PROJECT 1.1 Part 2

Simple Liner Regression analysis on Fuel Economy

MYSQL CODING

Project 1.1 My SQL question

Use MySQL

9. Upload the 2010 and 2011 dataset into a MySQL database named “fuel_economy”. The table name should be “fe2010” and “fe2011” respectively.

10. You have already calculated the beta coefficients for the full 2010 dataset. Insert two additional columns for the beta coefficients in the “fe2010” table and populate the columns with beta values. You can just take the previously calculate beta values to populate here. Remember the beta values will be constant for each column here.

11. Once point 10. is done, Calculate the Predicted value for “feb2011” table by using the input variable from “feb2011” and beta coefficients from “feb2010” table. Insert the predicted values in an additional column in table “feb2010”.

In this question as there is no primary key, we have joined the input variables namely EngDispl, Numcyl,FE of 2010 and 2011 joined in data fe2010m and performed the prediction for 2011 using Beta coefficients namely EngDisp and Numcyl of Fe 2010 . Further prediction is carried out in fe2011 table using fe2010 Beta coefficient values.

Enter password: **********

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 38

Server version: 8.0.12 MySQL Community Server - GPL

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

```
mysql> show databases;
+--------------------+
| Database | +-----
---------------+        |
fuel_economy         |
| globalsuperstores |
| hello             |
| information_schema |
| mysql             |
| newtrial          |
```

| performance_schema |

| sakila |

| sys |

| trial |

| trial1 |

| world |

+--------------------+

12 rows in set (0.04 sec)

9. Upload the 2010 and 2011 dataset into a MySQL database named “fuel_economy”. The table name should be “fe2010” and “fe2011” respectively.

mysql> use fuel_economy;

Database changed

mysql> show tables;

+------------------------ +

| Tables_in_fuel_economy |

+------------------------ +

| fe2010 |

| fe2010m |

| fe2011 |

| rand1fe2011 |

| rand2fe2011 |

| rand3 testfe2011 |

+-----------------------+

6 rows in set (0.00 sec)

10. You have already calculated the beta coefficients for the full 2010 dataset. Insert two additional columns for the beta coefficients in the "fe2010" table and populate the columns with beta values. You can just take the previously calculate beta values to populate here. Remember the beta values will be constant for each column here.

```
mysql> Alter table fe2010m
    -> Add column Becoef_Engd2010 decimal(10,5) Not NULL;
Query OK, 0 rows affected (1.34 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> Alter table fe2010m
    -> Add column Becoef_Numcyl2010 decimal(10,5) Not NULL;
Query OK, 0 rows affected (0.65 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> Alter table fe2010m
    -> Add column predictedval12011 decimal(10,5) Not NULL;
Query OK, 0 rows affected (0.56 sec)
```

```
Records: 0 Duplicates: 0 Warnings: 0

mysql> Alter table fe2010m
    -> Add column predictedval22011 decimal(10,5) Not NULL;
Query OK, 0 rows affected (0.62 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> update fe2010m
    -> set Becoef_Engd2010 = -4.517;
Query OK, 245 rows affected (0.18 sec)
Rows matched: 245 Changed: 245 Warnings: 0

mysql> update fe2010m
    -> set Becoef_Numcyl2010 =-2.9203;
Query OK, 245 rows affected (0.18 sec)
Rows matched: 245 Changed: 245 Warnings: 0

mysql> update fe2010m
    -> set predictedval12011 = 50.563 + Becoef_Engd2010*EngDispl;
Query OK, 245 rows affected, 29 warnings (0.14 sec)
```

Rows matched: 245 Changed: 245 Warnings: 29

mysql> update fe2010m

-> set predictedval22011 = 52.144 + Becoef_Numcyl2010*Numcyl;

Query OK, 245 rows affected (0.15 sec)

Rows matched: 245 Changed: 245 Warnings: 0

mysql> select * from fe2010m limit 3;

+ ----------+-------- +---------+---------- +-------------- +------------ +----------------- +-------------------+ -------------------+ -------------------+

| EngDispl | NumCyl | FE | NumGears | EngDispl2011 | NumCyl2011 | Becoef_Engd2010 | Becoef_Numcyl2010 | predictedval12011 | predictedval22011 |

+ ----------+-------- +---------+---------- +-------------- +------------ +----------------- +-------------------+ -------------------+ -------------------+

| 4.7 | 8 | 28.0198 | 6 | 5.9 | 12 | -4.51700 | -2.92030 | 29.33310 | 28.78160 |

| 4.7 | 8| 25.6094 | 6 | 4.2 | 8 | -4.51700 | -2.92030 | 29.33310 | 28.78160 |

| 4.2 | 8| 26.8 | 6 | 4.2 | 8 | -4.51700 | -2.92030 | 31.59160 | 28.78160 |

+ ----------+-------- +---------+---------- +-------------- +------------ +----------------- +-------------------+ -------------------+ -------------------+

3 rows in set (0.00 sec)

mysql> Alter table fe2010

-> Add column Becoef_Engd2010 decimal(10,5) Not NULL;

```
Query OK, 0 rows affected (0.64 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> Alter table fe2010
    -> Add column Becoef_Numcy12010 decimal(10,5) Not NULL;
Query OK, 0 rows affected (0.45 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> Alter table fe2010
    -> Add column predictedval1 decimal(10,5) Not NULL;
Query OK, 0 rows affected (0.50 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> Alter table fe2010
    -> Add column predictedval2 decimal(10,5) Not NULL;
Query OK, 0 rows affected (0.47 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> update fe2010
    -> set Becoef_Engd2010 = -4.517;
```

```
Query OK, 1107 rows affected (0.55 sec)
Rows matched: 1107 Changed: 1107 Warnings: 0

mysql> update fe2010
    -> set Becoef_Numcy12010 = -2.9203;
Query OK, 1107 rows affected (0.31 sec)
Rows matched: 1107 Changed: 1107 Warnings: 0

mysql> update fe2010
    -> set predictedval1 = 50.563 + Becoef_Engd2010*EngDispl;
Query OK, 1107 rows affected, 139 warnings (0.21 sec)
Rows matched: 1107 Changed: 1107 Warnings: 139

mysql> update fe2010
    -> set predictedval2 = 52.144+Becoef_Numcy12010*Numcyl;
Query OK, 1107 rows affected (0.27 sec)
Rows matched: 1107 Changed: 1107 Warnings: 0

mysql> select*from fe2010 limit 3;
```

```
+---------- +-------- +---------+---------- +-------------+-----------------+-------------------+--------------------- +---------------- +--------------- + ------------------+------------------ +------------
---+--------------- +

| EngDispl | NumCyl | FE      | NumGears | TransLockup | TransCreeperGear | IntakeValvePerCyl | ExhaustValvesPerCyl | VarValveTiming | VarValveLift |
Becoef_Engd2010 | Becoef_Numcy12010 | predictedval1 | predictedval2 |

+---------- +-------- +---------+---------- +-------------+-----------------+-------------------+--------------------- +---------------- +--------------- + ------------------+------------------ +------------
---+--------------- +

|      4.7 |     8 | 28.0198 |        6 |          1 |             0 |             2 |             2 |          1 |         0 |    -4.51700 |          -2.92030 |     29.33310 |
28.78160   |

|      4.7 |     8 | 25.6094 |        6 |          1 |             0 |             2 |             2 |          1 |         0 |    -4.51700 |          -2.92030 |     29.33310 |
28.78160   |

|      4.2 |     8 |     26.8 |     6 |          1 |             0 |             2 |             2 |          1 |         0 |      -4.51700 |        -2.92030 |      31.59160 |
28.78160   |

+---------- +-------- +---------+---------- +-------------+-----------------+-------------------+--------------------- +---------------- +--------------- + ------------------+------------------ +------------
---+--------------- +

3 rows in set (0.00 sec)


mysql> update fe2010m

    -> set predictedval12011 = 50.563 + Becoef_Engd2010*EngDispl2011;

Query OK, 240 rows affected, 25 warnings (0.18 sec)

Rows matched: 245 Changed: 240 Warnings: 25


mysql> update fe2010m
```

-> set predictedval22011 = 52.144 + Becoef_Numcyl2010*Numcyl;

Query OK, 0 rows affected (0.00 sec)

Rows matched: 245 Changed: 0 Warnings: 0

11. Once point 10. is done, Calculate the Predicted value for “feb2011” table by using the input variable from “feb2011” and beta coefficients from “feb2010” table. Insert the predicted values in an additional column in table “feb2010”.

mysql> select*from fe2010m limit 3;

+ ----------+-------- +---------+---------- +------------- +------------ + -----------------+-------------------+ -------------------+ --------------------+

| EngDispl | NumCyl | FE | NumGears | EngDispl2011 | NumCyl2011 | Becoef_Engd2010 | Becoef_Numcyl2010 | predictedval12011 | predictedval22011 |

+ ----------+-------- +---------+---------- +------------- +------------ + -----------------+-------------------+ -------------------+ --------------------+

| 4.7 | 8| 28.0198 | 6 | 5.9 | 12 | -4.51700 | -2.92030 | 23.91270 | 28.78160 |

| 4.7 | 8 | 25.6094 | 6 | 4.2 | 8 | -4.51700 | -2.92030 | 31.59160 | 28.78160 |

| 4.2 | 8| 26.8 | 6 | 4.2 | 8 | -4.51700 | -2.92030 | 31.59160 | 28.78160 |

+ ----------+-------- +---------+---------- +------------- +------------ + -----------------+-------------------+ -------------------+ --------------------+

3 rows in set (0.00 sec)

11. Once point 10. is done, Calculate the Predicted value for “feb2011” table by using the input variable from “feb2011” and beta coefficients from “feb2010” table. Insert the predicted values in an additional column in table “feb2010”.

mysql> select*from fe2010m

-> ;

+----------+--------+---------+----------+-------------+------------+-----------------+-------------------+-------------------+--------------------+

| EngDispl | NumCyl | FE | NumGears | EngDispl2011 | NumCyl2011 | Becoef_Engd2010 | Becoef_Numcyl2010 | predictedval12011 | predictedval22011 |

| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
4.7	8	28.0198	6	5.9	12	-4.51700	-2.92030	23.91270	28.78160
4.7	8	25.6094	6	4.2	8	-4.51700	-2.92030	31.59160	28.78160
4.2	8	26.8	6	4.2	8	-4.51700	-2.92030	31.59160	28.78160
4.2	8	25.0451	6	5.2	10	-4.51700	-2.92030	27.07460	28.78160
5.2	10	24.8	6	5.2	10	-4.51700	-2.92030	27.07460	22.94100
5.2	10	23.9	6	3	6	-4.51700	-2.92030	37.01200	22.94100
2	4	39.7256	6	1.5	4	-4.51700	-2.92030	43.78750	40.46280
6	12	24.4	6	1.5	4	-4.51700	-2.92030	43.78750	17.10040
3	6	39.7103	6	6.3	8	-4.51700	-2.92030	22.10590	34.62220
3	6	38.7896	6	6	12	-4.51700	-2.92030	23.46100	34.62220
3	6	33.6296	7	6.2	8	-4.51700	-2.92030	22.55760	34.62220
3	6	35.2678	6	3.6	6	-4.51700	-2.92030	34.30180	34.62220
8	16	17.8	7	3.8	6	-4.51700	-2.92030	33.39840	5.41920
6.2	8	27.1	6	3.4	6	-4.51700	-2.92030	35.20520	28.78160
6.2	8	34.3493	6	3.4	6	-4.51700	-2.92030	35.20520	28.78160
6.2	8	35.8	6	5	8	-4.51700	-2.92030	27.97800	28.78160
7	8	33.7	6	3.8	6	-4.51700	-2.92030	33.39840	28.78160

8.4	10	30	6	3.8	6	-4.51700	-2.92030	33.39840	22.94100
8.4	10	30	6	3.8	6	-4.51700	-2.92030	33.39840	22.94100
4.5	8	24.3499	7	3.8	6	-4.51700	-2.92030	33.39840	28.78160
5.7	12	20.99	6	6	12	-4.51700	-2.92030	23.46100	17.10040
5.7	12	21.1	6	3	6	-4.51700	-2.92030	37.01200	17.10040
5.2	10	25.4	6	3	6	-4.51700	-2.92030	37.01200	22.94100
5.2	10	24	6	3	6	-4.51700	-2.92030	37.01200	22.94100
5.2	10	25.4	6	3	6	-4.51700	-2.92030	37.01200	22.94100
5.2	10	22.6	6	1.6	4	-4.51700	-2.92030	43.33580	22.94100
6.5	12	17.5	7	1.6	4	-4.51700	-2.92030	43.33580	17.10040
6.5	12	19.9	7	1.6	4	-4.51700	-2.92030	43.33580	17.10040
6.5	12	19.9	7	3.7	6	-4.51700	-2.92030	33.85010	17.10040
6.5	12	17.5	7	3.7	6	-4.51700	-2.92030	33.85010	17.10040
6.5	12	19.9	7	3.5	6	-4.51700	-2.92030	34.75350	17.10040
1.8	4	37.62	6	3.5	6	-4.51700	-2.92030	34.75350	40.46280
1.8	4	37.0028	6	5.5	8	-4.51700	-2.92030	25.71950	40.46280
2	4	38.9959	5	5.5	8	-4.51700	-2.92030	25.71950	40.46280
2	4	39	6	1.6	4	-4.51700	-2.92030	43.33580	40.46280
2	4	38.512	6	1.6	4	-4.51700	-2.92030	43.33580	40.46280
5.5	8	29.3	7	1.8	4	-4.51700	-2.92030	42.43240	28.78160

3	6	35.9	6	1.8	4	-4.51700	-2.92030	42.43240	34.62220
3.5	6	36.2	7	4	8	-4.51700	-2.92030	32.49500	34.62220
3.5	6	34.5	7	4	8	-4.51700	-2.92030	32.49500	34.62220
3.5	6	34.7927	6	1.4	4	-4.51700	-2.92030	44.23920	34.62220
5.5	8	30.8	7	1.4	4	-4.51700	-2.92030	44.23920	28.78160
1	3	57.8	5	1.4	4	-4.51700	-2.92030	44.23920	43.38310
1	3	57.8	5	1.4	4	-4.51700	-2.92030	44.23920	43.38310
3.7	6	35.9802	6	2	4	-4.51700	-2.92030	41.52900	34.62220
3.7	6	36.9	7	2	4	-4.51700	-2.92030	41.52900	34.62220
3.7	6	34.5832	7	3.6	6	-4.51700	-2.92030	34.30180	34.62220
3.7	6	34.9	6	6.4	8	-4.51700	-2.92030	21.65420	34.62220
2	4	37.5	5	6.4	8	-4.51700	-2.92030	21.65420	40.46280
2	4	40	5	1.8	4	-4.51700	-2.92030	42.43240	40.46280
2.4	4	33.6	5	1.5	4	-4.51700	-2.92030	43.78750	40.46280
2.4	4	36.4	5	1.5	4	-4.51700	-2.92030	43.78750	40.46280
3.8	6	28.5532	6	1.6	4	-4.51700	-2.92030	43.33580	34.62220
3.8	6	27.372	6	1.6	4	-4.51700	-2.92030	43.33580	34.62220
2.9	6	37.3296	6	1.6	4	-4.51700	-2.92030	43.33580	34.62220
2.9	6	41.3608	7	1.6	4	-4.51700	-2.92030	43.33580	34.62220
3.4	6	36.7299	6	1.6	4	-4.51700	-2.92030	43.33580	34.62220

3.4	6	40.9978	7	1.6	4	-4.51700	-2.92030	43.33580	34.62220
2.9	6	37.3296	6	2.5	4	-4.51700	-2.92030	39.27050	34.62220
2.9	6	41.3608	7	2.5	4	-4.51700	-2.92030	39.27050	34.62220
3.4	6	36.7299	6	2.5	4	-4.51700	-2.92030	39.27050	34.62220
3.4	6	40.9978	7	2.5	4	-4.51700	-2.92030	39.27050	34.62220
2	4	37.5	5	2.5	4	-4.51700	-2.92030	39.27050	40.46280
2	4	40	5	2.5	4	-4.51700	-2.92030	39.27050	40.46280
2.4	4	36.4	5	2	4	-4.51700	-2.92030	41.52900	40.46280
2.4	4	33.6	5	2	4	-4.51700	-2.92030	41.52900	40.46280
4.2	8	27.471	6	2	4	-4.51700	-2.92030	41.52900	28.78160
5.9	12	23.6523	6	2	4	-4.51700	-2.92030	41.52900	17.10040
5.9	12	27.2408	6	2	4	-4.51700	-2.92030	41.52900	17.10040
5.9	12	22.9258	6	2	4	-4.51700	-2.92030	41.52900	17.10040
5.9	12	24.6983	6	2.5	5	-4.51700	-2.92030	39.27050	17.10040
4.3	8	26.1157	7	2.5	5	-4.51700	-2.92030	39.27050	28.78160
5	8	32.8808	6	3	6	-4.51700	-2.92030	37.01200	28.78160
5	8	30.3378	6	6.8	8	-4.51700	-2.92030	19.84740	28.78160
5	8	30.8027	6	4.4	8	-4.51700	-2.92030	30.68820	28.78160
4.3	8	31.6	6	4.4	8	-4.51700	-2.92030	30.68820	28.78160
3.5	6	35.5	6	2.4	4	-4.51700	-2.92030	39.72220	34.62220

1.6	4	51.6555	6	3.6	6	-4.51700	-2.92030	34.30180	40.46280
1.6	4	47.2025	6	3.6	6	-4.51700	-2.92030	34.30180	40.46280
1.6	4	52	6	2	4	-4.51700	-2.92030	41.52900	40.46280
1.6	4	47.2025	6	2	4	-4.51700	-2.92030	41.52900	40.46280
1.6	4	44.5714	6	2.4	4	-4.51700	-2.92030	39.72220	40.46280
1.6	4	47.7592	6	2	4	-4.51700	-2.92030	41.52900	40.46280
1.6	4	44.5714	6	2	4	-4.51700	-2.92030	41.52900	40.46280
1.6	4	47.7592	6	3.6	6	-4.51700	-2.92030	34.30180	40.46280
1.6	4	46.5047	6	3	6	-4.51700	-2.92030	37.01200	40.46280
1.6	4	46.5047	6	2.5	6	-4.51700	-2.92030	39.27050	40.46280
2.4	4	36.2628	4	2.5	6	-4.51700	-2.92030	39.27050	40.46280
3.8	6	33.2	5	3.7	6	-4.51700	-2.92030	33.85010	34.62220
3.6	6	35.2427	6	3.7	6	-4.51700	-2.92030	33.85010	34.62220
3.6	6	37.6908	7	5.6	8	-4.51700	-2.92030	25.26780	34.62220
3.6	6	34.8754	6	5.6	8	-4.51700	-2.92030	25.26780	34.62220
3.6	6	36.7563	7	3	6	-4.51700	-2.92030	37.01200	34.62220
3.6	6	34.8754	6	2.5	4	-4.51700	-2.92030	39.27050	34.62220
3.6	6	36.4395	7	2.3	4	-4.51700	-2.92030	40.17390	34.62220
3.6	6	34.8754	6	3	6	-4.51700	-2.92030	37.01200	34.62220
3.6	6	36.4395	7	4.2	8	-4.51700	-2.92030	31.59160	34.62220

3.8	6	34.5148	6	3	6	-4.51700	-2.92030	37.01200	34.62220
3.8	6	36.013	7	4.4	8	-4.51700	-2.92030	30.68820	34.62220
3.8	6	34.5148	6	4.4	8	-4.51700	-2.92030	30.68820	34.62220
3.8	6	37.0769	7	3	6	-4.51700	-2.92030	37.01200	34.62220
3.8	6	34.5148	6	3	6	-4.51700	-2.92030	37.01200	34.62220
3.8	6	37.0769	7	4.4	8	-4.51700	-2.92030	30.68820	34.62220
3.6	6	35.2427	6	4.4	8	-4.51700	-2.92030	30.68820	34.62220
3.6	6	37.6908	7	4.4	8	-4.51700	-2.92030	30.68820	34.62220
3.8	6	35.3594	6	4.4	8	-4.51700	-2.92030	30.68820	34.62220
3.8	6	36.9347	7	4.4	8	-4.51700	-2.92030	30.68820	34.62220
3.8	6	36.9347	7	3.6	6	-4.51700	-2.92030	34.30180	34.62220
3.8	6	35.3594	6	5.7	8	-4.51700	-2.92030	24.81610	34.62220
3.8	6	33.8482	7	4.6	8	-4.51700	-2.92030	29.78480	34.62220
3.8	6	33.1649	6	3.6	6	-4.51700	-2.92030	34.30180	34.62220
3.8	6	34.255	7	3.6	6	-4.51700	-2.92030	34.30180	34.62220
3.8	6	33.2357	6	3	6	-4.51700	-2.92030	37.01200	34.62220
3.8	6	33.8482	7	3	6	-4.51700	-2.92030	37.01200	34.62220
3.8	6	34.255	7	3	6	-4.51700	-2.92030	37.01200	34.62220
2.5	5	39.7267	6	3	6	-4.51700	-2.92030	37.01200	37.54250
5.9	12	26.6208	6	1.6	4	-4.51700	-2.92030	43.33580	17.10040

2	4	42.7743	1	1.6	4	-4.51700	-2.92030	43.33580	40.46280
2	4	37	6	1.6	4	-4.51700	-2.92030	43.33580	40.46280
2	4	37.7989	6	2.4	4	-4.51700	-2.92030	39.72220	40.46280
2	4	42.575	6	2.4	4	-4.51700	-2.92030	39.72220	40.46280
3.2	6	36.2	6	2.5	4	-4.51700	-2.92030	39.27050	34.62220
4.2	8	31	6	2.5	4	-4.51700	-2.92030	39.27050	28.78160
4.2	8	29.3	6	2.5	4	-4.51700	-2.92030	39.27050	28.78160
3	6	34	7	2.5	4	-4.51700	-2.92030	39.27050	34.62220
2	4	39.7256	6	3.5	6	-4.51700	-2.92030	34.75350	40.46280
6	12	23.2715	6	3.7	6	-4.51700	-2.92030	33.85010	17.10040
3	6	38.1696	6	4.7	8	-4.51700	-2.92030	29.33310	34.62220
3	6	38.7896	6	3.7	6	-4.51700	-2.92030	33.85010	34.62220
3	6	39.7103	6	4.7	8	-4.51700	-2.92030	29.33310	34.62220
3	6	38.7896	6	5.7	8	-4.51700	-2.92030	24.81610	34.62220
3	6	35.5	6	3.7	6	-4.51700	-2.92030	33.85010	34.62220
3	6	35.2678	6	3.7	6	-4.51700	-2.92030	33.85010	34.62220
3	6	36.1548	6	5	8	-4.51700	-2.92030	27.97800	34.62220
3	6	35.7081	6	5	8	-4.51700	-2.92030	27.97800	34.62220
3	6	39.7103	6	3.7	6	-4.51700	-2.92030	33.85010	34.62220
3	6	38.7896	6	4.7	8	-4.51700	-2.92030	29.33310	34.62220

3	6	38.1696	6	4.7	8	-4.51700	-2.92030	29.33310	34.62220
3	6	36.798	6	5.7	8	-4.51700	-2.92030	24.81610	34.62220
3	6	35.5404	6	3.7	6	-4.51700	-2.92030	33.85010	34.62220
3	6	35.4606	6	3.7	6	-4.51700	-2.92030	33.85010	34.62220
3	6	36.1548	6	5	8	-4.51700	-2.92030	27.97800	34.62220
3	6	35.7081	6	5	8	-4.51700	-2.92030	27.97800	34.62220
3	6	36.1548	6	6.2	8	-4.51700	-2.92030	22.55760	34.62220
3	6	35.7081	6	2.2	4	-4.51700	-2.92030	40.62560	34.62220
3	6	34.7288	6	6	8	-4.51700	-2.92030	23.46100	34.62220
3	6	34.2853	6	6	8	-4.51700	-2.92030	23.46100	34.62220
4.8	8	30.5375	6	6	8	-4.51700	-2.92030	23.46100	28.78160
4.8	8	31.3747	6	4.6	8	-4.51700	-2.92030	29.78480	28.78160
4.8	8	28.8	6	5.4	8	-4.51700	-2.92030	26.17120	28.78160
4.8	8	31.8	6	4.6	8	-4.51700	-2.92030	29.78480	28.78160
4	8	27.3704	7	5.4	8	-4.51700	-2.92030	26.17120	28.78160
4	8	27.3	6	6.8	10	-4.51700	-2.92030	19.84740	28.78160
4	8	28.4	6	5.4	8	-4.51700	-2.92030	26.17120	28.78160
4	8	27.9711	7	6	8	-4.51700	-2.92030	23.46100	28.78160
5	10	23.227	6	6	8	-4.51700	-2.92030	23.46100	22.94100
5	10	23.6182	7	6	8	-4.51700	-2.92030	23.46100	22.94100

5	10	23.7	6	4.8	8	-4.51700	-2.92030	28.88140	22.94100
5	10	24.0505	7	6	8	-4.51700	-2.92030	23.46100	22.94100
1.6	4	47.9	4	6	8	-4.51700	-2.92030	23.46100	40.46280
1.6	4	48.9	5	4.6	8	-4.51700	-2.92030	29.78480	40.46280
2.2	4	51.9	5	5.4	8	-4.51700	-2.92030	26.17120	40.46280
2.2	4	46.8	4	6.8	10	-4.51700	-2.92030	19.84740	40.46280
2	4	41.9	5	5.4	8	-4.51700	-2.92030	26.17120	40.46280
2.2	4	51.9	5	4.8	8	-4.51700	-2.92030	28.88140	40.46280
4	6	32.7568	5	6	8	-4.51700	-2.92030	23.46100	34.62220
4	6	36.3926	5	6	8	-4.51700	-2.92030	23.46100	34.62220
4.6	8	32.1109	5	3.6	6	-4.51700	-2.92030	34.30180	28.78160
4.6	8	33.8	5	3.6	6	-4.51700	-2.92030	34.30180	28.78160
5.4	8	30.4	6	2.7	4	-4.51700	-2.92030	38.36710	28.78160
1.8	4	50.5	5	3.5	6	-4.51700	-2.92030	34.75350	40.46280
1.8	4	48.6	5	3.5	6	-4.51700	-2.92030	34.75350	40.46280
1.8	4	51.1915	5	6	8	-4.51700	-2.92030	23.46100	40.46280
2	4	40.5	6	3.6	6	-4.51700	-2.92030	34.30180	40.46280
2	4	41.7998	5	5.7	8	-4.51700	-2.92030	24.81610	40.46280
2	4	42	6	2	4	-4.51700	-2.92030	41.52900	40.46280
3.8	6	38.0484	6	3.6	6	-4.51700	-2.92030	34.30180	34.62220

3.8	6	36.4	6	3.7	6	-4.51700	-2.92030	33.85010	34.62220
3.7	6	32.9748	6	4	6	-4.51700	-2.92030	32.49500	34.62220
3.7	6	35.2288	7	3.5	6	-4.51700	-2.92030	34.75350	34.62220
3.7	6	34.7305	6	3.5	6	-4.51700	-2.92030	34.75350	34.62220
3.7	6	37.065	7	6	8	-4.51700	-2.92030	23.46100	34.62220
3.7	6	35.162	7	6	8	-4.51700	-2.92030	23.46100	34.62220
2.5	6	36.2901	6	2.4	4	-4.51700	-2.92030	39.72220	34.62220
2.5	6	36.7047	6	2.4	4	-4.51700	-2.92030	39.72220	34.62220
2.5	6	40.8247	6	3.5	6	-4.51700	-2.92030	34.75350	34.62220
3.5	6	36.5564	6	5.4	8	-4.51700	-2.92030	26.17120	34.62220
5	8	32.0888	8	2	4	-4.51700	-2.92030	41.52900	28.78160
4.2	8	26.8817	6	2	4	-4.51700	-2.92030	41.52900	28.78160
4.7	8	26.7022	6	3.2	6	-4.51700	-2.92030	36.10860	28.78160
4.7	8	26.5604	6	3.2	6	-4.51700	-2.92030	36.10860	28.78160
1.3	2	30.2	6	3	6	-4.51700	-2.92030	37.01200	46.30340
1.3	2	32.1	6	3	6	-4.51700	-2.92030	37.01200	46.30340
3.5	6	36.0876	7	3	6	-4.51700	-2.92030	37.01200	34.62220
5.5	8	31.7	7	4.4	8	-4.51700	-2.92030	30.68820	28.78160
1.6	4	51.6555	6	6	8	-4.51700	-2.92030	23.46100	40.46280
1.6	4	47.2025	6	6.2	8	-4.51700	-2.92030	22.55760	40.46280

1.6	4	44.5714	6	6.2	8	-4.51700	-2.92030	22.55760	40.46280
1.6	4	47.7592	6	5.3	8	-4.51700	-2.92030	26.62290	40.46280
1.6	4	46.5047	6	5.3	8	-4.51700	-2.92030	26.62290	40.46280
2.4	4	38.5995	5	6	8	-4.51700	-2.92030	23.46100	40.46280
2.4	4	37.4902	4	3.6	6	-4.51700	-2.92030	34.30180	40.46280
3.8	6	34.6	6	5.7	8	-4.51700	-2.92030	24.81610	34.62220
3.8	6	33.2	5	3.6	6	-4.51700	-2.92030	34.30180	34.62220
2.5	4	44.7365	1	3.7	6	-4.51700	-2.92030	33.85010	40.46280
2.5	4	43.8	6	4	6	-4.51700	-2.92030	32.49500	40.46280
3.5	6	37.9628	6	6	8	-4.51700	-2.92030	23.46100	34.62220
3.5	6	38.0169	1	5.3	8	-4.51700	-2.92030	26.62290	34.62220
3.8	6	29.0307	6	6.2	8	-4.51700	-2.92030	22.55760	34.62220
2.2	4	51.9	5	6	8	-4.51700	-2.92030	23.46100	40.46280
2.2	4	46.8	4	5	8	-4.51700	-2.92030	27.97800	40.46280
2.2	4	46.8	4	2.4	4	-4.51700	-2.92030	39.72220	40.46280
2.2	4	51.9	5	3.5	6	-4.51700	-2.92030	34.75350	40.46280
2.2	4	51.9	5	5	8	-4.51700	-2.92030	27.97800	40.46280
4.6	8	29.14	5	5	8	-4.51700	-2.92030	27.97800	28.78160
4.6	8	31.61	5	3	6	-4.51700	-2.92030	37.01200	28.78160
2	4	41.2	6	3	6	-4.51700	-2.92030	37.01200	40.46280

2	4	37.5	5	3	6	-4.51700	-2.92030	37.01200	40.46280
1.6	4	48.9	5	2	4	-4.51700	-2.92030	41.52900	40.46280
1.6	4	42.1	4	3	6	-4.51700	-2.92030	37.01200	40.46280
2.4	4	40.2	4	2.5	4	-4.51700	-2.92030	39.27050	40.46280
2.4	4	38.2	5	2.5	4	-4.51700	-2.92030	39.27050	40.46280
1.8	4	47.2	4	2.5	4	-4.51700	-2.92030	39.27050	40.46280
1.8	4	46.9	5	2.5	4	-4.51700	-2.92030	39.27050	40.46280
1.5	4	48.8622	4	2.5	4	-4.51700	-2.92030	39.27050	40.46280
1.5	4	50.6725	5	3.6	6	-4.51700	-2.92030	34.30180	40.46280
2	4	41.521	6	3.6	6	-4.51700	-2.92030	34.30180	40.46280
2	4	41.3156	6	3	6	-4.51700	-2.92030	37.01200	40.46280
2.5	5	40.8	6	1.8	4	-4.51700	-2.92030	42.43240	37.54250
2.5	5	39.3753	5	1.8	4	-4.51700	-2.92030	42.43240	37.54250
2.5	5	38.4	5	4.6	8	-4.51700	-2.92030	29.78480	37.54250
2.5	5	38.6	6	4.6	8	-4.51700	-2.92030	29.78480	37.54250
2.4	4	39.3	6	2	4	-4.51700	-2.92030	41.52900	40.46280
2.4	4	42.3	5	2	4	-4.51700	-2.92030	41.52900	40.46280
3.5	6	37.6	5	2.4	4	-4.51700	-2.92030	39.72220	34.62220
2	4	42.7743	1	2.4	4	-4.51700	-2.92030	39.72220	40.46280
2	4	37.7989	6	2.4	4	-4.51700	-2.92030	39.72220	40.46280

| 2 | 4| 42.575 | 6 | 2 | 4 | -4.51700 | -2.92030 | 41.52900 | 40.46280 |

| 3 | 6| 34.1 | 6 | 3.5 | 6 | -4.51700 | -2.92030 | 34.75350 | 34.62220 |

| 3 | 6| 35 | 7 | 2 | 4 | -4.51700 | -2.92030 | 41.52900 | 34.62220 |

| 6.8 | 8 | 21.006 | 6 | 2 | 4 | -4.51700 | -2.92030 | 41.52900 | 28.78160 |

| 6.8 | 8 | 21.006 | 6 | 2.8 | 6 | -4.51700 | -2.92030 | 37.91540 | 28.78160 |

| 6 | 12 | 23.8 | 6 | 3 | 6 | -4.51700 | -2.92030 | 37.01200 | 17.10040 |

| 3 | 6 | 39.7103 | 6 | 3 | 6 | -4.51700 | -2.92030 | 37.01200 | 34.62220 |

| 3 | 6 | 38.7896 | 6 | 2.4 | 4 | -4.51700 | -2.92030 | 39.72220 | 34.62220 |

+----------+--------+---------+----------+--------------+-----------+-----------------+-------------------+-------------------+-------------------+

245 rows in set (0.00 sec)

mysql> Alter table fe2011

-> Add column Becoef_Engd2010 decimal(10,5) Not NULL;

Query OK, 0 rows affected (0.57 sec)

Records: 0 Duplicates: 0 Warnings: 0

mysql> Alter table fe2011

-> Add column Becoef_Numcyl2010 decimal(10,5) Not NULL;

Query OK, 0 rows affected (0.65 sec)

Records: 0 Duplicates: 0 Warnings: 0

```
mysql> Alter table fe2011
    -> Add column predictedval1FE decimal(10,5) Not NULL;
Query OK, 0 rows affected (0.50 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> Alter table fe2011
    -> Add column predictedval2FE decimal(10,5) Not NULL;
Query OK, 0 rows affected (0.55 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> update fe2011
    -> set Becoef_Engd2010 = -4.517;
Query OK, 245 rows affected (0.22 sec)
Rows matched: 245 Changed: 245 Warnings: 0

mysql> update fe2011
    -> set Becoef_Numcyl2010 = -2.9203;
Query OK, 245 rows affected (0.13 sec)
Rows matched: 245 Changed: 245 Warnings: 0
```

```
mysql> update fe2011
    -> set predictedval1FE = 50.563 + Becoef_Engd2010*EngDispl;
Query OK, 245 rows affected, 25 warnings (0.22 sec)
Rows matched: 245 Changed: 245 Warnings: 25

mysql> update fe2011
    -> set predictedval2FE = 52.144 +Becoef_Numcyl2010*Numcyl;
Query OK, 245 rows affected (0.14 sec)
Rows matched: 245 Changed: 245 Warnings: 0
```

11. Once point 10. is done, Calculate the Predicted value for “feb2011” table by using the input variable from “feb2011” and beta coefficients from “feb2010” table. Insert the predicted values in an additional column in table “feb2010”.

```
mysql> select*from fe2011 limit 5;
+----------+--------+---------+----------+--------------+-----------------+-------------------+--------------------+-----------------+---------------+--------------+----------------+-------------------+
| EngDispl | NumCyl | FE      | NumGears | TransLockup | TransCreeperGear | IntakeValvePerCyl | ExhaustValvesPerCyl | VarValveTiming | VarValveLift | Becoef_Engd2010 | Becoef_Numcyl2010 | predictedval1FE | predictedval2FE |
+----------+--------+---------+----------+--------------+-----------------+-------------------+--------------------+-----------------+---------------+--------------+----------------+-------------------+
|      5.9 |     12 | 22.9258 |        6 |            0 |               0 |                 2 |                  2 |               0 |             0 |     -4.51700 |        -2.92030 |          23.91270 |        17.10040 |
```

| 4.2 | 8 | 26.7678 | 6 | 0 | 0 | 2 | 2 | 1 | 0 | -4.51700 | -2.92030 | 31.59160 | 28.78160 |

| 4.2 | 8 | 24.301 | 6 | 0 | 0 | 2 | 2 | 1 | 0 | -4.51700 | -2.92030 | 31.59160 | 28.78160 |

| 5.2 | 10 | 24.3325 | 6 | 0 | 0 | 2 | 2 | 1 | 0 | -4.51700 | -2.92030 | 27.07460 | 22.94100 |

| 5.2 | 10 | 23.0667 | 6 | 0 | 0 | 2 | 2 | 1 | 0 | -4.51700 | -2.92030 | 27.07460 | 22.94100 |

+---------+-------+---------+---------+-------------+------------------+--------------------+----------------------+----------------+--------------+----------------+-----------------+-----------------+

5 rows in set (0.00 sec)

The first part Excel Analytics is submitted separately as submission in this project 1.1

Acknowledgement

This is a quite interesting project and I have gained a lot of knowledge about Excel analytics, MYSQL and finding the linear relationship in R, Excel graphs are very much interesting. I thank the institute Acadgild and the Mentors Mr. Mohit & Ms. Puja who taught us the R Excel, MYSQL and other subjects to understand the Analytics. I once again thank Acadgild for enlighten me on Machine learning through online teaching and various coding support through the support coordinators. Thank you Acadgild.