# Exercise Session 4

## 1 December

## 1 Views, Triggers (2 parts, 8p)

In the year 2127, the first spaceship to colonize Mars carries 1337 colonists. When they arrive on the planet, they will build a city and live there. Following democratic principles, the spaceship captain, captain Picard, asks you to improve an SQL database to help with the voting process.

The existing SQL database was created with the following statement:

```sql
CREATE TABLE Votes (
    cityname TEXT PRIMARY KEY,
    votecount INT
);
```

To add a vote, you can use either `INSERT` or `UPDATE`, as shown below:

```sql
INSERT INTO Votes(cityname, votecount) VALUES('Mars City One', 34);
INSERT INTO Votes(cityname, votecount) VALUES('New Gothenburg', 11);
INSERT INTO Votes(cityname, votecount) VALUES('Picardia', 1);
UPDATE Votes SET votecount=votecount+3 WHERE cityname='New Gothenburg';
```

**5a.** Create a new VIEW called "VoteSummary" which outputs 2 columns named "cityname" and "percentage" containing the cityname and percentage of votes cast for that cityname. The output is sorted according to the votecount, highest votecount first. After the example votes above, there would be 34 votes for "Mars City One" out of a total of 49 votes, so the top row of the "VoteSummary" VIEW would be (`'Mars City One', 69.3878`). There is no need to round off the percentage. (3p)

**5b.** Create a trigger to update the "Votes" table, to keep track of how many colonists have not voted yet. This count will appear next to the special cityname "<not voted>". In the example above, 49 votes have been cast out of 1337 possible votes. This means the trigger needs to create or update an entry with cityname "<not voted>" and votecount 1288 (= 1337 - 49). Keep in mind that you need to create this entry if it does not exist yet. There is no need for a trigger on DELETE. Be careful with infinite recursion! (5p)