

CE 223 - DATABASE SYSTEMS

WEEK #7 RECITATION QUESTIONS

- 6.3.7
- 6.4.7
- 6.5.2

Exercise 6.3.7: For these relations from our running movie database schema

StarsIn(movieTitle, movieYear, starName)

MovieStar(name, address, gender, birthdate)

MovieExec(name, address, cert#, netWorth)

Studio(name, address, presC#)

describe the tuples that would appear in the following SQL expressions:

- a) Studio CROSS JOIN MovieExec;
- b) StarsIn NATURAL FULL OUTER JOIN MovieStar;
- c) StarsIn FULL OUTER JOIN MovieStar ON name = starName;

Exercise 6.4.7: Write the following queries, based on the database schema

```
Classes(class, type, country, numGuns, bore, displacement)
Ships(name, class, launched)
Battles(name, date)
Outcomes(ship, battle, result)
```

of Exercise 2.4.3, and evaluate your queries using the data of that exercise.

- a) Find the number of battleship classes.
- b) Find the average number of guns of battleship classes.
- ! c) Find the average number of guns of battleships. Note the difference between (b) and (c); do we weight a class by the number of ships of that class or not?
- ! d) Find for each class the year in which the first ship of that class was launched.
- ! e) Find for each class the number of ships of that class sunk in battle.
- !! f) Find for each class with at least three ships the number of ships of that class sunk in battle.
- !! g) The weight (in pounds) of the shell fired from a naval gun is approximately one half the cube of the bore (in inches). Find the average weight of the shell for each country's ships.

Exercise 6.5.2: Write the following database modifications, based on the database schema

```
Classes(class, type, country, numGuns, bore, displacement)
Ships(name, class, launched)
Battles(name, date)
Outcomes(ship, battle, result)
```

of Exercise 2.4.3. Describe the effect of the modifications on the data of that exercise.

- a) The two British battleships of the Nelson class — Nelson and Rodney — were both launched in 1927, had nine 16-inch guns, and a displacement of 34,000 tons. Insert these facts into the database.
- b) Two of the three battleships of the Italian Vittorio Veneto class — Vittorio Veneto and Italia — were launched in 1940; the third ship of that class, Roma, was launched in 1942. Each had nine 15-inch guns and a displacement of 41,000 tons. Insert these facts into the database.
- c) Delete from **Ships** all ships sunk in battle.
- d) Modify the **Classes** relation so that gun bores are measured in centimeters (one inch = 2.5 centimeters) and displacements are measured in metric tons (one metric ton = 1.1 tons).
- e) Delete all classes with fewer than three ships.