W228/206

**DUBLIN INSTITUTE OF TECHNOLOGY**

**KEVIN STREET, DUBLIN 8**

**WINTER EXAMINATIONS 2012**

DATABASES

Ms. P. O’Byrne

Dr. D. Lillis

Mr. Brian Boyle

2 hours TBA

SOLUTIONS

Q1 is worth 40 marks and is compulsory

Q2 to 4 are worth 30 marks each and 2 should be attempted.

1. (a) List the primary entities for the Pine Valley DVD Club. (5 marks)



Case Study Pine Valley DVD club

(b) For each entity, state which attribute(s) you would use as a primary key. (5 marks)

(c) Show how the entities should be related to each other;by drawing an Entity Relationship Diagram (entities only), using IE notation. (5 marks)

(d) List the attributes for each of your entities, noting constraints. (5 marks)

(e) Draw a full ERD, complete with attributes, underlining primary keys and marking foreign keys with an asterisk. (10 marks).



(f) Assuming that you have created tables in your schema that correspond to your ERD, write a set of SQL statements to add the following information:

The member Kiera Knightley, (member’s name) of 12 Notting Hill, London, (member’s address) who joined the club on 1st January /2006, has rented a DVD of the movie entitled ‘Notting Hill’ (censor rating 12A) on 10/8/2011 for €3. It is due back on 14/8/2011 and has not yet been returned. The DVD was bought from HiFi Suppliers of 14 Montague Street, Dublin for €1 on 1st Jan 2011.. (10 marks)

*Insert into supplier values (1,’HiFi Suppliers’,’14 Montague Street, Dublin’);*

*Insert into Movie values (10, ‘Notting Hill’,’12A’,3.00);*

*Insert into Member (values (100, ‘Kiera Knightley’,’12 Notting Hill, London’,’01-JAN-2006’)*

*Insert into DVD values (1000,’01-JAN-2011’,1.00,1,100);*

*Insert into Loan (MemberId, DVDId, RentalDate, DueDate, FeeCharged) values (100, 1000, ’10-AUG-2011’,’14-AUG-2011’,3.00);*



Case Study Problem tracking system

When a student gets an account (StudentAccount) he / she must provide a valid student number (StudentNumber). Staff members are recorded with their staffNo a name (SName) and may provide an e-mail address. All pieces of hardware owned are recorded with their type (HWType) (e.g. mouse) and may have a location (Locatn). When a student reports a problem, he / she must give a student number (StudentNumber), the serial no (HWSerialNo) of the piece of hardware that has the problem and the nature of the problem (NatureOfProblem). When the problem is recorded, the system date is recorded as PDate. A member of staff is allocated to each problem (i.e. a staffno is put into the problem row to show who is responsible for solving it). When the problem is solved, the staff member who solves it updates it, giving the date it was solved (SolvedDate).

2. (a) Write a query to return the StudentAccount, Hardware Serial number (HWSerialNo), NatureofProblem, problem date (Pdate) and the solved date for all solved problems that took more than 2 days to fix. (10 marks) (5 marks)

*select studentaccount, hwserialno, natureofproblem, pdate, SOLVEDDATE*

*from problem*

*where solvedDate is not null and (solveddate - pdate > 2);*

(b) Write a query to return each member of staff’s StaffNo and the number of queries he / she solved. (10 marks)

*SELECT STAFFNO, COUNT(SOLVEDDATE) FROM PROBLEM group by STAFFNO;*

(c) Write a query to return the staff number (Staffno) and number of problems solved for any member of staff who solved more than 5 problems. (10 marks)

*SELECT STAFFNO, COUNT(\*) FROM PROBLEM GROUP BY STAFFNO HAVING COUNT(\*)>2;*

3. (a) Write a query to return the StudentNumber, NatureOfProblem and Date the problem occurred (Pdate) of all problems reported since ’01-JAN-2011’ (10 marks)

*SELECT STUDENTNumber, NATUREOFPROBLEM, PDATE FROM*

*STUDENT JOIN PROBLEM USING (STUDENTACCOUNT)*

*WHERE PDATE > '01-JAN-2011';*

(b) Write a query to return the studentnumber and studentaccount of all students who never reported a problem. (10 marks)

*select studentnumber, studentaccount from student where studentaccount not in*

*(select studentaccount from problem);*

(c) Write a query to return the studentnumber and studentaccount of all students who reported a problem with a hardware item that has a HWtype ‘KEYBOARD’. (10 marks)

*select studentnumber, studentaccount from student where studentaccount in*

*(select studentaccount from problem join hardware using (hwserialno) where hwtype like 'KEYBOARD');*

4. (a) Write a query to add a problem to the system, reported by the student with StudentAccount POBYRNE on an item of hardware with serial no DEL\_10111, reporting the problem as ‘VGA cable faulty’, using the current date as PDate. (10 marks)

*insert into problem (studentaccount, hwserialno, natureofproblem, pdate)*

*values (user, 'DL1235678','VGA cable faulty',sysdate);*

(b) Update the problem previously added to give the responsibility of solving it to the staff member with staff number 12345.

*update problem set staffno = 1 where studentaccount like user and hwserialno like 'DL1235678';*

(c) Combine the above into a single *transaction* (not a single statement), making it permanent before exiting. (10 marks)

*insert into problem (studentaccount, hwserialno, natureofproblem, pdate)*

*values (user, 'DL1235678','VGA cable faulty',sysdate);*

*update problem set staffno = 1 where studentaccount like user and hwserialno like 'DL1235678';*

*commit;*