

### G51DBS 2009-2010 coursework 5

Deadline 26 March 15:30, submit to the school office (if you are totally stuck, then submit by email to nza@cs.nott.ac.uk with the subject line 'G51DBS cw5 submission').

Consider a relation Listing with attributes Cinema, Film, Day, Time, Certificate:

Listing				
Cinema	Film	Day	Time	Certificate
Savoy	Green Zone	Wed	18 : 00	15
Savoy	Green Zone	Wed	20 : 00	15
Cineworld	Green Zone	Wed	20 : 00	15
Cineworld	Avatar	Wed	20 : 00	12A
Savoy	Avatar	Thu	18 : 00	12A
...	...	...	...	...

Each film is assigned a certificate by the British Board of Film Classification; certificate 15 means that nobody younger than 15 can see this film in a cinema. The same cinema can show a film on multiple times during a day, and may show different films at the same time (on different screens). For the purpose of this exercise, let us assume that there are no two different films with the same title.

1. List all non-trivial functional dependencies in the Listing relation.
2. List all candidate keys in the Listing relation and explain why they are unique and minimal.
3. State whether the Listing relation is in 2NF and explain why.
4. Give an example of update anomalies in the Listing relation.
5. If Listing is not in BCNF, decompose it to BCNF, and explain why the resulting relations are in BCNF.