	4	21
## 167 167	subaru	impreza awd	2.2 1999	4	manual(m5)	4	19
## 168 168	subaru	impreza awd	2.5 1999	4	manual(m5)	4	19
## 169 169	subaru	impreza awd	2.5 1999	4	auto(14)	4	19
## 170 170	subaru	impreza awd	2.5 2008	4	auto(s4)	4	20
## 171 171	subaru	impreza awd	2.5 2008	4	auto(s4)	4	20
## 172 172	subaru	impreza awd	2.5 2008	4	manual(m5)	4	19
## 173 173	subaru	impreza awd	2.5 2008	4	manual(m5)	4	20
## 174 174	toyota	4runner 4wd	2.7 1999	4	manual(m5)	4	15
## 175 175	toyota	4runner 4wd	2.7 1999	4	auto(14)	4	16
## 176 176	toyota	4runner 4wd	3.4 1999	6	auto(14)	4	15
## 177 177	toyota	4runner 4wd	3.4 1999	6	manual(m5)	4	15
## 178 178	toyota	4runner 4wd	4.0 2008	6	auto(15)	4	16
## 179 179	toyota	4runner 4wd	4.7 2008	8	auto(15)	4	14
## 180 180	toyota	camry	2.2 1999	4	manual(m5)	f	21
## 181 181	toyota	camry	2.2 1999	4	auto(14)	f	21
## 182 182	toyota	camry	2.4 2008	4	manual(m5)	f	21
## 183 183	toyota	camry	2.4 2008	4	auto(15)	f	21
## 184 184	toyota	camry	3.0 1999	6	auto(14)	f	18
## 185 185	toyota	camry	3.0 1999	6	manual(m5)	f	18
## 186 186	toyota	camry	3.5 2008	6	auto(s6)	f	19
## 187 187	toyota	camry solara	2.2 1999	4	auto(14)	f	21
## 188 188	toyota	camry solara	2.2 1999	4	manual(m5)	f	21
## 189 189	toyota	camry solara	2.4 2008	4	manual(m5)	f	21
## 190 190	toyota	camry solara	2.4 2008	4	auto(s5)	f	22
## 191 191	toyota	camry solara	3.0 1999	6	auto(14)	f	18
## 192 192	toyota	camry solara	3.0 1999	6	manual(m5)	f	18
## 193 193	toyota	camry solara	3.3 2008	6	auto(s5)	f	18
## 194 194	toyota	corolla	1.8 1999	4	auto(13)	f	24
## 195 195	toyota	corolla	1.8 1999	4	auto(14)	f	24
## 196 196	toyota	corolla	1.8 1999	4	manual(m5)	f	26

##	197	197	toyota	corolla	1.8	2008	4	manual(m5)	f	28
##	198	198	toyota	corolla	1.8	2008	4	auto(l4)	f	26
##	199	199	toyota	land cruiser wagon 4wd	4.7	1999	8	auto(l4)	4	11
##	200	200	toyota	land cruiser wagon 4wd	5.7	2008	8	auto(s6)	4	13
##	201	201	toyota	toyota tacoma 4wd	2.7	1999	4	manual(m5)	4	15
##	202	202	toyota	toyota tacoma 4wd	2.7	1999	4	auto(l4)	4	16
##	203	203	toyota	toyota tacoma 4wd	2.7	2008	4	manual(m5)	4	17
##	204	204	toyota	toyota tacoma 4wd	3.4	1999	6	manual(m5)	4	15
##	205	205	toyota	toyota tacoma 4wd	3.4	1999	6	auto(l4)	4	15
##	206	206	toyota	toyota tacoma 4wd	4.0	2008	6	manual(m6)	4	15
##	207	207	toyota	toyota tacoma 4wd	4.0	2008	6	auto(l5)	4	16
##	208	208	volkswagen	gti	2.0	1999	4	manual(m5)	f	21
##	209	209	volkswagen	gti	2.0	1999	4	auto(l4)	f	19
##	210	210	volkswagen	gti	2.0	2008	4	manual(m6)	f	21
##	211	211	volkswagen	gti	2.0	2008	4	auto(s6)	f	22
##	212	212	volkswagen	gti	2.8	1999	6	manual(m5)	f	17
##	213	213	volkswagen	jetta	1.9	1999	4	manual(m5)	f	33
##	214	214	volkswagen	jetta	2.0	1999	4	manual(m5)	f	21
##	215	215	volkswagen	jetta	2.0	1999	4	auto(l4)	f	19
##	216	216	volkswagen	jetta	2.0	2008	4	auto(s6)	f	22
##	217	217	volkswagen	jetta	2.0	2008	4	manual(m6)	f	21
##	218	218	volkswagen	jetta	2.5	2008	5	auto(s6)	f	21
##	219	219	volkswagen	jetta	2.5	2008	5	manual(m5)	f	21
##	220	220	volkswagen	jetta	2.8	1999	6	auto(l4)	f	16
##	221	221	volkswagen	jetta	2.8	1999	6	manual(m5)	f	17
##	222	222	volkswagen	new beetle	1.9	1999	4	manual(m5)	f	35
##	223	223	volkswagen	new beetle	1.9	1999	4	auto(l4)	f	29
##	224	224	volkswagen	new beetle	2.0	1999	4	manual(m5)	f	21
##	225	225	volkswagen	new beetle	2.0	1999	4	auto(l4)	f	19
##	226	226	volkswagen	new beetle	2.5	2008	5	manual(m5)	f	20
##	227	227	volkswagen	new beetle	2.5	2008	5	auto(s6)	f	20
##	228	228	volkswagen	passat	1.8	1999	4	manual(m5)	f	21
##	229	229	volkswagen	passat	1.8	1999	4	auto(l5)	f	18
##	230	230	volkswagen	passat	2.0	2008	4	auto(s6)	f	19
##	231	231	volkswagen	passat	2.0	2008	4	manual(m6)	f	21
##	232	232	volkswagen	passat	2.8	1999	6	auto(l5)	f	16
##	233	233	volkswagen	passat	2.8	1999	6	manual(m5)	f	18
##	234	234	volkswagen	passat	3.6	2008	6	auto(s6)	f	17
##			hwy	fl						
##	1	29	p	compact						
##	2	29	p	compact						
##	3	31	p	compact						
##	4	30	p	compact						
##	5	26	p	compact						
##	6	26	p	compact						
##	7	27	p	compact						
##	8	26	p	compact						
##	9	25	p	compact						
##	10	28	p	compact						
##	11	27	p	compact						
##	12	25	p	compact						
##	13	25	p	compact						
##	14	25	p	compact						
##	15	25	p	compact						

## 16	24	p	midsize
## 17	25	p	midsize
## 18	23	p	midsize
## 19	20	r	suv
## 20	15	e	suv
## 21	20	r	suv
## 22	17	r	suv
## 23	17	r	suv
## 24	26	p	2seater
## 25	23	p	2seater
## 26	26	p	2seater
## 27	25	p	2seater
## 28	24	p	2seater
## 29	19	r	suv
## 30	14	e	suv
## 31	15	r	suv
## 32	17	d	suv
## 33	27	r	midsize
## 34	30	r	midsize
## 35	26	r	midsize
## 36	29	r	midsize
## 37	26	r	midsize
## 38	24	r	minivan
## 39	24	r	minivan
## 40	22	r	minivan
## 41	22	r	minivan
## 42	24	r	minivan
## 43	24	r	minivan
## 44	17	e	minivan
## 45	22	r	minivan
## 46	21	r	minivan
## 47	23	r	minivan
## 48	23	r	minivan
## 49	19	r	pickup
## 50	18	r	pickup
## 51	17	r	pickup
## 52	17	r	pickup
## 53	19	r	pickup
## 54	19	r	pickup
## 55	12	e	pickup
## 56	17	r	pickup
## 57	15	r	pickup
## 58	17	r	suv
## 59	17	r	suv
## 60	12	e	suv
## 61	17	r	suv
## 62	16	r	suv
## 63	18	r	suv
## 64	15	r	suv
## 65	16	r	pickup
## 66	12	e	pickup
## 67	17	r	pickup
## 68	17	r	pickup
## 69	16	r	pickup

## 70	12	e	pickup
## 71	15	r	pickup
## 72	16	r	pickup
## 73	17	r	pickup
## 74	15	r	pickup
## 75	17	r	suv
## 76	17	r	suv
## 77	18	r	suv
## 78	17	r	suv
## 79	19	r	suv
## 80	17	r	suv
## 81	19	r	suv
## 82	19	r	suv
## 83	17	r	suv
## 84	17	r	pickup
## 85	17	r	pickup
## 86	16	r	pickup
## 87	16	r	pickup
## 88	17	r	pickup
## 89	15	r	pickup
## 90	17	r	pickup
## 91	26	r	subcompact
## 92	25	r	subcompact
## 93	26	r	subcompact
## 94	24	r	subcompact
## 95	21	r	subcompact
## 96	22	r	subcompact
## 97	23	r	subcompact
## 98	22	r	subcompact
## 99	20	p	subcompact
## 100	33	r	subcompact
## 101	32	r	subcompact
## 102	32	r	subcompact
## 103	29	p	subcompact
## 104	32	r	subcompact
## 105	34	r	subcompact
## 106	36	r	subcompact
## 107	36	c	subcompact
## 108	29	p	subcompact
## 109	26	r	midsize
## 110	27	r	midsize
## 111	30	r	midsize
## 112	31	r	midsize
## 113	26	r	midsize
## 114	26	r	midsize
## 115	28	r	midsize
## 116	26	r	subcompact
## 117	29	r	subcompact
## 118	28	r	subcompact
## 119	27	r	subcompact
## 120	24	r	subcompact
## 121	24	r	subcompact
## 122	24	r	subcompact
## 123	22	d	suv

##	124	19	r	suv
##	125	20	r	suv
##	126	17	r	suv
##	127	12	e	suv
##	128	19	r	suv
##	129	18	r	suv
##	130	14	p	suv
##	131	15	p	suv
##	132	18	r	suv
##	133	18	r	suv
##	134	15	p	suv
##	135	17	r	suv
##	136	16	p	suv
##	137	18	r	suv
##	138	17	r	suv
##	139	19	r	suv
##	140	19	r	suv
##	141	17	r	suv
##	142	29	r	compact
##	143	27	r	compact
##	144	31	r	midsize
##	145	32	r	midsize
##	146	27	p	midsize
##	147	26	p	midsize
##	148	26	r	midsize
##	149	25	r	midsize
##	150	25	p	midsize
##	151	17	r	suv
##	152	17	r	suv
##	153	20	p	suv
##	154	18	p	suv
##	155	26	r	midsize
##	156	26	p	midsize
##	157	27	r	midsize
##	158	28	r	midsize
##	159	25	p	midsize
##	160	25	r	suv
##	161	24	r	suv
##	162	27	r	suv
##	163	25	p	suv
##	164	26	r	suv
##	165	23	p	suv
##	166	26	r	subcompact
##	167	26	r	subcompact
##	168	26	r	subcompact
##	169	26	r	subcompact
##	170	25	p	compact
##	171	27	r	compact
##	172	25	p	compact
##	173	27	r	compact
##	174	20	r	suv
##	175	20	r	suv
##	176	19	r	suv
##	177	17	r	suv

##	178	20	r	suv
##	179	17	r	suv
##	180	29	r	midsize
##	181	27	r	midsize
##	182	31	r	midsize
##	183	31	r	midsize
##	184	26	r	midsize
##	185	26	r	midsize
##	186	28	r	midsize
##	187	27	r	compact
##	188	29	r	compact
##	189	31	r	compact
##	190	31	r	compact
##	191	26	r	compact
##	192	26	r	compact
##	193	27	r	compact
##	194	30	r	compact
##	195	33	r	compact
##	196	35	r	compact
##	197	37	r	compact
##	198	35	r	compact
##	199	15	r	suv
##	200	18	r	suv
##	201	20	r	pickup
##	202	20	r	pickup
##	203	22	r	pickup
##	204	17	r	pickup
##	205	19	r	pickup
##	206	18	r	pickup
##	207	20	r	pickup
##	208	29	r	compact
##	209	26	r	compact
##	210	29	p	compact
##	211	29	p	compact
##	212	24	r	compact
##	213	44	d	compact
##	214	29	r	compact
##	215	26	r	compact
##	216	29	p	compact
##	217	29	p	compact
##	218	29	r	compact
##	219	29	r	compact
##	220	23	r	compact
##	221	24	r	compact
##	222	44	d	subcompact
##	223	41	d	subcompact
##	224	29	r	subcompact
##	225	26	r	subcompact
##	226	28	r	subcompact
##	227	29	r	subcompact
##	228	29	p	midsize
##	229	29	p	midsize
##	230	28	p	midsize
##	231	29	p	midsize

```
## 232 26 p      midsize
## 233 26 p      midsize
## 234 26 p      midsize
```

1.b Which variables from mpg dataset are categorical?

```
is_cont <- sapply(mpg, is.character)
cont_vars <- names(mpg)[is_cont]
cont_vars
```

```
## [1] "manufacturer" "model"          "trans"          "drv"            "fl"
## [6] "class"
```

1.c Which are continuous variables?

```
is_cont <- sapply(mpg, is.numeric)
cont_vars <- names(mpg)[is_cont]
cont_vars
```

```
## [1] "X"      "displ" "year"  "cyl"   "cty"   "hwy"
```

2. Which manufacturer has the most models in this data set? Which model has the most variations? Show your answer.

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
##
## The following objects are masked from 'package:stats':
##
##   filter, lag
##
## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union
```

```
MostModels <- summarise(group_by(mpg, manufacturer), numModels = n_distinct(model))
MostModels <- arrange(MostModels, desc(numModels))
MostModels <- head(MostModels, 1)
```

```
MostVariations <- summarise(group_by(mpg, model), numVariations = n())
MostVariations <- arrange(MostVariations, desc(numVariations))
MostVariations <- head(MostVariations, 1)
```

```
cat("Manufacturer with the most models: ", MostModels$manufacturer, "with ", MostModels$numModels, " models\n")
```

```
## Manufacturer with the most models: toyota with 6 models
```

```
cat("Model with the most variations: ", MostVariations$model, " with ", MostVariations$numVariations, " variations\n")
```

```
## Model with the most variations: caravan 2wd with 11 variations
```

2.a Group the manufacturers and find the unique models. Show your codes and result.

```
library(dplyr)
```

```
manufacturersModels <- data.frame(Manufacturer = mpg$manufacturer, Model = mpg$model)
manufacturersModels
```

##	Manufacturer	Model
## 1	audi	a4
## 2	audi	a4
## 3	audi	a4
## 4	audi	a4
## 5	audi	a4
## 6	audi	a4
## 7	audi	a4
## 8	audi	a4 quattro
## 9	audi	a4 quattro
## 10	audi	a4 quattro
## 11	audi	a4 quattro
## 12	audi	a4 quattro
## 13	audi	a4 quattro
## 14	audi	a4 quattro
## 15	audi	a4 quattro
## 16	audi	a6 quattro
## 17	audi	a6 quattro
## 18	audi	a6 quattro
## 19	chevrolet	c1500 suburban 2wd
## 20	chevrolet	c1500 suburban 2wd
## 21	chevrolet	c1500 suburban 2wd
## 22	chevrolet	c1500 suburban 2wd
## 23	chevrolet	c1500 suburban 2wd
## 24	chevrolet	corvette
## 25	chevrolet	corvette
## 26	chevrolet	corvette
## 27	chevrolet	corvette
## 28	chevrolet	corvette
## 29	chevrolet	k1500 tahoe 4wd
## 30	chevrolet	k1500 tahoe 4wd
## 31	chevrolet	k1500 tahoe 4wd
## 32	chevrolet	k1500 tahoe 4wd
## 33	chevrolet	malibu
## 34	chevrolet	malibu
## 35	chevrolet	malibu
## 36	chevrolet	malibu
## 37	chevrolet	malibu
## 38	dodge	caravan 2wd
## 39	dodge	caravan 2wd
## 40	dodge	caravan 2wd
## 41	dodge	caravan 2wd
## 42	dodge	caravan 2wd
## 43	dodge	caravan 2wd
## 44	dodge	caravan 2wd
## 45	dodge	caravan 2wd
## 46	dodge	caravan 2wd
## 47	dodge	caravan 2wd
## 48	dodge	caravan 2wd
## 49	dodge	dakota pickup 4wd
## 50	dodge	dakota pickup 4wd
## 51	dodge	dakota pickup 4wd
## 52	dodge	dakota pickup 4wd
## 53	dodge	dakota pickup 4wd

## 54	dodge	dakota pickup 4wd
## 55	dodge	dakota pickup 4wd
## 56	dodge	dakota pickup 4wd
## 57	dodge	dakota pickup 4wd
## 58	dodge	durango 4wd
## 59	dodge	durango 4wd
## 60	dodge	durango 4wd
## 61	dodge	durango 4wd
## 62	dodge	durango 4wd
## 63	dodge	durango 4wd
## 64	dodge	durango 4wd
## 65	dodge	ram 1500 pickup 4wd
## 66	dodge	ram 1500 pickup 4wd
## 67	dodge	ram 1500 pickup 4wd
## 68	dodge	ram 1500 pickup 4wd
## 69	dodge	ram 1500 pickup 4wd
## 70	dodge	ram 1500 pickup 4wd
## 71	dodge	ram 1500 pickup 4wd
## 72	dodge	ram 1500 pickup 4wd
## 73	dodge	ram 1500 pickup 4wd
## 74	dodge	ram 1500 pickup 4wd
## 75	ford	expedition 2wd
## 76	ford	expedition 2wd
## 77	ford	expedition 2wd
## 78	ford	explorer 4wd
## 79	ford	explorer 4wd
## 80	ford	explorer 4wd
## 81	ford	explorer 4wd
## 82	ford	explorer 4wd
## 83	ford	explorer 4wd
## 84	ford	f150 pickup 4wd
## 85	ford	f150 pickup 4wd
## 86	ford	f150 pickup 4wd
## 87	ford	f150 pickup 4wd
## 88	ford	f150 pickup 4wd
## 89	ford	f150 pickup 4wd
## 90	ford	f150 pickup 4wd
## 91	ford	mustang
## 92	ford	mustang
## 93	ford	mustang
## 94	ford	mustang
## 95	ford	mustang
## 96	ford	mustang
## 97	ford	mustang
## 98	ford	mustang
## 99	ford	mustang
## 100	honda	civic
## 101	honda	civic
## 102	honda	civic
## 103	honda	civic
## 104	honda	civic
## 105	honda	civic
## 106	honda	civic
## 107	honda	civic

## 108	honda	civic
## 109	hyundai	sonata
## 110	hyundai	sonata
## 111	hyundai	sonata
## 112	hyundai	sonata
## 113	hyundai	sonata
## 114	hyundai	sonata
## 115	hyundai	sonata
## 116	hyundai	tiburon
## 117	hyundai	tiburon
## 118	hyundai	tiburon
## 119	hyundai	tiburon
## 120	hyundai	tiburon
## 121	hyundai	tiburon
## 122	hyundai	tiburon
## 123	jeep	grand cherokee 4wd
## 124	jeep	grand cherokee 4wd
## 125	jeep	grand cherokee 4wd
## 126	jeep	grand cherokee 4wd
## 127	jeep	grand cherokee 4wd
## 128	jeep	grand cherokee 4wd
## 129	jeep	grand cherokee 4wd
## 130	jeep	grand cherokee 4wd
## 131	land rover	range rover
## 132	land rover	range rover
## 133	land rover	range rover
## 134	land rover	range rover
## 135	lincoln	navigator 2wd
## 136	lincoln	navigator 2wd
## 137	lincoln	navigator 2wd
## 138	mercury	mountaineer 4wd
## 139	mercury	mountaineer 4wd
## 140	mercury	mountaineer 4wd
## 141	mercury	mountaineer 4wd
## 142	nissan	altima
## 143	nissan	altima
## 144	nissan	altima
## 145	nissan	altima
## 146	nissan	altima
## 147	nissan	altima
## 148	nissan	maxima
## 149	nissan	maxima
## 150	nissan	maxima
## 151	nissan	pathfinder 4wd
## 152	nissan	pathfinder 4wd
## 153	nissan	pathfinder 4wd
## 154	nissan	pathfinder 4wd
## 155	pontiac	grand prix
## 156	pontiac	grand prix
## 157	pontiac	grand prix
## 158	pontiac	grand prix
## 159	pontiac	grand prix
## 160	subaru	forester awd
## 161	subaru	forester awd

## 162	subaru	forester awd
## 163	subaru	forester awd
## 164	subaru	forester awd
## 165	subaru	forester awd
## 166	subaru	impreza awd
## 167	subaru	impreza awd
## 168	subaru	impreza awd
## 169	subaru	impreza awd
## 170	subaru	impreza awd
## 171	subaru	impreza awd
## 172	subaru	impreza awd
## 173	subaru	impreza awd
## 174	toyota	4runner 4wd
## 175	toyota	4runner 4wd
## 176	toyota	4runner 4wd
## 177	toyota	4runner 4wd
## 178	toyota	4runner 4wd
## 179	toyota	4runner 4wd
## 180	toyota	camry
## 181	toyota	camry
## 182	toyota	camry
## 183	toyota	camry
## 184	toyota	camry
## 185	toyota	camry
## 186	toyota	camry
## 187	toyota	camry solara
## 188	toyota	camry solara
## 189	toyota	camry solara
## 190	toyota	camry solara
## 191	toyota	camry solara
## 192	toyota	camry solara
## 193	toyota	camry solara
## 194	toyota	corolla
## 195	toyota	corolla
## 196	toyota	corolla
## 197	toyota	corolla
## 198	toyota	corolla
## 199	toyota land	cruiser wagon 4wd
## 200	toyota land	cruiser wagon 4wd
## 201	toyota	toyota tacoma 4wd
## 202	toyota	toyota tacoma 4wd
## 203	toyota	toyota tacoma 4wd
## 204	toyota	toyota tacoma 4wd
## 205	toyota	toyota tacoma 4wd
## 206	toyota	toyota tacoma 4wd
## 207	toyota	toyota tacoma 4wd
## 208	volkswagen	gti
## 209	volkswagen	gti
## 210	volkswagen	gti
## 211	volkswagen	gti
## 212	volkswagen	gti
## 213	volkswagen	jetta
## 214	volkswagen	jetta
## 215	volkswagen	jetta

```
## 216 volkswagen jetta
## 217 volkswagen jetta
## 218 volkswagen jetta
## 219 volkswagen jetta
## 220 volkswagen jetta
## 221 volkswagen jetta
## 222 volkswagen new beetle
## 223 volkswagen new beetle
## 224 volkswagen new beetle
## 225 volkswagen new beetle
## 226 volkswagen new beetle
## 227 volkswagen new beetle
## 228 volkswagen passat
## 229 volkswagen passat
## 230 volkswagen passat
## 231 volkswagen passat
## 232 volkswagen passat
## 233 volkswagen passat
## 234 volkswagen passat
```

```
uniqueMods <- unique(manufacturersModels)
uniqueMods
```

```
##      Manufacturer      Model
## 1         audi          a4
## 8         audi      a4 quattro
## 16        audi      a6 quattro
## 19   chevrolet  c1500 suburban 2wd
## 24   chevrolet      corvette
## 29   chevrolet  k1500 tahoe 4wd
## 33   chevrolet      malibu
## 38      dodge      caravan 2wd
## 49      dodge  dakota pickup 4wd
## 58      dodge      durango 4wd
## 65      dodge  ram 1500 pickup 4wd
## 75      ford      expedition 2wd
## 78      ford      explorer 4wd
## 84      ford      f150 pickup 4wd
## 91      ford      mustang
## 100     honda      civic
## 109    hyundai      sonata
## 116    hyundai      tiburon
## 123     jeep  grand cherokee 4wd
## 131 land rover      range rover
## 135    lincoln  navigator 2wd
## 138    mercury  mountaineer 4wd
## 142     nissan      altima
## 148     nissan      maxima
## 151     nissan  pathfinder 4wd
## 155    pontiac      grand prix
## 160    subaru  forester awd
## 166    subaru  impreza awd
## 174    toyota      4runner 4wd
## 180    toyota      camry
## 187    toyota  camry solara
```

```
## 194      toyota      corolla
## 199      toyota land cruiser wagon 4wd
## 201      toyota      toyota tacoma 4wd
## 208      volkswagen      gti
## 213      volkswagen      jetta
## 222      volkswagen      new beetle
## 228      volkswagen      passat
```

```
uniqueModsFactor <- factoredManufacturer <- as.factor(uniqueMods$Manufacturer)
```

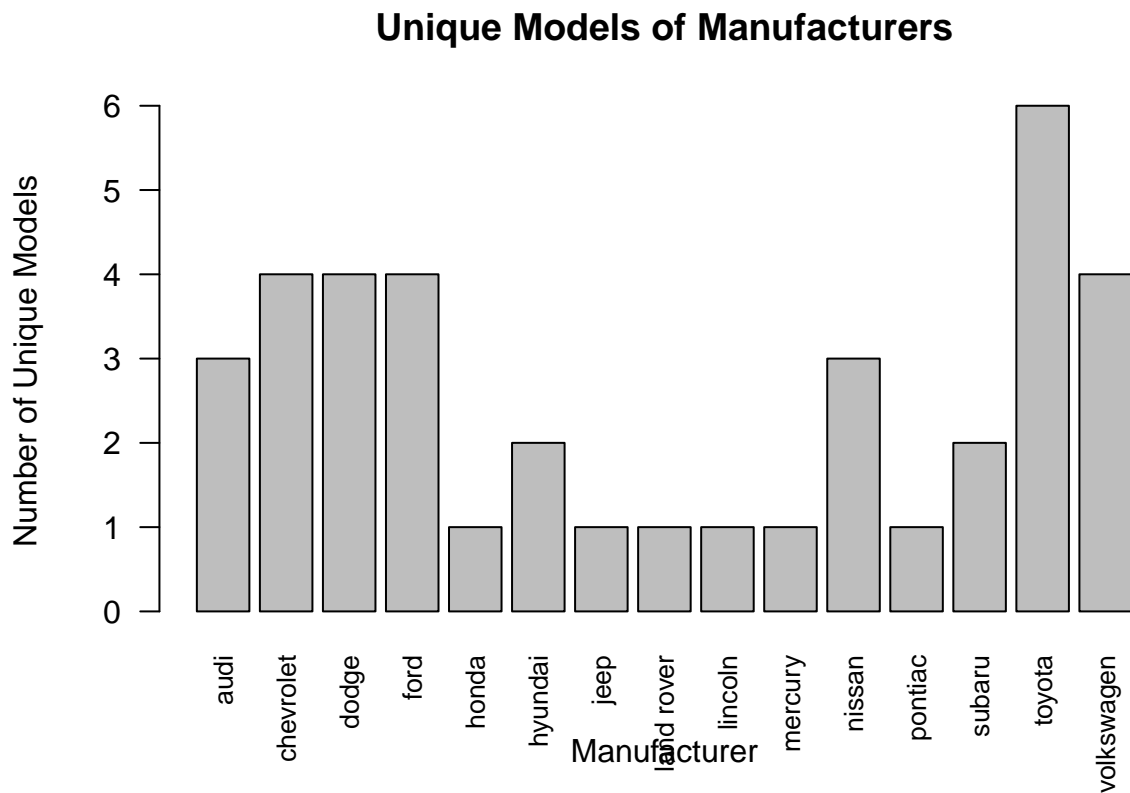
2.b Graph the result by using plot() and ggplot(). Write the codes and its result.

```
library(ggplot2)
```

```
##
## Attaching package: 'ggplot2'
## The following object is masked _by_ '.GlobalEnv':
##
##      mpg
```

```
library(dplyr)
```

```
uniquePlot <- plot(as.factor(factoredManufacturer),
  main = "Unique Models of Manufacturers",
  xlab = "Manufacturer",
  ylab = "Number of Unique Models",
  cex.names = 0.8, las = 2)
```



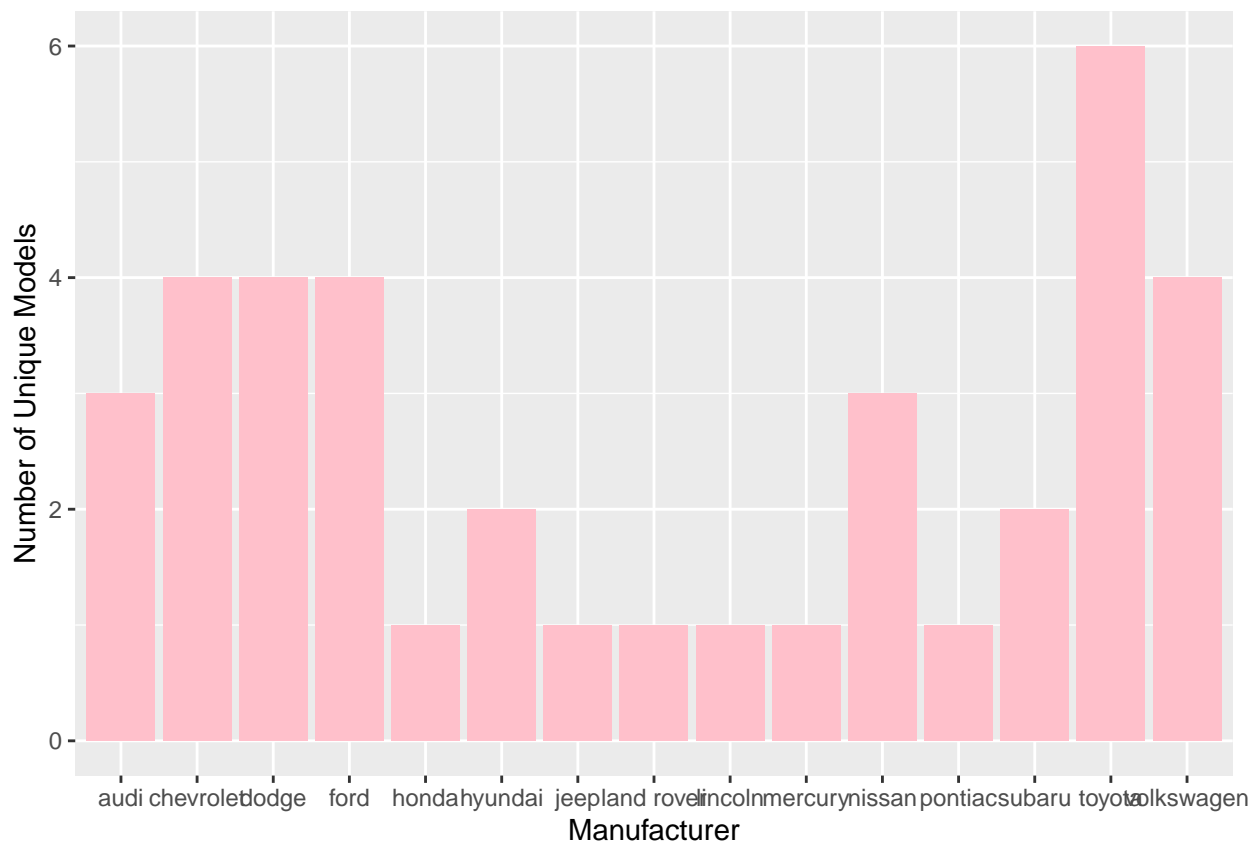
```
uniqueCount <- uniqueMods %>%
  count(uniqueMods$Manufacturer)
```



```
uniqueCount
```

```
##      uniqueMods$Manufacturer n
## 1                audi 3
## 2            chevrolet 4
## 3                dodge 4
## 4                ford 4
## 5                honda 1
## 6            hyundai 2
## 7                jeep 1
## 8        land rover 1
## 9            lincoln 1
## 10           mercury 1
## 11             nissan 3
## 12           pontiac 1
## 13             subaru 2
## 14             toyota 6
## 15        volkswagen 4
```

```
ggplot(uniqueCount, aes(x = `uniqueMods$Manufacturer`, y = n)) +
  geom_bar(stat = "identity", fill = "pink") +
  labs(x = "Manufacturer", y = "Number of Unique Models")
```

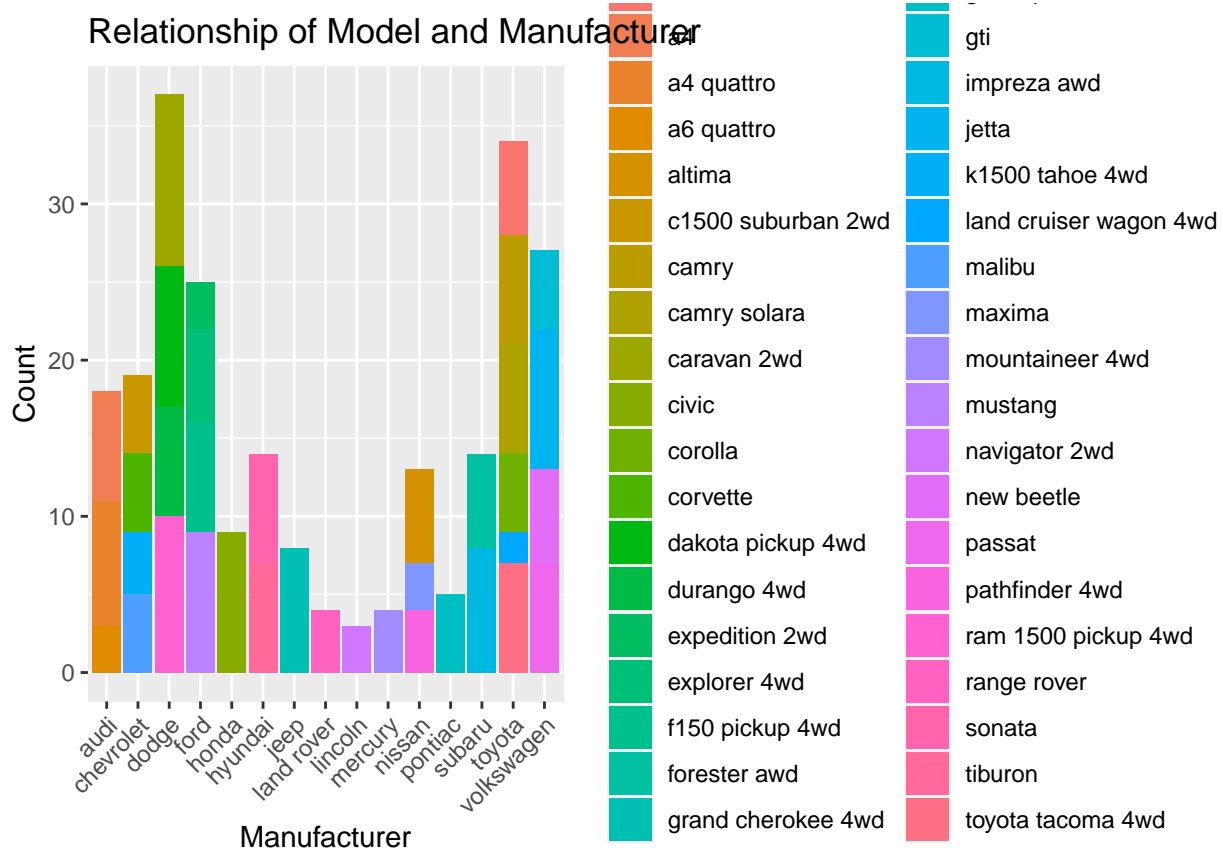


2.1 Same dataset will be used. You are going to show the relationship of the model and the manufacturer.

```
library(ggplot2)
```

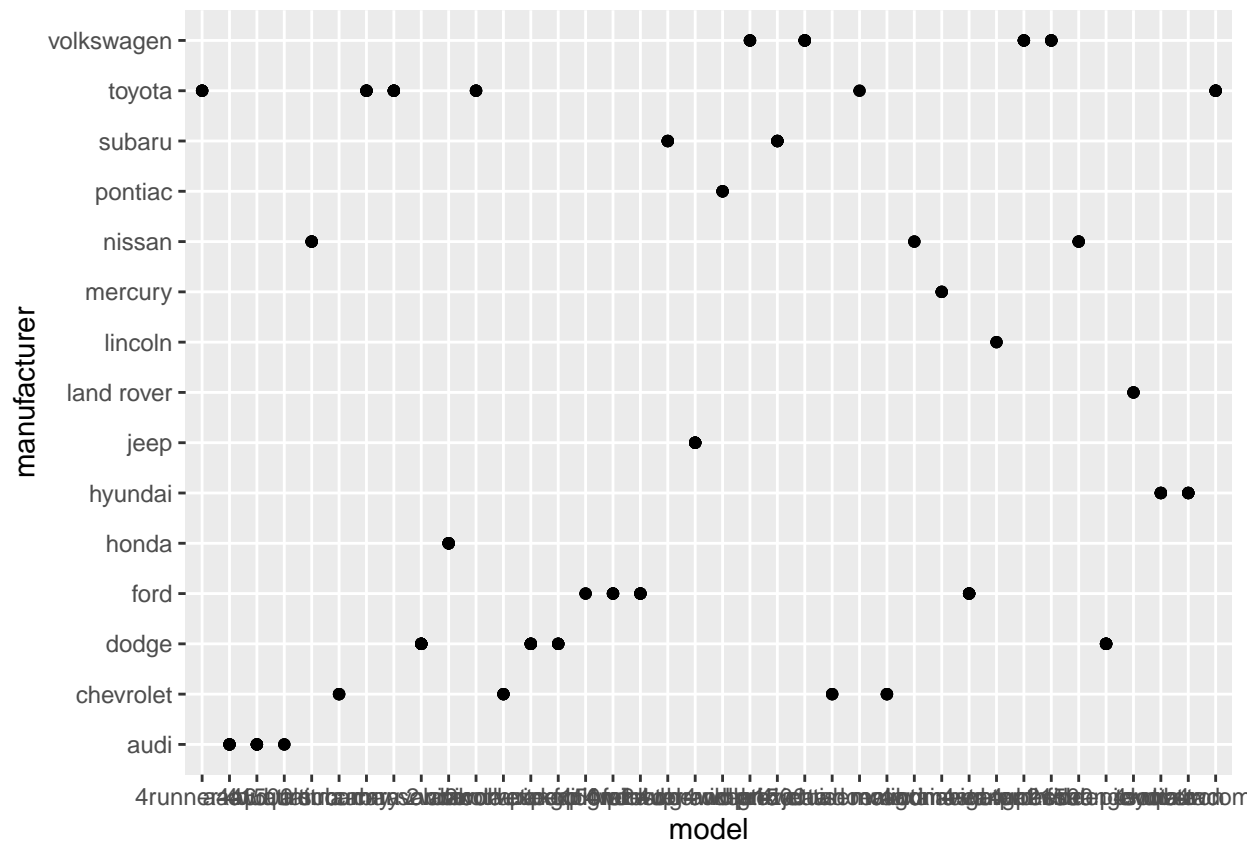
```
ggplot(mpg, aes(x = manufacturer, fill = model)) +
```

```
geom_bar() +
labs(title = "Relationship of Model and Manufacturer",
      x = "Manufacturer",
      y = "Count",
      fill = "Model") +
theme(axis.text.x = element_text(angle = 45, hjust = 1))
```



2.1.a What does `ggplot(mpg, aes(model, manufacturer)) + geom_point()` show?

```
ggplot(mpg, aes(model, manufacturer)) + geom_point()
```

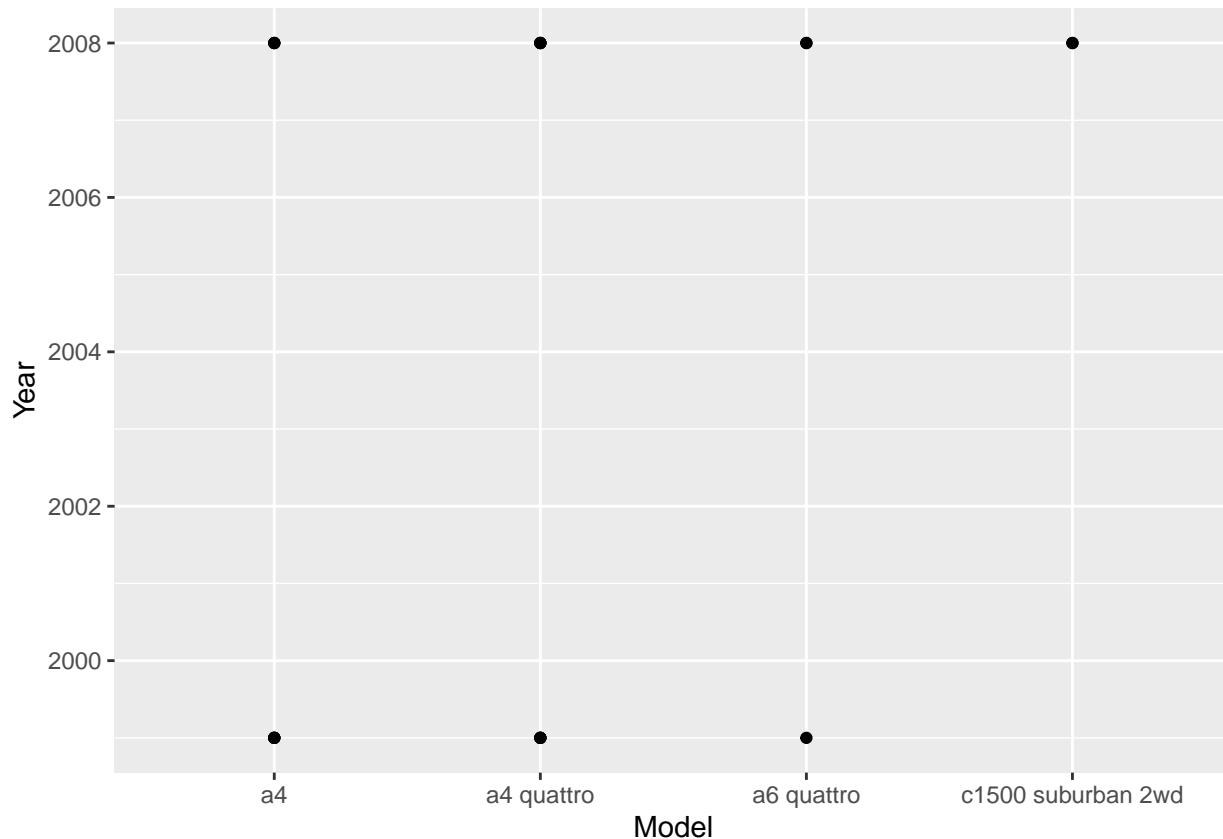


#The "model" variable is represented by the x-axis. The variable "manufacturer" is represented by the y

#To add points to the plot, utilize the geom_point() method. You will see a point for every combination

2.1.b For you, is it useful? If not, how could you modify the data to make it more informative?

```
ggplot(mpg, aes(x = model, y = manufacturer, color = class)) + geom_point()
```

4. Using the pipe (`%>%`), group the model and get the number of cars per model. Show codes and its result

```
library(dplyr)
```

```
modelCarCount <- mpg %>%
  group_by(model) %>%
  summarize(numberOfCars = n())
```

```
modelCarCount
```

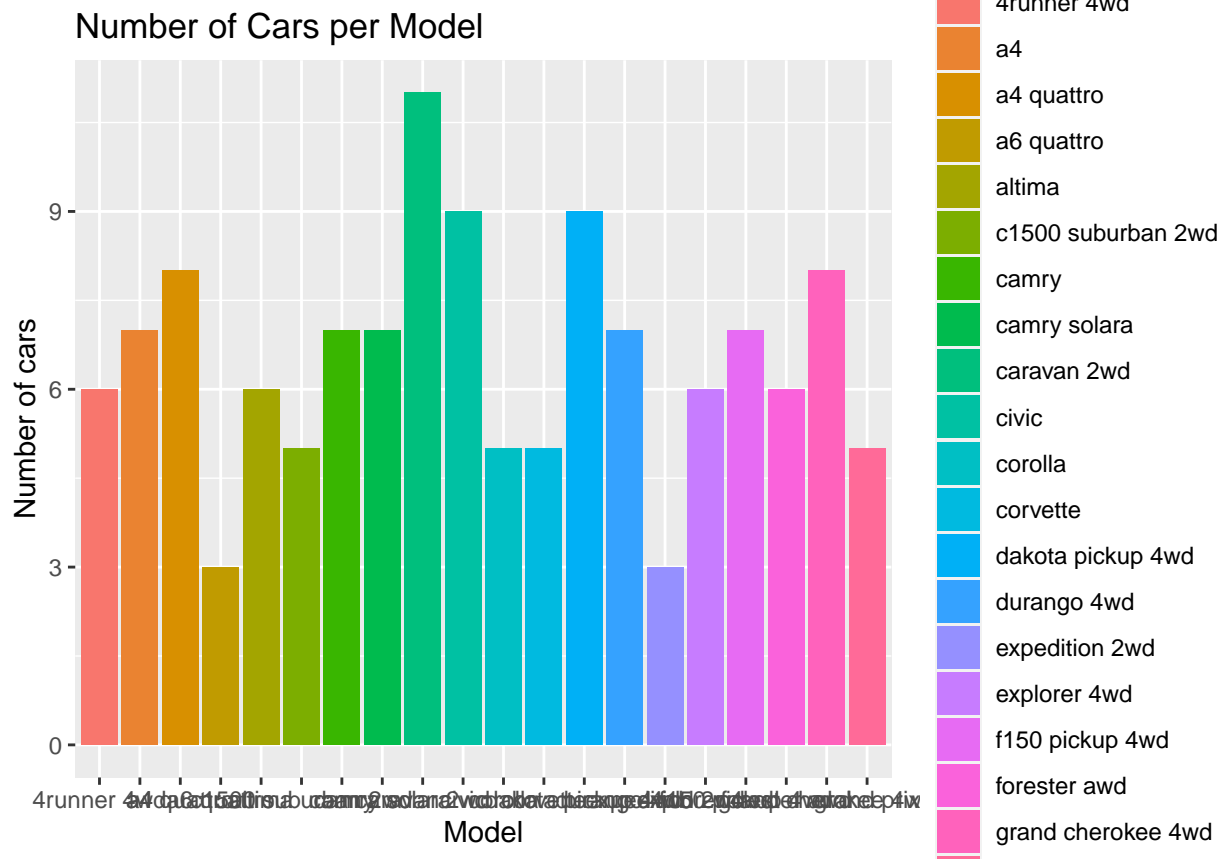
```
## # A tibble: 38 x 2
##   model          numberOfCars
##   <chr>             <int>
## 1 4runner 4wd         6
## 2 a4                 7
## 3 a4 quattro        8
## 4 a6 quattro         3
## 5 altima             6
## 6 c1500 suburban 2wd 5
## 7 camry              7
## 8 camry solara       7
## 9 caravan 2wd       11
## 10 civic             9
## # i 28 more rows
```

4.a Plot the relationship between `cyl` - number of cylinders and `displ` - engine displacement using `geom_point` with aesthetic color = engine displacement. Title should be “Relationship between No. of Cylinders and Engine Displacement”.

```
obs20 <- head(modelCarCount, 20)
```

```
top_20 <- ggplot(obs20, aes(x = model, y = numberOfCars, fill = model)) +  
  geom_bar(stat = "identity") +  
  labs(title = "Number of Cars per Model",  
        x = "Model" ,  
        y = "Number of cars")
```

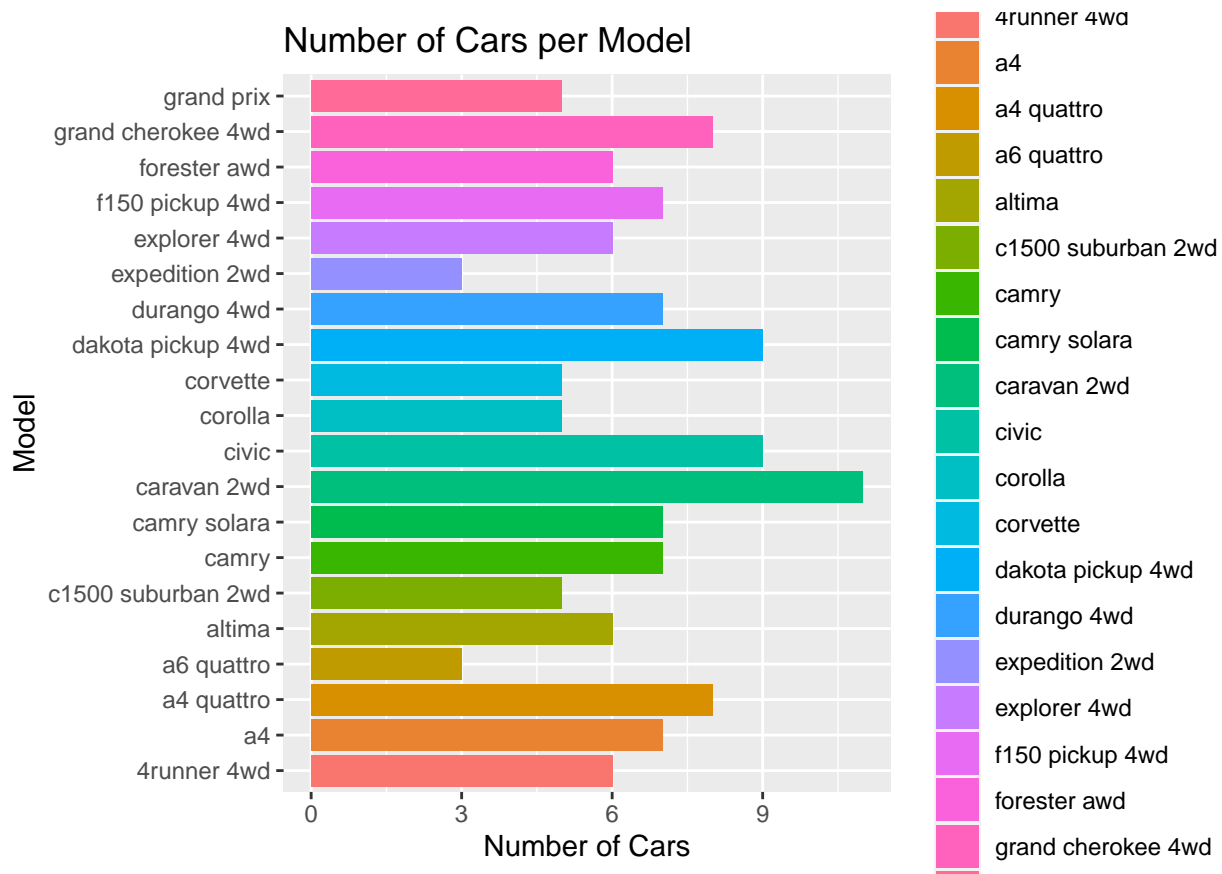
```
top_20
```



4.b

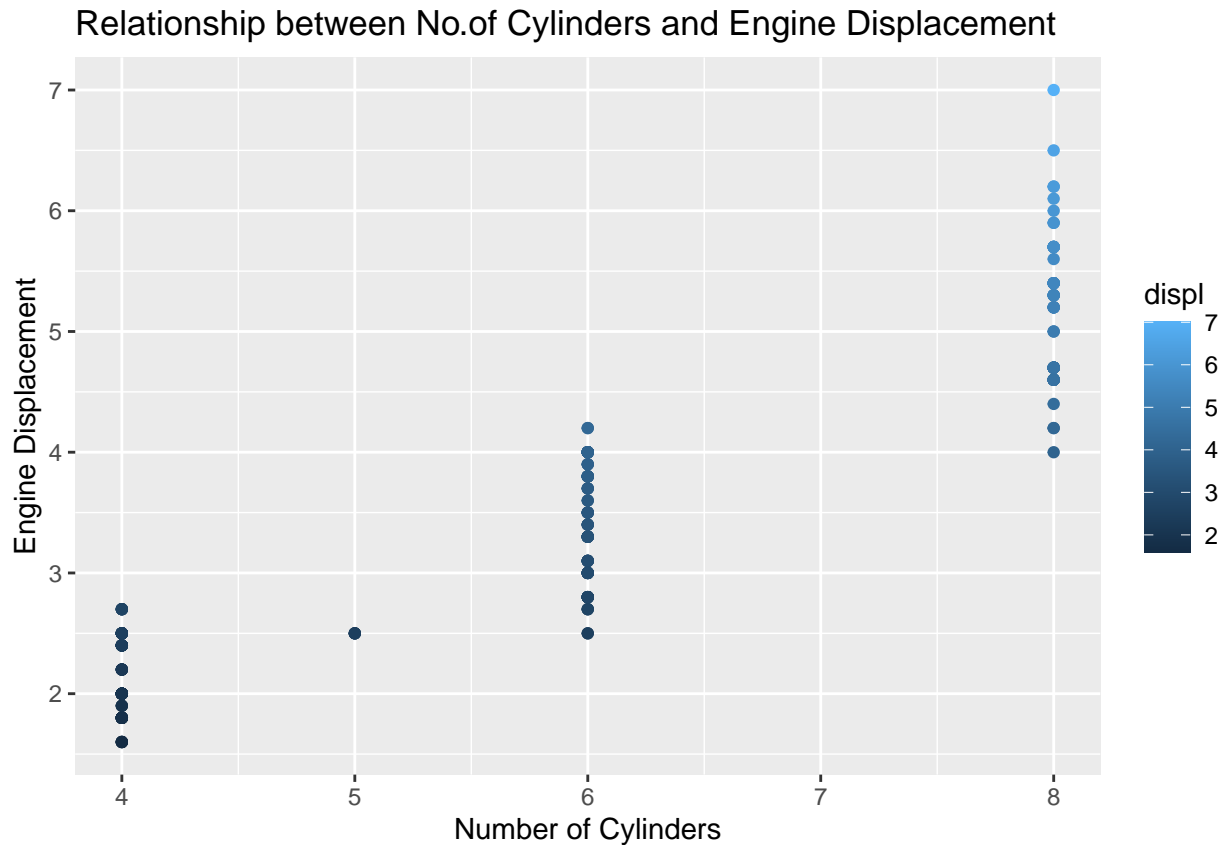
```
flippedTop20 <- ggplot(obs20, aes(x = model, y = numberOfCars, fill = model)) +  
  geom_bar(stat = "identity") + labs(title = "Number of Cars per Model", x = "Model" ,  
                                     y = "Number of Cars")+ coord_flip()
```

```
flippedTop20
```



5. Plot the relationship between `cyl` - number of cylinders and `displ` - engine displacement using `geom_point` with aesthetic color = engine displacement. Title should be "Relationship between No. of Cylinders and Engine Displacement".

```
cylDisplayPlot <- ggplot(mpg, aes(x = cyl, y = displ, color = displ)) + geom_point() + labs(title = "Relationship between No. of Cylinders and Engine Displacement")
cylDisplayPlot
```



5.a How would you describe its relationship? Show the codes and its result.

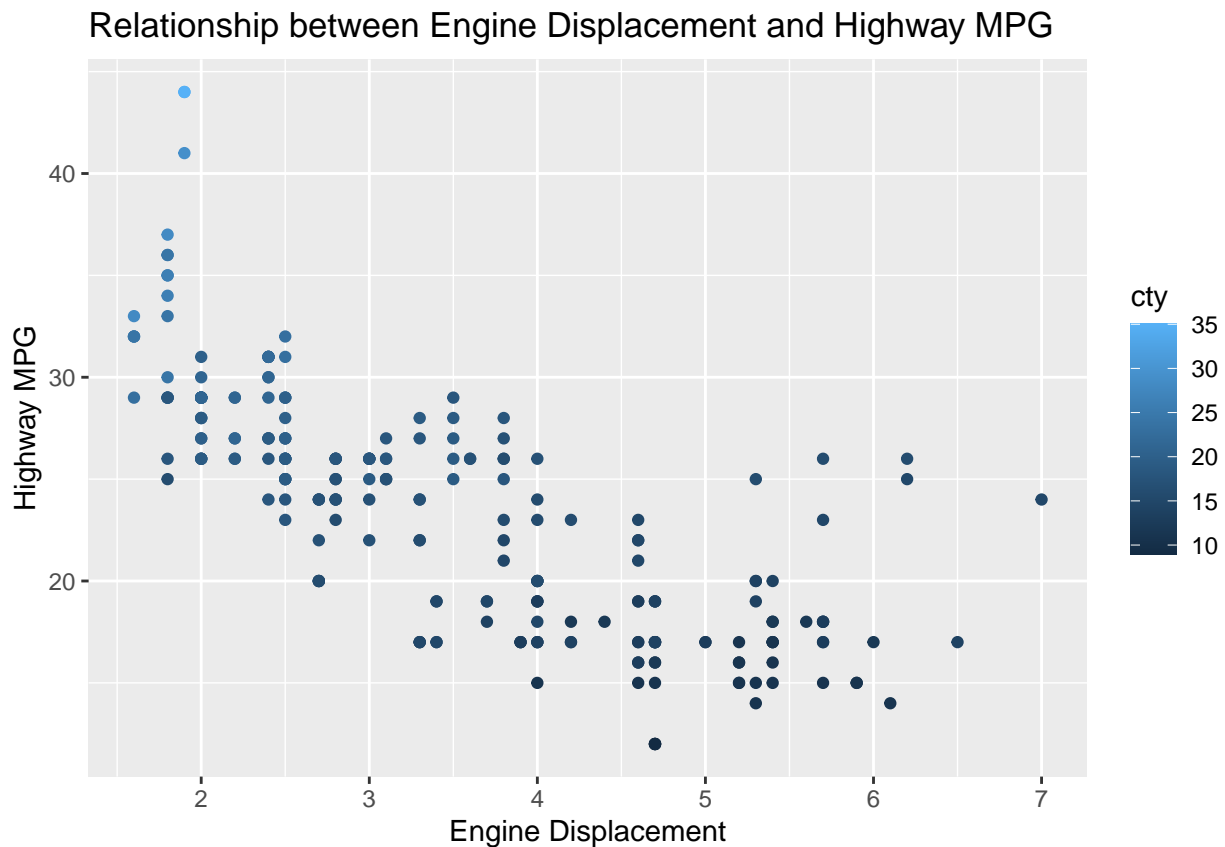
#This will produce a scatter plot illustrating how the number of cylinders relates to engine displacement

#As cylinder count rises, engine displacement generally follows suit. This indicates a trend where larger

6. Plot the relationship between displ (engine displacement) and hwy(highway miles per gallon). Mapped it with a continuous variable you have identified in #1-c. What is its result? Why it produced such output?

```
displayHwyPlot <- ggplot(mpg, aes(x = displ, y = hwy, color = cty)) +
  geom_point() +
  labs(title = "Relationship between Engine Displacement and Highway MPG",
        x = "Engine Displacement",
        y = "Highway MPG")
```

displayHwyPlot



#This scatterplot exhibits engine displacement on the x-axis and highway miles per gallon on the y-axis

#By examining this plot, we gain insight into the correlations among displacement, highway efficiency,

#This analysis helps us grasp how vehicles with diverse engine sizes perform in terms of fuel efficiency.

6.Import the traffic.csv onto your R environment.

6.a How many numbers of observation does it have? What are the variables of the traffic dataset the Show your answer.

```
library(readr)
traffic <- read.csv("traffic.csv")
```

```
numObservation <- nrow(traffic)
numObservation
```

```
## [1] 48120
```

```
numVars <- ncol(traffic)
numVars
```

```
## [1] 4
```

```
variables <- colnames(traffic)
variables
```

```
## [1] "DateTime" "Junction" "Vehicles" "ID"
```

6.b Subset the traffic dataset into junctions. What is the R codes and its output?

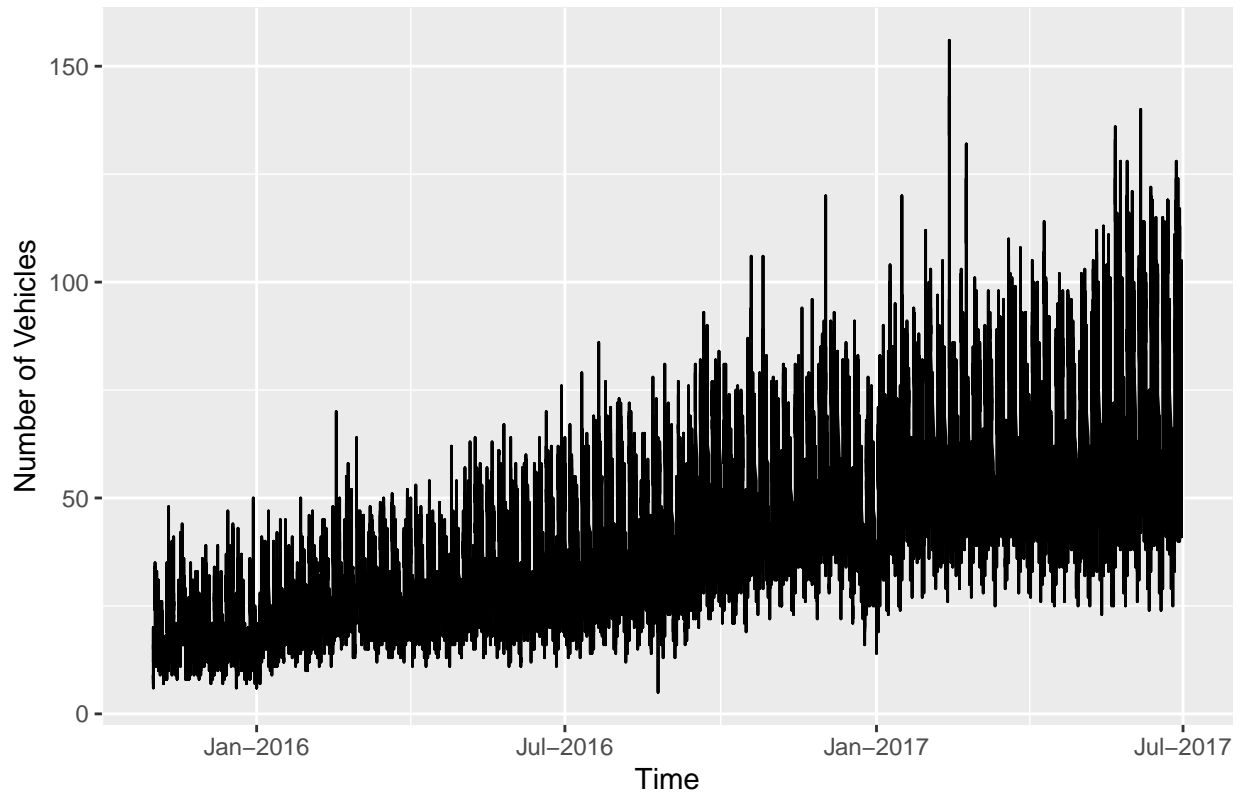
```
junctionsSubset1 <- subset(traffic, Junction == 1)
junctionsSubset2 <- subset(traffic, Junction == 2)
junctionsSubset3 <- subset(traffic, Junction == 3)
junctionsSubset4 <- subset(traffic, Junction == 4)
```

6.c Plot each junction in a using `geom_line()`. Show your solution and output.

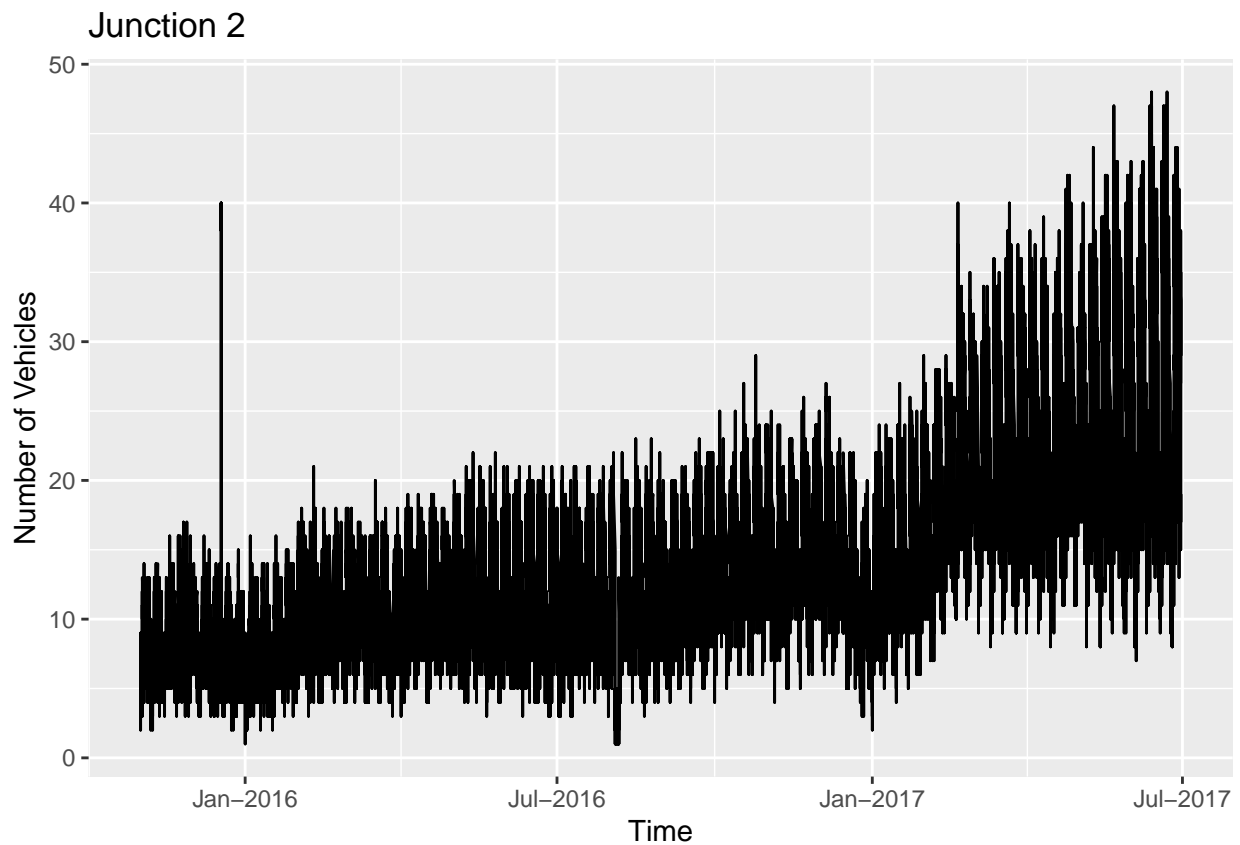
```
junction1Plot <- ggplot(junctionsSubset1, aes(x = as.Date(junctionsSubset1$DateTime), y = Vehicles)) +
  geom_line()
junction1Plot
```

```
## Warning: Use of `junctionsSubset1$DateTime` is discouraged.
## i Use `DateTime` instead.
```

Junction 1

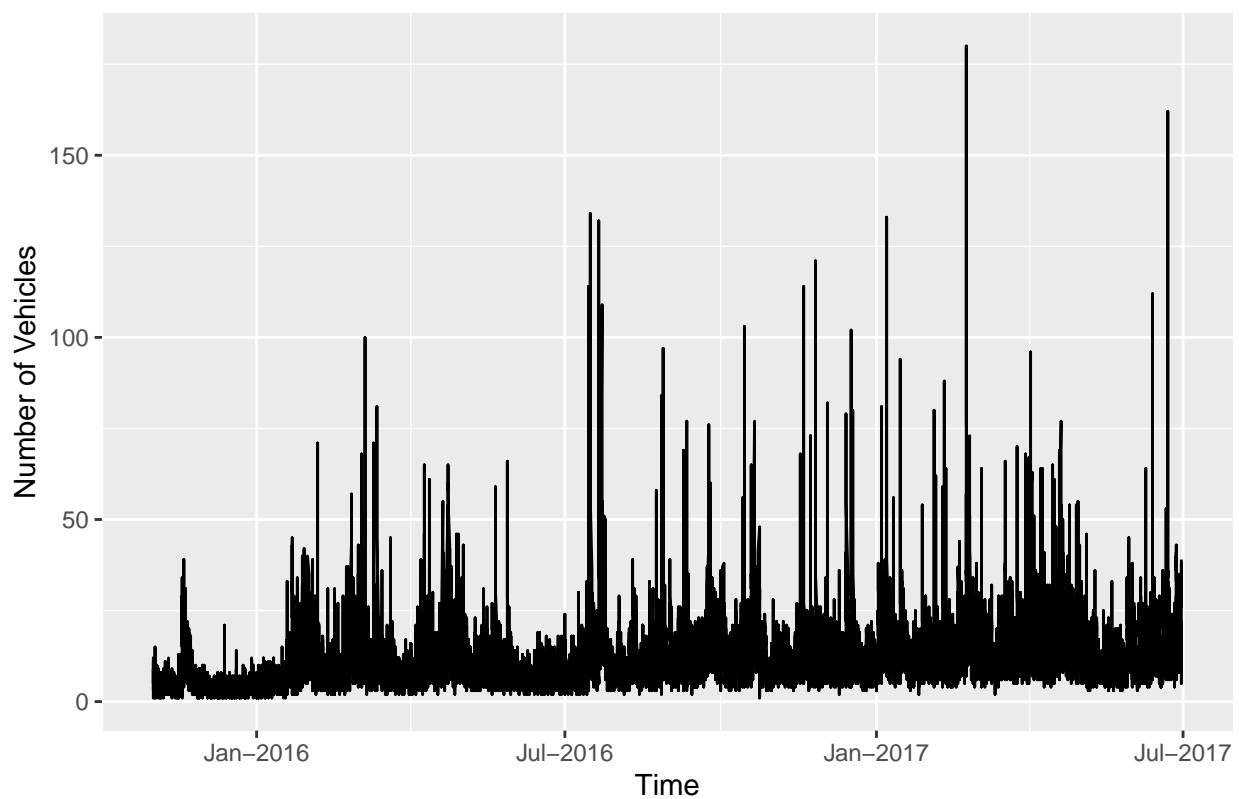


```
junction2Plot <- ggplot(junctionsSubset2, aes(x = as.Date(junctionsSubset2$DateTime), y = Vehicles)) +
  scale_x_date(date_labels = "%b-%Y") + theme(legend.position = "none") + labs(title = "Junction 2", x = "Time")
junction2Plot
```



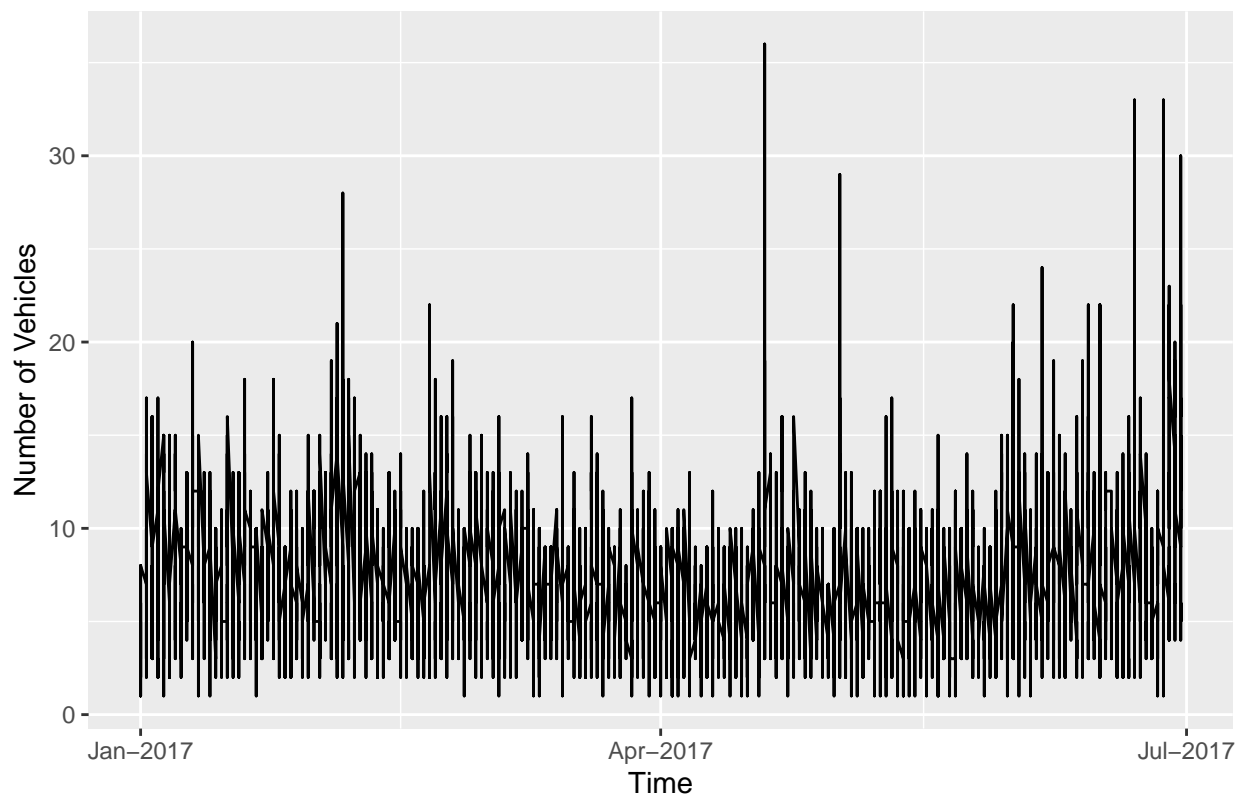
```
junction3Plot <- ggplot(junctionsSubset3, aes(x = as.Date(junctionsSubset3$DateTime), y = Vehicles)) +  
  scale_x_date(date_labels = "%b-%Y") + theme(legend.position = "none") +  
  labs(title = "Junction 3", x = "Time", y = "Number of Vehicles")  
  
junction3Plot
```

Junction 3



```
junction4Plot <- ggplot(junctionsSubset4, aes(x = as.Date(junctionsSubset4$DateTime), y = Vehicles)) +  
  scale_x_date(date_labels = "%b-%Y") + theme(legend.position = "none") +  
  labs(title = "Junction 4", x = "Time", y = "Number of Vehicles")  
  
junction4Plot
```

Junction 4



7. From alexa_file.xlsx, import it to your environment

7.a How many observations does alexa_file has? What about the number of columns? Show your solution and answer.

```
library(readxl)

alexaData <- read_excel("/cloud/project/Worksheet_Suero#4/Worksheet_Suero#4c/alexa_file.xlsx")

numObservation <- nrow(alexaData)
numObservation

## [1] 3150

numCols <- ncol(alexaData)
numCols
```

```
## [1] 5
```

7.b Group the variations and get the total of each variations. Use dplyr package. Show solution and answer

```
varCounts <- alexaData %>%
  count(variation)

varCounts
```

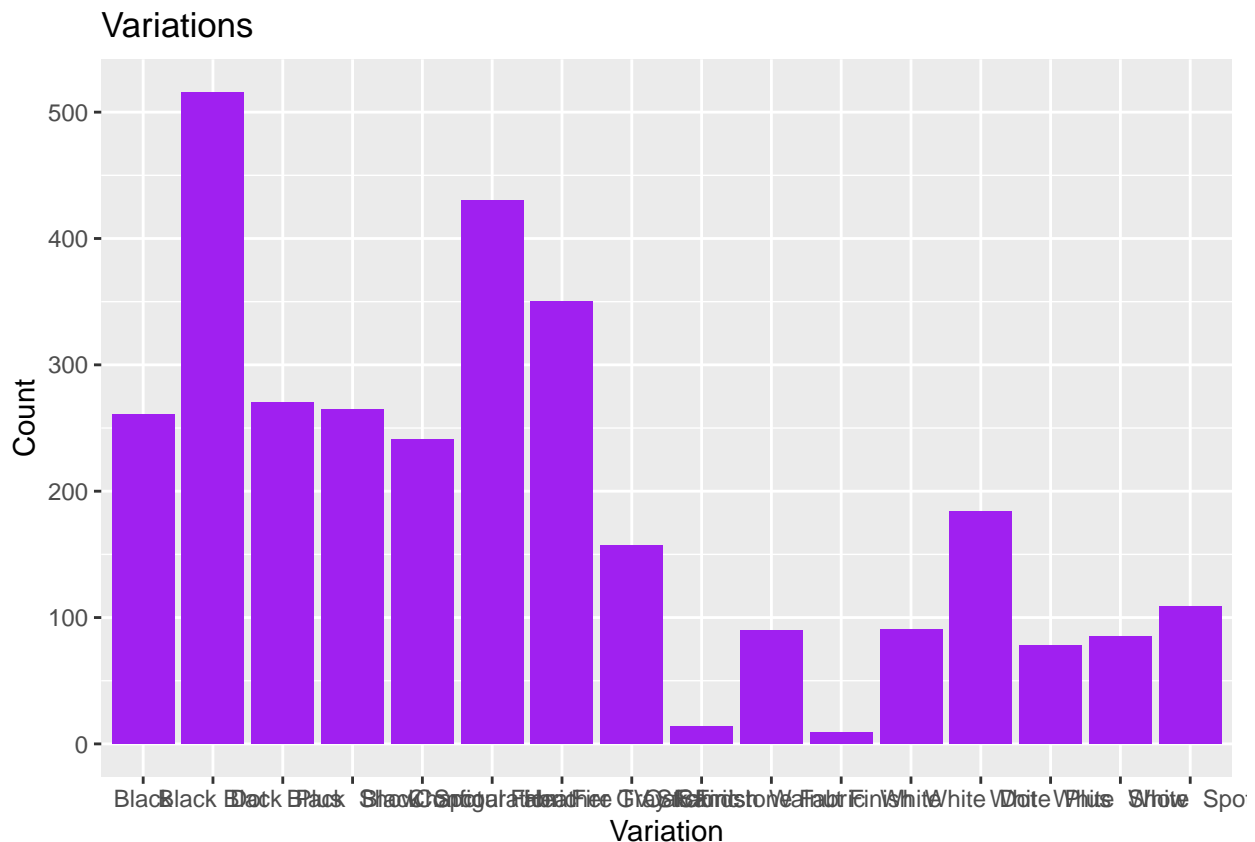
```
## # A tibble: 16 x 2
##   variation      n
##   <chr>      <int>
## 1 Black      261
## 2 Black Dot  516
```

```
## 3 Black Plus 270
## 4 Black Show 265
## 5 Black Spot 241
## 6 Charcoal Fabric 430
## 7 Configuration: Fire TV Stick 350
## 8 Heather Gray Fabric 157
## 9 Oak Finish 14
## 10 Sandstone Fabric 90
## 11 Walnut Finish 9
## 12 White 91
## 13 White Dot 184
## 14 White Plus 78
## 15 White Show 85
## 16 White Spot 109
```

7.c Plot the variations using the `ggplot()` function. What did you observe? Complete the details of the graph. Show solution and answer.

```
alexaPlot <- ggplot(alexaData, aes(x = variation)) +
  geom_bar(fill = "purple") +
  labs(title = "Variations",
       x = "Variation",
       y = "Count")
```

alexaPlot



#The visual displays the spread of different variations alongside their corresponding counts. Each bar

7.d Plot a `geom_line()` with the date and the number of verified reviews. Complete the details of the graphs.

Show your answer and solution

```
library(dplyr)

alexaData$date <- as.Date(alexaData$date)

alexaData$month <- format(alexaData$date, "%m")

countMonth <- alexaData %>%
  count(month)
countMonth

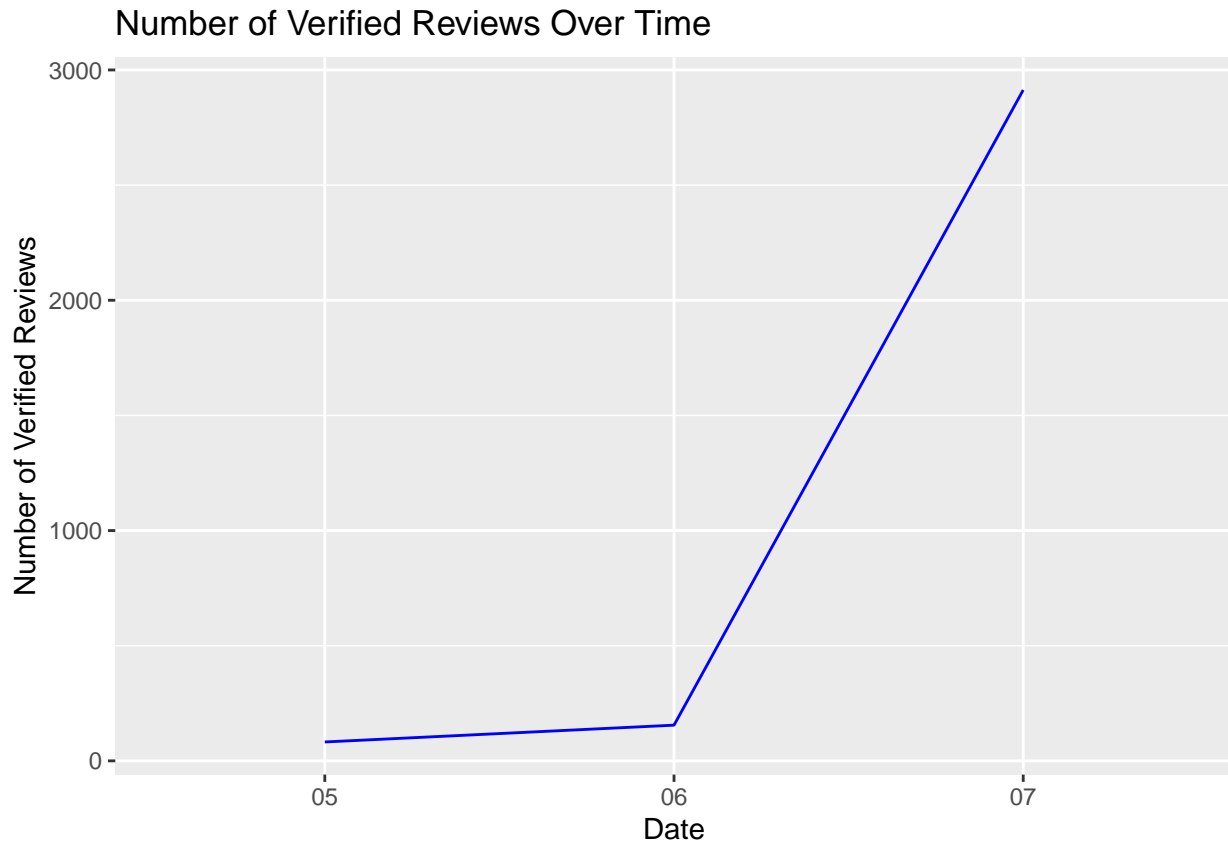
## # A tibble: 3 x 2
##   month     n
##   <chr> <int>
## 1 05      82
## 2 06     155
## 3 07    2913

monthlyRevCount <- table(countMonth)
monthlyRevCount

##           n
## month 82 155 2913
##   05  1   0   0
##   06  0   1   0
##   07  0   0   1

alexaData <- ggplot(countMonth, aes(x = month, y = n, group = 1)) +
  geom_line(color = "blue") +
  labs(title = "Number of Verified Reviews Over Time",
       x = "Date",
       y = "Number of Verified Reviews")

alexaData
```



7.e Get the relationship of variations and ratings. Which variations got the most highest in rating? Plot a graph to show its relationship. Show your solution and answer.

```
variationRatings <- alexaData %>%
  group_by(variation) %>%
  summarise(avgRating = mean(rating))
```

variationRatings

```
## # A tibble: 16 x 2
##   variation          avgRating
##   <chr>             <dbl>
## 1 Black             4.23
## 2 Black Dot         4.45
## 3 Black Plus        4.37
## 4 Black Show        4.49
## 5 Black Spot        4.31
## 6 Charcoal Fabric   4.73
## 7 Configuration: Fire TV Stick 4.59
## 8 Heather Gray Fabric 4.69
## 9 Oak Finish         4.86
## 10 Sandstone Fabric  4.36
## 11 Walnut Finish     4.89
## 12 White             4.14
## 13 White Dot         4.42
## 14 White Plus        4.36
## 15 White Show        4.28
## 16 White Spot        4.31
```



```
highestRatings <- variationRatings %>%
  filter(avgRating == max(avgRating))
```

```
highestRatings
```

```
## # A tibble: 1 x 2
##   variation      avgRating
##   <chr>         <dbl>
## 1 Walnut Finish      4.89
```

```
# The finish variation that has the highest rating is the walnut
```

```
ggplot(variationRatings, aes(x = variation, y = avgRating)) + geom_bar(stat = "identity", fill = "blue")
```

