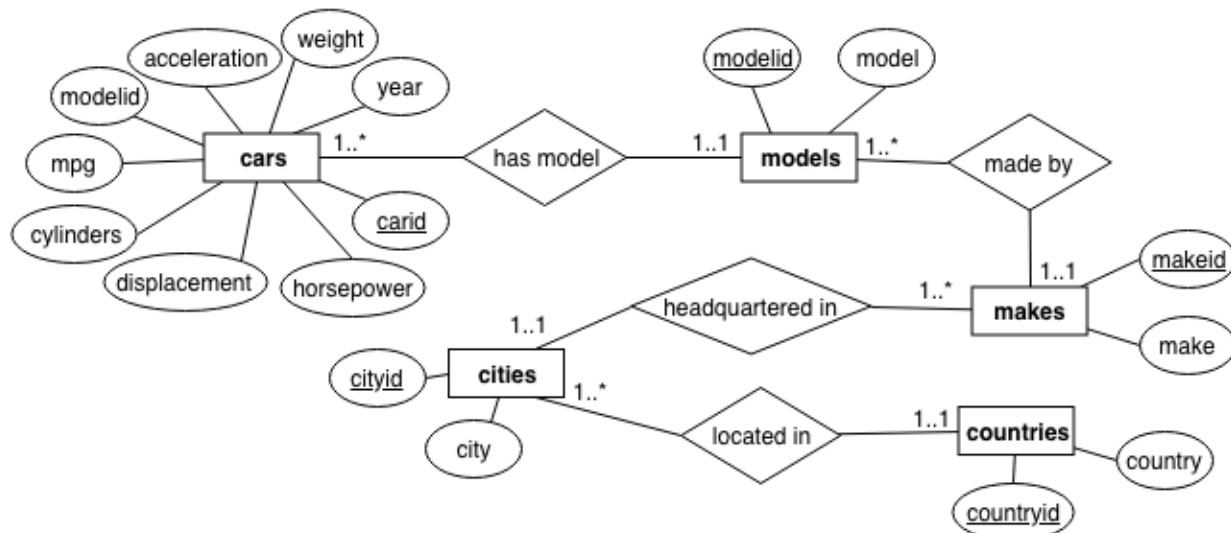


Database Term Project

Final Write-Up

1 ER Diagram	3
2. CREATE TABLE Statements for Database Tables	3
2.1 Models Table	3
2.2 Cars Table	3
2.3 Cities Table	4
2.4 Makes Table	4
2.5 MakeRel Table	4
2.6 Countries Table	4
2.7 CityRel Table	4
3. Database Population	5
4 SQL Queries and Results	6
5 Contents of All Tables	6
5.1 Models Table	6
5.2 Cars Table	10
5.3 Cities Table	19
5.4 Makes Table	19
5.5 MakeRel Table	20
5.6 Countries Table	24
5.7 CityRel Table	25

1 ER Diagram



The only change made to the database relations was to move the *cityid* attribute from the *makes* table to the *makerel* table, as suggested by the instructor.

2. CREATE TABLE Statements for Database Tables

2.1 Models Table

```
create table models (  
  modelid INT PRIMARY KEY,  
  model VARCHAR(30) NOT NULL);
```

2.2 Cars Table

```
create table cars (  
  carid INT PRIMARY KEY,  
  modelid INT REFERENCES makerel(modelid),  
  mpg FLOAT,  
  cylinders INT,  
  displacement FLOAT,  
  horsepower INT,  
  weight INT,  
  acceleration FLOAT,  
  year INT);
```

2.3 Cities Table

```
create table cities (  
  cityid INT PRIMARY KEY,  
  city VARCHAR(30) NOT NULL);
```

2.4 Makes Table

```
create table makes (  
  makeid INT PRIMARY KEY,  
  make VARCHAR(30) NOT NULL);
```

2.5 MakeRel Table

```
create table makerel (  
  modelid INT REFERENCES models(modelid),  
  makeid INT REFERENCES makes(makeid),  
  cityid INT REFERENCES cityrel(cityid),  
  PRIMARY KEY(modelid));
```

2.6 Countries Table

```
create table countries (  
  countryid INT PRIMARY KEY,  
  country VARCHAR(30) NOT NULL);
```

2.7 CityRel Table

```
create table cityrel (  
  cityid INT REFERENCES cities(cityid),  
  countryid INT REFERENCES countries(countryid),  
  PRIMARY KEY (cityid));
```

3. Database Population

In order to populate and create the database, I wrote a SQL script that included the CREATE TABLE statements mentioned in section 2 of this report. I was able to use the SQL script upload function (*Figure 1*) within the database management software and have it directly execute all the statements within.

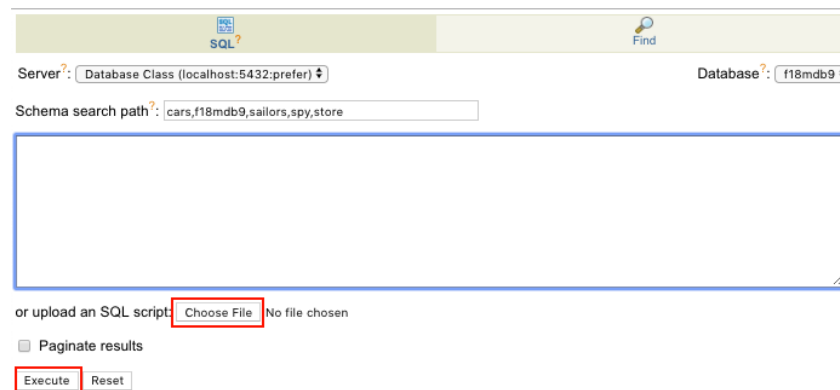


Figure 1. PostgreSQL SQL Script Upload and Execute features

After successfully creating all tables with this method, I populated them by utilizing my CSV files containing the data for each table, and going to each newly created table and using the Import function (*Figure 2*) in PostgreSQL to choose and import the data in the file corresponding to that table.

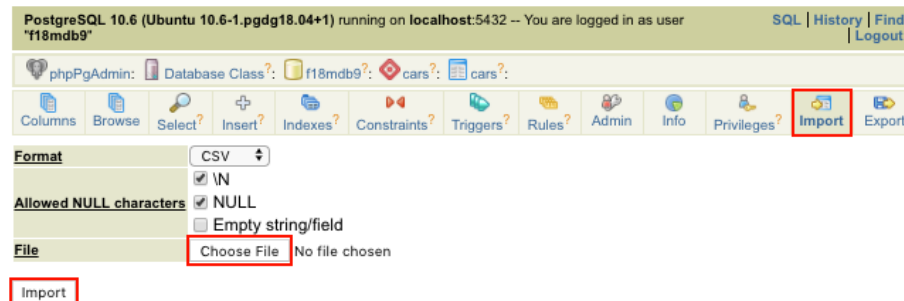


Figure 2. PostgreSQL Import CSV file feature

This process was repeated for each table, until the entire database was successfully populated.

4 SQL Queries and Results

The queries remained the same as those included in the initial proposal. I opted to add an additional one as was suggested by the professor in the query proposal.

1. How many cars were manufactured in 1970 with an MPG between 15 and 16?

```
SELECT COUNT(*)  
FROM cars  
WHERE year = 70 AND mpg >= 15 AND mpg <=16
```

count
6

2. What is the make, model, and weight of cars manufactured in Japan with a weight greater than 2500?

```
SELECT mo.model, ma.make, c.weight, co.country  
FROM cars c, makerel mr, cityrel cr, countries co,  
models mo, makes ma  
WHERE c.weight > 2500 AND  
c.modelid = mr.modelid AND  
mr.modelid = mo.modelid AND  
mr.makeid = ma.makeid AND  
mr.cityid = cr.cityid AND  
cr.countryid = co.countryid AND  
co.country = 'Japan'
```

model	make	weight	country
200-SX	Datsun	2615	Japan
210	Datsun	2910	Japan
626	Mazda	2542	Japan
626	Mazda	2635	Japan
710	Datsun	2545	Japan
810	Datsun	2815	Japan
810	Datsun	2930	Japan
Celica	Toyota	2665	Japan
Celica	Toyota	2515	Japan
Corona	Toyota	2702	Japan
Corona	Toyota	2560	Japan
Corona	Toyota	2711	Japan
Corona	Toyota	2506	Japan
Cressida	Toyota	2900	Japan
Mark II	Toyota	2807	Japan
Mark II	Toyota	2930	Japan
Rx-4	Mazda	2720	Japan

3. What countries manufacture cars with a horsepower of at least 200?

```
SELECT DISTINCT co.country  
FROM cars c, makerel mr, cityrel  
cr, countries co  
WHERE c.horsepower > 200 AND  
c.modelid = mr.modelid AND  
mr.cityid = cr.cityid AND  
cr.countryid = co.countryid
```

country
US

4. What is the average acceleration value for cars manufactured by Ford?

```
SELECT AVG(c.acceleration) AS avg_acc  
FROM cars c, makerel mr, makes ma  
WHERE ma.make = 'Ford' AND  
mr.makeid = ma.makeid AND  
c.modelid = mr.modelid
```

avg_acc
15.2916666666667

5. What cities make cars with Acceleration of 15.5?

```
SELECT DISTINCT city
FROM cars NATURAL JOIN
    (makerel NATURAL JOIN
        (cityrel NATURAL JOIN
            cities))
WHERE acceleration = 15.5
```

city
Russelsheim
Dearborn
Gothenburg
Wolfsburg
Tokyo
Southfield
Auburn Hills
Turin
Lansing
Toyota
Detroit

6. What is the average MPG for Mustangs?

```
SELECT AVG(mpg) AS avg_mustang_mpg
FROM cars NATURAL JOIN
models
WHERE model = 'Mustang'
```

avg_mustang_mpg
20.875

7. How many cars were manufactured in Detroit?

```
SELECT COUNT(*)
FROM cars NATURAL JOIN
    (makerel NATURAL JOIN
        (cityrel NATURAL JOIN
            cities))
WHERE city = 'Detroit'
```

count
80

8. What are the models and displacements of cars manufactured in 1977 with a displacement greater than 200?

```
SELECT model, displacement
FROM cars NATURAL JOIN
models
WHERE year = 77 AND displacement > 200
```

model	displacement
Caprice Classic	305
Concours	250
Cordoba	400
Cougar	302
Cutlass Salon	260
Granada	250
Grand Prix	400
Monaco	318
Monte Carlo	350
Skylark	231
Thunderbird	351
Volare	225

9. What make has the highest mpg?

```
SELECT make AS highest_mpg_make
FROM cars NATURAL JOIN
    (makerel NATURAL JOIN
     makes)
WHERE mpg = (
    SELECT MAX(mpg)
    FROM cars)
```

highest_mpg_make
Mazda

10. What model had the highest horsepower in 1982?

```
SELECT model
FROM cars NATURAL JOIN
    models
WHERE horsepower = (
    SELECT MAX(horsepower)
    FROM cars WHERE
    year = 82) AND year = 82
```

model
Granada

11. How many cars have a horsepower of at most 180?

```
SELECT COUNT(*) AS hp_atmost_180
FROM cars
WHERE horsepower <= 180
```

hp_atmost_180
375

12. What country has manufactured the most cars in the database, and how many cars has it manufactured?

```
SELECT country, car_count
FROM(
    SELECT COUNT(carid) AS car_count, country
    FROM cars NATURAL JOIN
        (makerel NATURAL JOIN
         (cityrel NATURAL JOIN
          countries))
    GROUP BY country) AS counts
WHERE car_count =
    (SELECT MAX(car_count) FROM (
```

country	car_count
US	246


```
SELECT COUNT(carid) AS car_count, country
FROM cars NATURAL JOIN
  (makerel NATURAL JOIN
    (cityrel NATURAL JOIN
      countries))
GROUP BY country) AS counts)
```

13. What countries manufactured cars in 1970?

```
SELECT DISTINCT country
FROM cars NATURAL JOIN
  (makerel NATURAL JOIN
    (cityrel NATURAL JOIN countries))
WHERE year = 70
```

country
US
Sweden
France
Germany
Japan

14. What is the average number of cylinders for all Toyotas rounded to 2 decimal places?

```
SELECT ROUND(AVG(cylinders), 2) AS avg_cyl_toyota
FROM cars NATURAL JOIN
  (makerel NATURAL JOIN
    makes)
WHERE make = 'Toyota'
```

avg_cyl_toyota
4.23

15. What is lowest displacement for all cars with a weight between 3000 to 3200?

```
SELECT min(displacement) AS min_displ
FROM
  (SELECT *
   FROM cars
   WHERE weight >=3000 AND weight <=
3200) AS weights
```

min
130

16. What is the minimum horsepower for Cadillacs?

```
SELECT min(horsepower) AS min_hp_cadillac
FROM
  (SELECT *
   FROM cars NATURAL JOIN
    (makerel NATURAL JOIN
      makes)
   WHERE make = 'Cadillac') AS cadillacs
```

min_hp_cadillac
125

17. What is the maximum displacement for cars from France?

```
SELECT MAX(displacement) AS max_disp_france
FROM cars NATURAL JOIN
  (makerel NATURAL JOIN
   (cityrel NATURAL JOIN
    countries))
WHERE country = 'France'
```

max_disp_france
163

18. What model was manufactured in the most years, and what years was it manufactured in sorted in increasing order?

```
SELECT DISTINCT year, model
FROM cars NATURAL JOIN
  (models NATURAL JOIN
   (SELECT COUNT(DISTINCT year) AS
    year_count, modelid
   FROM cars
   GROUP BY modelid) AS count_by_model)
WHERE year_count =
  (SELECT MAX(year_count)
   FROM cars NATURAL JOIN
    (models NATURAL JOIN
     (SELECT COUNT(DISTINCT year) AS
      year_count, modelid
     FROM cars
     GROUP BY modelid) AS
    count_by_model))
ORDER BY year
```

year	model
71	Corolla
72	Corolla
74	Corolla
75	Corolla
76	Corolla
77	Corolla
80	Corolla
81	Corolla
82	Corolla

19. What is the city that manufactured the most cars with an MPG greater than 20?

```
SELECT city
FROM
  (SELECT COUNT(carid) AS
   count_mpg_20, city
   FROM
    (SELECT *
     FROM cars NATURAL JOIN
      (makerel NATURAL JOIN
       cities))
```

city
Tokyo

```

        WHERE mpg > 20) AS mpgs
    GROUP BY city
) AS mpgs_by_city
WHERE count_mpg_20 = (
SELECT MAX(count_mpg_20)
FROM
    (SELECT COUNT(carid) AS
count_mpg_20, city
    FROM
        (SELECT *
        FROM cars NATURAL JOIN
        (makerel NATURAL JOIN
        cities)
        WHERE mpg > 20) AS mpgs
        GROUP BY city
    ) AS mpgs_by_city)

```

20. Which model had the largest change in mpg?

```

SELECT model
FROM
    (SELECT MAX(mpg) - MIN(mpg) AS diff, modelid
    FROM cars NATURAL JOIN
        (SELECT COUNT(modelid) AS model_count, modelid
        FROM cars
        GROUP BY modelid) AS count_by_modelid
    WHERE model_count > 1
    GROUP BY modelid
    ) AS diff_table NATURAL JOIN
models
WHERE diff =
    (SELECT MAX(diff)
    FROM
        (SELECT MAX(mpg) - MIN(mpg) AS diff, modelid
        FROM cars NATURAL JOIN
            (SELECT COUNT(modelid) AS model_count, modelid
            FROM cars
            GROUP BY modelid) AS count_by_modelid
        WHERE model_count > 1
        GROUP BY modelid) AS diff_table)

```

model
Civic

21. What models have an acceleration of at most 12.5 or have been manufactured in Sweden?

```
SELECT DISTINCT model
FROM models
WHERE modelid IN
(SELECT modelid
FROM cars
WHERE acceleration <= 12.5)

OR modelid IN
(SELECT modelid
FROM cars NATURAL JOIN
(makerel NATURAL JOIN
(cityrel NATURAL JOIN
countries))
WHERE country = 'Sweden')
```

model
Cordoba
264G
Estate Wagon
Seville
Safari
Rebel Sst
Vista Cruiser
Citation
Grand Prix
Mustang
Omega
Ambassador
Galaxie 500
New Yorker Brougham
Electra
Country
Torino
Futura
Monaco
Chevelle Malibu
Challenger
Impala
Coronet
Marquis
Dart
245
Catalina
Caprice Classic
Fury
Newport Royal
Rx-7 GS
144EA
Monte Carlo
Matador
Rampage
2002
Barracuda 340
99Le
Rabbit
Country Squire
C10
Satellite
210
Skylark

5 Contents of All Tables

5.1 Models Table

modelid	model
1	100LS
2	1200
3	124 Sport Coupe
4	128
5	12TI
6	131
7	144EA
8	18I
9	1900
10	200-SX
11	2002
12	210
13	240D
14	245
15	264GI
16	280S
17	300D
18	304
19	310
20	320I
21	4000
22	5 GTL
23	5000
24	504
25	510
26	510 Hatchback
27	610
28	626
29	710
30	810
31	99Le
32	Accord
33	Ambassador
34	Aries
35	Aries Wagon

36	Arrow GS
37	Aspen
38	Astro
39	B210
40	Barracuda 340
41	Bel Air
42	C10
43	C20
44	Camaro
45	Capri
46	Caprice Classic
47	Carina
48	Catalina
49	Cavalier
50	Celica
51	Century
52	Challenger
53	Champ
54	Charger
55	Chevelle Concours
56	Chevelle Malibu
57	Chevette
58	Citation
59	Civic
60	Colt
61	Colt Hardtop
62	Colt Hatchback
63	Concord
64	Concours
65	Cordoba
66	Corolla
67	Corona
68	Coronet
69	Cougar
70	Country
71	Country Squire
72	Cressida
73	Cricket
74	Custom Suburb
75	Cutlass Ciera
76	Cutlass Salon
77	D100
78	Dart

79	Dasher
80	Dasher (Diesel)
81	Delta 88 Royale
82	Diplomat
83	DL Wagon
84	Duster
85	Eldorado
86	Electra
87	Escort
88	Estate Wagon
89	F-10 Hatchback
90	F108
91	F250
92	Fairmont
93	Fiesta
94	Firebird
95	Forester
96	Fox
97	Fury
98	Futura
99	Galaxie 500
100	GLC
101	Gran Torino
102	Granada
103	Grand Marquis
104	Grand Prix
105	Gremlin
106	Horizon
107	Hornet
108	Impala
109	Impreza
110	J2000 Se Hatchback
111	Jetta
112	Lebaron
113	Lemans V6
114	Lesabre Custom
115	Ltd Landau
116	Lynx L
117	Magnum XE
118	Malibu
119	Manta
120	Mark II
121	Marquis

122	Matador
123	Maverick
124	Model 111
125	Monaco
126	Monarch
127	Monte Carlo
128	Monza
129	Mustang
130	New Yorker Brougham
131	Newport Royal
132	Nova
133	Omega
134	Omni
135	Opel Isuzu DeluXE
136	Outback
137	Pacer
138	Phoenix
139	Pickup
140	Pinto
141	PI510
142	Prelude
143	Rabbit
144	Rabbit L
145	Rampage
146	Ranger
147	Rebel Sst
148	Regal Sport Coupe
149	Reliant
150	Rx-4
151	Rx-7 GS
152	Rx2 Coupe
153	Rx3
154	S-10
155	Safari
156	Sapporo
157	Satellite
158	Scirocco
159	Seville
160	Skyhawk
161	Skylark
162	Spirit DI
163	St. Regis
164	Stanza XE

165	Starfire SX
166	Starlet
167	Strada
168	Sunbird Coupe
169	Super Beetle
170	Tercel
171	Thunderbird
172	Torino
173	Tr7 Coupe
174	Type 3
175	Valiant
176	Vega
177	Ventura SJ
178	Vista Cruiser
179	Volare
180	Woody
181	X1.9
182	Zephyr

5.2 Cars Table

carid	modelid	mpg	cylinders	displacement	horsepower	weight	acceleration	year
1	1	24	4	107	90	2430	14.5	70
2	1	20	4	114	91	2582	14	73
3	1	23	4	115	95	2694	15	75
4	79	26	4	97	46	1835	20.5	70
5	5	26	4	96	69	2189	18	72
6	2	35	4	72	69	1613	18	71
7	3	26	4	98	90	2265	15.5	73
8	3	26	4	116	75	2246	14	74
9	3	30	4	88	76	2065	14.5	71
10	4	29	4	68	49	1867	19.5	73
11	4	24	4	90	75	2108	15.5	74
12	5	27	4	101	83	2202	15.3	76
13	6	28	4	107	86	2464	15.5	76
14	7	19	4	121	112	2868	15.5	73
15	7	18	4	121	112	2933	14.5	72
16	8	34.5	4	100	NULL	2320	15.8	81
17	9	28	4	116	90	2123	14	71
18	9	25	4	116	81	2220	16.9	76
19	10	23.9	4	119	97	2405	14.9	78
20	11	26	4	121	113	2234	12.5	70
21	10	32.9	4	119	100	2615	14.8	81

22	12	31.8	4	85	65	2020	19.2	79
23	12	40.8	4	85	65	2110	19.2	80
24	12	37	4	85	65	1975	19.4	81
25	13	30	4	146	67	3250	21.8	80
26	14	22	4	121	98	2945	14.5	75
27	14	20	4	130	102	3150	15.7	76
28	15	17	6	163	125	3140	13.6	78
29	12	32.7	6	168	132	2910	11.4	80
30	16	16.5	6	168	120	3820	16.7	76
31	17	25.4	5	183	77	3530	20.1	79
32	18	30	4	79	70	2074	19.5	71
33	19	37.2	4	86	65	2019	16.4	80
34	19	38	4	91	67	1995	16.2	82
35	20	21.5	4	121	110	2600	12.8	77
36	21	34.3	4	97	78	2188	15.8	80
37	79	22	4	121	76	2511	18	72
38	22	36	4	79	58	1825	18.6	77
39	23	20.3	5	131	103	2830	15.9	78
40	23	36.4	5	121	67	2950	19.9	80
41	24	25	4	110	87	2672	17.5	70
42	24	23	4	120	88	2957	17	75
43	24	19	4	120	88	3270	21.9	76
44	24	27.2	4	141	71	3190	24.8	79
45	24	21	4	120	87	2979	19.5	72
46	24	28.1	4	141	80	3230	20.4	81
47	25	27.2	4	119	97	2300	14.7	78
48	25	28	4	97	92	2288	17	72
49	26	37	4	119	92	2434	15	80
50	24	16.2	6	163	133	3410	15.8	78
51	27	22	4	108	94	2379	16.5	73
52	28	31.3	4	120	75	2542	17.5	80
53	28	31.6	4	120	74	2635	18.3	81
54	29	32	4	83	61	2003	19	74
55	29	24	4	119	97	2545	17	75
56	30	22	6	146	97	2815	14.5	77
57	30	24.2	6	146	120	2930	13.8	81
58	31	25	4	104	95	2375	17.5	70
59	31	21.6	4	121	115	2795	15.7	78
60	31	24	4	121	110	2660	14	73
61	31	25	4	121	115	2671	13.5	75
62	32	32.4	4	107	72	2290	17	80
63	32	36	4	107	75	2205	14.5	82
64	32	31.5	4	98	68	2045	18.5	77
65	32	29.5	4	98	68	2135	16.6	78
66	33	13	8	360	175	3821	11	73
67	33	15	8	390	190	3850	8.5	70
68	33	17	8	304	150	3672	11.5	72

69	34	29	4	135	84	2525	16	82
70	35	25.8	4	156	92	2620	14.4	81
71	36	25.5	4	122	96	2300	15.5	77
72	37	18.6	6	225	110	3620	18.7	78
73	37	19.1	6	225	90	3381	18.7	80
74	37	20.6	6	225	110	3360	16.6	79
75	37	20	6	225	100	3651	17.7	76
76	38	23	4	140	78	2592	18.5	75
77	39	32	4	85	70	1990	17	76
78	39	31	4	79	67	1950	19	74
79	39	39.4	4	85	70	2070	18.6	78
80	40	14	8	340	160	3609	8	70
81	41	15	8	350	145	4440	14	75
82	42	13	8	350	145	4055	12	76
83	43	10	8	307	200	4376	15	70
84	44	27	4	151	90	2950	17.3	82
85	45	23	4	122	86	2220	14	71
86	45	25	4	140	92	2572	14.9	76
87	45	21	6	155	107	2472	14	73
88	46	13	8	400	150	4464	12	73
89	46	17.5	8	305	145	3880	12.5	77
90	46	17	8	305	130	3840	15.4	79
91	47	20	4	97	88	2279	19	73
92	48	14	8	455	225	4425	10	70
93	48	14	8	400	175	4385	12	72
94	48	16	8	400	170	4668	11.5	75
95	48	14	8	400	175	4464	11.5	71
96	49	28	4	112	88	2605	19.6	82
97	49	34	4	112	88	2395	18	81
98	49	27	4	112	88	2640	18.6	80
99	50	32	4	144	96	2665	13.9	82
100	50	21.1	4	134	95	2515	14.8	78
101	51	17	6	231	110	3907	21	75
102	51	22.4	6	231	110	3415	15.8	81
103	51	13	8	350	175	4100	13	73
104	51	25	6	181	110	2945	16.4	82
105	51	13	8	350	150	4699	14.5	74
106	51	20.6	6	231	105	3380	15.8	78
107	52	15	8	383	170	3563	10	70
108	53	39	4	86	64	1875	16.4	81
109	54	36	4	135	84	2370	13	82
110	55	13	8	307	130	4098	14	72
111	56	18	8	307	130	3504	12	70
112	56	17	6	250	100	3329	15.5	71
113	56	16	6	250	105	3897	18.5	75
114	56	16	6	250	100	3781	17	74
115	56	17.5	8	305	140	4215	13	76

116	57	29	4	85	52	2035	22.2	76
117	57	30.5	4	98	63	2051	17	77
118	57	30	4	98	68	2155	16.5	78
119	57	32.1	4	98	70	2120	15.5	80
120	58	28.8	6	173	115	2595	11.3	79
121	58	28	4	151	90	2678	16.5	80
122	58	23.5	6	173	110	2725	12.6	81
123	59	24	4	120	97	2489	15	74
124	59	33	4	91	53	1795	17.4	76
125	59	38	4	91	67	1965	15	82
126	59	32	4	91	67	1965	15.7	82
127	59	35.1	4	81	60	1760	16.1	81
128	59	44.6	4	91	67	1850	13.8	80
129	59	33	4	91	53	1795	17.5	75
130	59	36.1	4	91	60	1800	16.4	78
131	60	28	4	90	75	2125	14.5	74
132	60	26	4	98	79	2255	17.7	76
133	60	27.9	4	156	105	2800	14.4	80
134	60	28	4	98	80	2164	15	72
135	61	25	4	97.5	80	2126	17	72
136	62	35.7	4	98	80	1915	14.4	79
137	60	33.5	4	98	83	2075	15.9	77
138	63	19.4	6	232	90	3210	17.2	78
139	63	24.3	4	151	90	3003	20.1	80
140	63	18.1	6	258	120	3410	15.1	78
141	63	23	4	151	NULL	3035	20.5	82
142	63	20.2	6	232	90	3265	18.2	79
143	64	17.5	6	250	110	3520	16.4	77
144	65	15.5	8	400	190	4325	12.2	77
145	66	29	4	97	75	2171	16	75
146	66	28	4	97	75	2155	16.4	76
147	66	32.2	4	108	75	2265	15.2	80
148	66	32.4	4	108	75	2350	16.8	81
149	66	34	4	108	70	2245	16.9	82
150	66	31	4	71	65	1773	19	71
151	66	32	4	71	65	1836	21	74
152	66	27	4	97	88	2100	16.5	72
153	66	26	4	97	75	2265	18.2	77
154	66	38.1	4	89	60	1968	18.8	80
155	67	25	4	113	95	2228	14	71
156	67	31	4	76	52	1649	16.5	74
157	67	24	4	134	96	2702	13.5	75
158	67	27.5	4	134	95	2560	14.2	78
159	67	24	4	113	95	2278	15.5	72
160	67	29.8	4	134	90	2711	15.5	80
161	67	24	4	113	95	2372	15	70
162	67	23	4	120	97	2506	14.5	72

163	68	16	8	318	150	4190	13	76
164	68	15	8	318	150	3777	12.5	73
165	68	14	8	318	150	4457	13.5	74
166	69	15	8	302	130	4295	14.9	77
167	70	12	8	400	167	4906	12.5	73
168	71	13	8	400	170	4746	12	71
169	71	15.5	8	351	142	4054	14.3	79
170	72	25.4	6	168	116	2900	12.6	81
171	73	26	4	91	70	1955	20.5	71
172	74	13	8	360	170	4654	13	73
173	75	38	6	262	85	3015	17	82
174	75	26.6	8	350	105	3725	19	81
175	76	19.9	8	260	110	3365	15.5	78
176	76	23.9	8	260	90	3420	22.2	79
177	76	17	8	260	110	4060	19	77
178	77	13	8	318	150	3755	14	76
179	77	11	8	318	210	4382	13.5	70
180	78	15	8	318	150	3399	11	73
181	79	26	4	79	67	1963	15.5	74
182	79	25	4	90	71	2223	16.5	75
183	79	30.5	4	97	78	2190	14.1	77
184	80	43.4	4	90	48	2335	23.7	80
185	81	12	8	350	160	4456	13.5	72
186	15	30.7	6	145	76	3160	19.6	81
187	82	19.4	8	318	140	3735	13.2	78
188	83	33.8	4	97	67	2145	18	80
189	84	22	6	198	95	2833	15.5	70
190	84	23	6	198	95	2904	16	73
191	84	20	6	198	95	3102	16.5	74
192	85	23	8	350	125	3900	17.4	79
193	86	12	8	455	225	4951	11	73
194	87	29.9	4	98	65	2380	20.7	81
195	87	34.4	4	98	65	2045	16.2	81
196	88	14	8	455	225	3086	10	70
197	88	16.9	8	350	155	4360	14.9	79
198	89	33.5	4	85	70	1945	16.8	77
199	90	13	8	302	130	3870	15	76
200	91	10	8	360	215	4615	14	70
201	92	26.4	4	140	88	2870	18.1	80
202	92	20.2	6	200	85	2965	15.8	78
203	92	25.1	4	140	88	2720	15.4	78
204	92	22.3	4	140	88	2890	17.3	79
205	92	24	4	140	92	2865	16.4	82
206	93	36.1	4	98	66	1800	14.4	78
207	94	19	6	250	100	3282	15	71
208	95	30	4	97	67	1985	16.4	77
209	96	29	4	98	83	2219	16.5	74

210	97	18	6	225	95	3785	19	75
211	97	14	8	318	150	4237	14.5	73
212	97	14	8	440	215	4312	8.5	70
213	97	14	8	318	150	4096	13	71
214	97	15	8	318	150	4135	13.5	72
215	98	18.1	8	302	139	3205	11.2	78
216	99	15	8	429	198	4341	10	70
217	99	14	8	351	153	4154	13.5	71
218	99	14	8	351	153	4129	13	72
219	100	46.6	4	86	65	2110	17.9	80
220	100	34.1	4	91	68	1985	16	81
221	100	31	4	91	68	1970	17.6	82
222	100	37	4	91	68	2025	18.2	82
223	100	32.8	4	78	52	1985	19.4	78
224	100	34.1	4	86	65	1975	15.2	79
225	101	14	8	302	137	4042	14.5	73
226	101	16	8	302	140	4141	14	74
227	101	14.5	8	351	152	4215	12.8	76
228	101	13	8	302	140	4294	16	72
229	101	14	8	302	140	4638	16	74
230	102	18.5	6	250	98	3525	19	77
231	102	18	6	250	78	3574	21	76
232	102	20.2	6	200	88	3060	17.1	81
233	102	22	6	232	112	2835	14.7	82
234	97	16	8	318	150	4498	14.5	75
235	103	16.5	8	351	138	3955	13.2	79
236	104	16	8	400	230	4278	9.5	73
237	104	16	8	400	180	4220	11.1	77
238	105	21	6	199	90	2648	15	70
239	105	19	6	232	100	2634	13	71
240	105	18	6	232	100	2789	15	73
241	105	20	6	232	100	2914	16	75
242	106	34.2	4	105	70	2200	13.2	79
243	106	34.7	4	105	63	2215	14.9	81
244	106	38	4	105	63	2125	14.7	82
245	106	34.5	4	105	70	2150	14.9	79
246	107	18	6	199	97	2774	15.5	70
247	107	18	6	232	100	2945	16	73
248	107	19	6	232	100	2901	16	74
249	107	22.5	6	232	90	3085	17.6	76
250	107	18	6	258	110	2962	13.5	71
251	108	14	8	454	220	4354	9	70
252	108	14	8	350	165	4209	12	71
253	108	13	8	350	165	4274	12	72
254	108	11	8	400	150	4997	14	73
255	109	32.3	4	97	67	2065	17.8	81
256	110	31	4	112	85	2575	16.2	82

257	111	33	4	105	74	2190	14.2	81
258	112	26	4	156	92	2585	14.5	82
259	112	17.6	6	225	85	3465	16.6	81
260	112	18.5	8	360	150	3940	13	79
261	113	21.5	6	231	115	3245	15.4	79
262	114	13	8	350	155	4502	13.5	72
263	115	13	8	351	158	4363	13	73
264	115	14	8	351	148	4657	13.5	75
265	115	17.6	8	302	129	3725	13.4	79
266	116	36	4	98	70	2125	17.3	82
267	117	17.5	8	318	140	4080	13.7	78
268	118	13	8	350	145	3988	13	73
269	118	20.5	6	200	95	3155	18.2	78
270	118	19.2	8	267	125	3605	15	79
271	119	24	4	116	75	2158	15.5	73
272	119	26	4	97	78	2300	14.5	74
273	120	20	6	156	122	2807	13.5	73
274	120	19	6	156	108	2930	15.5	76
275	121	11	8	429	208	4633	11	72
276	121	12	8	429	198	4952	11.5	73
277	122	18	6	232	100	3288	15.5	71
278	122	14	8	304	150	3672	11.5	73
279	122	16	6	258	110	3632	18	74
280	122	15	6	258	110	3730	19	75
281	122	15.5	8	304	120	3962	13.9	76
282	122	15	8	304	150	3892	12.5	72
283	122	14	8	304	150	4257	15.5	74
284	123	21	6	200	85	2587	16	70
285	123	18	6	250	88	3021	16.5	73
286	123	15	6	250	72	3158	19.5	75
287	123	24	6	200	81	3012	17.6	76
288	124	27	4	97	60	1834	19	71
289	125	12	8	383	180	4955	11.5	71
290	125	15.5	8	318	145	4140	13.7	77
291	126	15	6	250	72	3432	21	75
292	126	20.2	8	302	139	3570	12.8	78
293	127	15	8	400	150	3761	9.5	70
294	127	15.5	8	350	170	4165	11.4	77
295	127	19.2	8	305	145	3425	13.2	78
296	127	15	8	350	145	4082	13	73
297	128	20	8	262	110	3221	13.5	75
298	129	18	6	250	88	3139	14.5	71
299	129	27	4	140	86	2790	15.6	82
300	129	13	8	302	129	3169	12	75
301	129	25.5	4	140	89	2755	15.8	77
302	130	13	8	440	215	4735	11	73
303	131	13	8	400	190	4422	12.5	72

304	132	15	6	250	100	3336	17	74
305	132	18	6	250	105	3459	16	75
306	132	22	6	250	105	3353	14.5	76
307	132	16	6	250	100	3278	18	73
308	133	11	8	350	180	3664	11	73
309	133	26.8	6	173	115	2700	12.9	79
310	134	30.9	4	105	75	2230	14.5	78
311	135	30	4	111	80	2155	14.8	77
312	136	26	4	108	93	2391	15.5	74
313	137	19	6	232	90	3211	17	75
314	137	17.5	6	258	95	3193	17.8	76
315	138	33.5	4	151	90	2556	13.2	79
316	138	27	4	151	90	2735	18	82
317	138	19.2	6	231	105	3535	19.2	78
318	139	44	4	97	52	2130	24.6	82
319	140	19	4	122	85	2310	18.5	73
320	140	26	4	122	80	2451	16.5	74
321	140	23	4	140	83	2639	17	75
322	140	18	6	171	97	2984	14.5	75
323	140	26.5	4	140	72	2565	13.6	76
324	140	22	4	122	86	2395	16	72
325	140	21	4	122	86	2226	16.5	72
326	141	27	4	97	88	2130	14.5	70
327	141	27	4	97	88	2130	14.5	71
328	142	33.7	4	107	75	2210	14.4	81
329	143	29	4	90	70	1937	14	75
330	143	29.5	4	97	71	1825	12.2	76
331	169	29.8	4	89	62	1845	15.3	80
332	143	29	4	90	70	1937	14.2	76
333	158	41.5	4	98	76	2144	14.7	80
334	143	44.3	4	90	48	2085	21.7	80
335	143	29	4	97	78	1940	14.5	77
336	143	31.9	4	89	71	1925	14	79
337	143	43.1	4	90	48	1985	21.5	78
338	144	36	4	105	74	1980	15.3	82
339	145	32	4	135	84	2295	11.6	82
340	146	28	4	120	79	2625	18.6	82
341	147	16	8	304	150	3433	12	70
342	148	17.7	6	231	165	3445	13.4	78
343	149	27.2	4	135	84	2490	15.7	81
344	149	30	4	135	84	2385	12.9	81
345	150	21.5	3	80	110	2720	13.5	77
346	151	23.7	3	70	100	2420	12.5	80
347	152	19	3	70	97	2330	13.5	72
348	153	18	3	70	90	2124	13.5	73
349	154	31	4	119	82	2720	19.4	82
350	155	13	8	400	175	5140	12	71

351	156	23.2	4	156	105	2745	16.7	78
352	157	18	8	318	150	3436	11	70
353	157	16	6	225	105	3439	15.5	71
354	157	14	8	318	150	4077	14	72
355	157	18	6	225	105	3613	16.5	74
356	158	31.5	4	89	71	1990	14.9	78
357	159	16.5	8	350	180	4380	12.1	76
358	160	21	6	231	110	3039	15	75
359	161	20.5	6	231	105	3425	16.9	77
360	161	26.6	4	151	84	2635	16.4	81
361	161	15	8	350	165	3693	11.5	70
362	161	28.4	4	151	90	2670	16	79
363	162	27.4	4	121	80	2670	15	79
364	163	18.2	8	318	135	3830	15.2	79
365	164	36	4	120	88	2160	14.5	82
366	165	23.8	4	151	85	2855	17.6	78
367	166	39.1	4	79	58	1755	16.9	81
368	167	37.3	4	91	69	2130	14.7	79
369	168	24.5	4	151	88	2740	16	77
370	169	26	4	97	46	1950	21	73
371	170	37.7	4	89	62	2050	17.3	81
372	171	16	8	351	149	4335	14.5	77
373	172	17	8	302	140	3449	10.5	70
374	172	19	6	250	88	3302	15.5	71
375	173	35	4	122	88	2500	15.1	80
376	174	23	4	97	54	2254	23.5	72
377	175	18	6	225	105	3121	16.5	73
378	175	22	6	225	100	3233	15.4	76
379	175	19	6	225	95	3264	16	75
380	176	20	4	140	90	2408	19.5	72
381	176	21	4	140	72	2401	19.5	73
382	176	25	4	140	75	2542	17	74
383	176	22	4	140	72	2408	19	71
384	176	28	4	140	90	2264	15.5	71
385	177	18.5	6	250	110	3645	16.2	76
386	178	12	8	350	180	4499	12.5	73
387	179	20.5	6	225	100	3430	17.2	78
388	179	19	6	225	100	3630	17.7	77
389	179	13	8	318	150	3940	13.2	76
390	180	24.5	4	98	60	2164	22.1	76
391	181	31	4	79	67	2000	16	74
392	182	20.8	6	200	85	3070	16.7	78
393	182	19.8	6	200	85	2990	18.2	79

5.3 Cities Table

cityid	city
1	Auburn Hills
2	Boulogne-Billancourt
3	Dearborn
4	Detroit
5	Fond du Lac
6	Gothenburg
7	Hinckley
8	Hiroshima
9	Ingolstadt
10	Lansing
11	Munchen
12	New York
13	Paris
14	Russelsheim
15	Southfield
16	Stockholm
17	Stuttgart
18	Tokyo
19	Toyota
20	Turin
21	Wolfsburg
22	Yokohama

5.4 Makes Table

makeid	make
1	Amc
2	Audi
3	Bmw
4	Buick
5	Cadillac
6	Chevrolet
7	Chrysler
8	Datsun
9	Dodge
10	Fiat

11	Ford
12	Honda
13	Mazda
14	Mercedes Benz
15	Mercury
16	Nissan
17	Oldsmobile
18	Opel
19	Peugeot
20	Plymouth
21	Pontiac
22	Renault
23	Saab
24	Subaru
25	Toyota
26	Triumph
27	Volkswagen
28	Volvo

5.5 MakeRel Table

modelid	makeid	cityid
1	2	9
2	8	18
3	10	20
4	10	20
5	22	2
6	10	20
7	28	6
8	22	2
9	18	14
10	8	18
11	3	11
12	8	18
13	14	17
14	28	6
15	28	6
16	14	17
17	14	17
18	19	13

19	8	18
20	3	11
21	2	9
22	22	2
23	2	9
24	19	13
25	8	18
26	8	18
27	8	18
28	13	8
29	8	18
30	8	18
31	23	16
32	12	18
33	1	15
34	9	1
35	9	1
36	20	1
37	9	1
38	21	4
39	8	18
40	20	1
41	6	4
42	6	4
43	6	4
44	6	4
45	15	5
46	6	4
47	25	19
48	21	4
49	6	4
50	25	19
51	4	4
52	9	1
53	20	1
54	9	1
55	6	4
56	6	4
57	6	4
58	6	4
59	12	18
60	9	1
61	9	1

62	9	1
63	1	15
64	6	4
65	7	1
66	25	19
67	25	19
68	9	1
69	15	5
70	11	3
71	11	3
72	25	19
73	20	1
74	20	1
75	17	10
76	17	10
77	9	1
78	9	1
79	27	21
80	27	21
81	17	10
82	9	1
83	24	18
84	20	1
85	5	12
86	4	4
87	11	3
88	4	4
89	8	18
90	11	3
91	11	3
92	11	3
93	11	3
94	21	4
95	24	18
96	2	9
97	20	1
98	11	3
99	11	3
100	13	8
101	11	3
102	11	3
103	15	5
104	21	4

105	1	15
106	20	1
107	1	15
108	6	4
109	24	18
110	21	4
111	27	21
112	7	1
113	21	4
114	4	4
115	11	3
116	15	5
117	9	1
118	6	4
119	18	14
120	25	19
121	15	5
122	1	15
123	11	3
124	27	21
125	9	1
126	15	5
127	6	4
128	6	4
129	11	3
130	7	1
131	7	1
132	6	4
133	17	10
134	9	1
135	4	4
136	24	18
137	1	15
138	21	4
139	27	21
140	11	3
141	8	18
142	12	18
143	27	21
144	27	21
145	9	1
146	11	3
147	1	15

148	4	4
149	20	1
150	13	8
151	13	8
152	13	8
153	13	8
154	6	4
155	21	4
156	20	1
157	20	1
158	27	21
159	5	12
160	4	4
161	4	4
162	1	15
163	9	1
164	16	22
165	17	10
166	25	19
167	10	20
168	21	4
169	27	21
170	25	19
171	11	3
172	11	3
173	26	7
174	27	21
175	20	1
176	6	4
177	21	4
178	17	10
179	20	1
180	6	4
181	10	20
182	15	5

5.6 Countries Table

countryid	country
1	England
2	France

3	Germany
4	Italy
5	Japan
6	Sweden
7	US

5.7 CityRel Table

cityid	countryid
1	7
2	2
3	7
4	7
5	7
6	6
7	7
8	5
9	3
10	7
11	3
12	7
13	2
14	3
15	7
16	6
17	3
18	5
19	5
20	4
21	3
22	5