DATA ANALYTICS REFERENCE DOCUMENT	
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Document No.:	1550081446
Author(s):	Gerhard van der Linde
Contributor(s):	

REVISION HISTORY

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Applied Databases - Week 4

1. Get garage.sql from Moodle and import it into MySQL.

```
mysql -u root -p <garage.sql
```

2. How are the tables in the database related?

```
show tables;
describe manufacturer;
show create table manufacturer;
show create table vehicle;
```

The *manufacturer* table contains a manufacturer code, name and description of the manufacturer of the vehicle.

The *vehicle* table contains the vehicle deteails with a reference to the manufacturer code described as a *foreign key constraint*. This foreign key links the two table with the manu_code present in both tables.

3. Show the manu_code, manu_name and the first 10 characters of the manu_details followed by three dots (...) for each manufacturer.

```
mysql> SELECT manu_code,
              manu_name,
              concat(left(manu_details,10),' ...') as 'manu_details'
              FROM garage.manufacturer;

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

```
| manu_code | manu_name      | manu_details   |
+-----------+----------------+----------------+
| FOR       | Ford           | The Ford M ... |
| GM        | General Motors | General Mo ... |
| NIS       | Nissan         | Nissan Mot ... |
| TOY       | Toyota         | Toyota Mot ... |
| VOL       | Volkswagen     | Volkswagen ... |
+-----------+----------------+----------------+
5 rows in set (0.00 sec)
```

4. Show the average length of the manu_name (displayed as “Length”) with 0 characters after the decimal point. HINT: Functions needed are avg(), length() and format().

```
mysql> SELECT format(avg(length(manu_name)),0)
    ->        as Length
    ->        FROM garage.manufacturer;

+--------+
| Length |
+--------+
| 8      |
+--------+
1 row in set (0.00 sec)
```

5. Show all details of all vehicles plus an extra column called “cost” which has the value 1.45 if the fuel is petrol otherwise has the value 1.30.

```
mysql> SELECT *, if(fuel='petrol', '1.45', '1.30') as cost
    -> FROM garage.vehicle;
+--------------+-----------+---------+----------+--------+--------+------+
| reg          | manu_code | mileage | price    | colour | fuel   | cost |
+--------------+-----------+---------+----------+--------+--------+------+
| 2003-LM-201  | TOY       |  170000 |  3500.50 | Red    | petrol | 1.45 |
| 2009-RN-12   | FOR       |   98242 |  2500.00 | Red    | petrol | 1.45 |
| 2010-G-13345 | TOY       |   50000 |  8599.00 | Silver | petrol | 1.45 |
| 2011-G-995   | FOR       |   33500 |  8500.00 | Blue   | petrol | 1.45 |
| 2011-WH-2121 | FOR       |   55998 | 14000.00 | Black  | diesel | 1.30 |
| 2014-WH-2189 | FOR       |   12553 | 11000.00 | Blue   | diesel | 1.30 |
| 2016-D-12345 | TOY       |    3456 | 15000.00 | Red    | petrol | 1.45 |
+--------------+-----------+---------+----------+--------+--------+------+
7 rows in set (0.00 sec)
```

6. Show all the reg, manu_code and associated manu_name for each vehicle.

```
mysql> SELECT gv.reg, gv.manu_code, gm.manu_name FROM garage.vehicle gv
```

```
    -> left join garage.manufacturer gm
    -> on gv.manu_code=gm.manu_code
    -> ;
+--------------+-----------+-----------+
| reg          | manu_code | manu_name |
+--------------+-----------+-----------+
| 2009-RN-12   | FOR       | Ford      |
| 2011-G-995   | FOR       | Ford      |
| 2011-WH-2121 | FOR       | Ford      |
| 2014-WH-2189 | FOR       | Ford      |
| 2003-LM-201  | TOY       | Toyota    |
| 2010-G-13345 | TOY       | Toyota    |
| 2016-D-12345 | TOY       | Toyota    |
+--------------+-----------+-----------+
7 rows in set (0.00 sec)
```

7. Show the manu_code and manu_name as well as associated reg, for each manufacturer who has vehicles listed in the vehicle table.

```
mysql> SELECT gm.manu_code, gm.manu_name, gv.reg
    -> FROM garage.manufacturer as gm
    -> inner join garage.vehicle as gv
    -> on gm.manu_code=gv.manu_code;

+-----------+-----------+--------------+
| manu_code | manu_name | reg          |
+-----------+-----------+--------------+
| FOR       | Ford      | 2009-RN-12   |
| FOR       | Ford      | 2011-G-995   |
| FOR       | Ford      | 2011-WH-2121 |
| FOR       | Ford      | 2014-WH-2189 |
| TOY       | Toyota    | 2003-LM-201  |
| TOY       | Toyota    | 2010-G-13345 |
| TOY       | Toyota    | 2016-D-12345 |
+-----------+-----------+--------------+
7 rows in set (0.00 sec)
```

8. Show the manu_code and manu_name as well as associated reg, for all manufacturers and if they have vehicles listed in the vehicle table, show the reg of it.

```
mysql> SELECT gm.manu_code, gm.manu_name, gv.reg
    -> FROM garage.manufacturer as gm
    -> left join garage.vehicle as gv
    -> on gm.manu_code=gv.manu_code;
+-----------+----------------+--------------+
| manu_code | manu_name      | reg          |
+-----------+----------------+--------------+
| FOR       | Ford           | 2009-RN-12   |
| FOR       | Ford           | 2011-G-995   |
| FOR       | Ford           | 2011-WH-2121 |
| FOR       | Ford           | 2014-WH-2189 |
| GM        | General Motors | NULL         |
```

```
| NIS        | Nissan          | NULL          |
| TOY        | Toyota          | 2003-LM-201   |
| TOY        | Toyota          | 2010-G-13345  |
| TOY        | Toyota          | 2016-D-12345  |
| VOL        | Volkswagen      | NULL          |
+------------+-----------------+---------------+
10 rows in set (0.00 sec)
```

9. Write a stored procedure called price_less_than that takes one parameter of type decimal(8,2) which represents the price of a vehicle:

```
price_less_than(p decimal(8,2))
```

The procedure should then return the following details for all vehicles where the price of the vehicle is less than p sorted by ascending price:

- Reg
- Manu_code
- Manu_name
- Mileage
- Price

Procedure

```
CREATE PROCEDURE `price_less_than`(p decimal(8,2))
    DETERMINISTIC
BEGIN
    SELECT gv.reg, gv.manu_code, gm.manu_name, gv.mileage, gv.price
    FROM garage.vehicle gv
    left join garage.manufacturer gm
    on gv.manu_code=gm.manu_code
    where gv.price < p
    order by gv.price;
END
```

Testing Procedure

```
mysql> call price_less_than(15000);
+--------------+-----------+-----------+---------+----------+
| reg          | manu_code | manu_name | mileage | price    |
+--------------+-----------+-----------+---------+----------+
| 2009-RN-12   | FOR       | Ford      |   98242 |  2500.00 |
| 2003-LM-201  | TOY       | Toyota    |  170000 |  3500.50 |
| 2011-G-995   | FOR       | Ford      |   33500 |  8500.00 |
| 2010-G-13345 | TOY       | Toyota    |   50000 |  8599.00 |
| 2014-WH-2189 | FOR       | Ford      |   12553 | 11000.00 |
| 2011-WH-2121 | FOR       | Ford      |   55998 | 14000.00 |
+--------------+-----------+-----------+---------+----------+
6 rows in set (0.00 sec)
```

```
Query OK, 0 rows affected (0.00 sec)
```