OLLSCOIL NA hÉIREANN
THE NATIONAL UNIVERSITY OF IRELAND, CORK

COLÁISTE NA hOLLSCOILE, CORCAIGH
UNIVERSITY COLLEGE, CORK

Examination Session and Year	WINTER EXAMINATIONS– 2022-23
Module Code	CS1106
Module Title	Introduction to Relational Databases
Paper Number	Paper Number 1
External Examiner	Professor Peter Sawyer
Head of Department	Professor Utz Roedig
Internal Examiners	Dr Kieran Herley
Instructions to Candidates	Answer All Questions. Total marks 70.
Duration of paper	1.5 Hours
Special Requirements	None

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THEN ENSURE THAT YOU HAVE THE CORRECT EXAM PAPER

Question 1 *[10 marks]*

Draw a suitable ER diagram that models the following simplified airline-reservation system. An airline operates a number of services, each for a direct link from one airport (the origin) to another (the destination). Each service has a distinct code, a fixed departure and arrival time and a capacity (the total number of seats on the aircraft operating the service). Services need not operate daily: some operate only on certain days of the week, others may be seasonal and operate only for specifed periods. Customers have names (first and last), phone numbers and email addresses, as well as distinct customer numbers. Customers may be booked on specific flights for a particular date. Each booking has a unique booking code and a number, reflecting the number of seats the customer has booked on the flight in question.

Question 2 *[18 marks]*

Suppose that the Exams Office needs a simple database to keep track of the details of the various exams to be held duing a particular exam session. For each exam, we need to keep track of the code and title of the module, the date, time (start time) and duration (in hours or fractions thereof) of the exam. We also need to record the location of the exam and the number of students taking it. We assume that all students take the exam at the same venue and at the same time.

Write a suitable SQL statements to complete each of the following tasks.

(i) Create a table to house exam information as outlined above. You may invent your own (suitable) table and column names. Make sure you identify an appropriate key for your table design.
(3 marks)

(ii) Add three rows to the table. One should relate to the exam you are currently sitting; invent values for the other two. Assume that there are 100 students taking this exam.
(3 marks)

(iii) Increase the time allowed so that each 90-minute exam is increased to 100 minutes.
(3 marks)

(iv) Delete all exams for which six or fewer students are registered.
(3 marks)

(v) List the code, name and venue for all exams of over 90 minutes duration for the first of December 2016.
(3 marks)

(vi) For each venue used, list the first and last date on which an exam takes place at that venue and the total numbers of exam sittings that takes place there during that interval. Each student taking an exam contributes one exam sitting to the count for that venue.
(3 marks)

Question 3 *[42 marks]*

Consider a film database with following table structure:

```
movies(id, title, yr, score, votes, director)
actors(id, name)
castings(movieid, actorid)
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In the case of each of the tasks below give a complete SQL query to complete the task.

(i) List the names of all the actors who appeared in Gone with the Wind. (*7 marks*)

(ii) List the names of all actors who have appeared in at least ten films. (*7 marks*)

(iii) List the names of all films released in the same year as Citizen Kane that have a better score than that film. (*7 marks*)

(iv) List the names of all trios of actors who have appeared together in an least three seperate films. By "trio" we mean a set three distinct actors. (*7 marks*)

(v) List for each year the name of the worst film(s) released that year. Films are rated by score: the lower the score, the worse the film. In the event of a tie, all tied films should be listed. The results should appear chronologically. (*7 marks*)

(vi) List the names of all actors who who have at least six films to their credit but have never appeared in a bad film (score less than five). (*7 marks*)