UNIVERSITY OF WESTMINSTER
FACULTY OF SCIENCE & TECHNOLOGY

DEPARTMENT OF **COMPUTER SCIENCE**

Module Title: **Database Design & Practice 1**

Module Code: **EBSY505**

Date of Exam: **13 May 2016**

Time Exam Starts: **10:00**

Time Allowed: **2 Hours**

INSTRUCTIONS FOR CANDIDATES

This paper contains 6 Questions.

ALL 6 QUESTIONS ARE COMPULSORY, ANSWER ALL QUESTIONS

QUESTION 1 CARRIES 18 MARKS
QUESTION 2 CARRIES 18 MARKS
QUESTION 3 CARRIES 06 MARKS
QUESTION 4 CARRIES 20 MARKS
QUESTION 5 CARRIES 18 MARKS
QUESTION 6 CARRIES 20 MARKS

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CoolRadio is a local radio station which broadcasts a number of music-oriented radio shows. The radio shows generally play a number of music tracks but can also host live performances from music artists. CoolRadio employs a number of presenters to present the shows and live technicians to assist with the live performances.

CoolRadio is seeking to design and develop a database-driven radio management system to be used internally by the employees to help them organise the scheduling of radio shows, the playing of music tracks and the hosting of live performances.

The Conceptual Entity-Relationship Diagram (ERD) for the CoolRadio management system is given on Appendix A (page 4). Carefully consider the conceptual ERD on appendix A.

Question 1

(a) Discuss in detail the multiplicity of the relationship *'is located in'* (between the entities Staff and Office).

[8 Marks]

(b) Explain how you would map the relationship *'is located in'* (between the entities Staff and Office) to a Logical ERD. Make sure you include all the correct attributes and keys. Provide a diagram to support your answer.

[10 Marks]

Question 2

(a) Discuss in detail the multiplicity of the relationship '*releases'* (between the entities Artist and Track).

[8 Marks]

(b) Explain how you would map the relationship '*releases'* (between the entities Artist and Track) to a Logical ERD. Make sure you include all the correct attributes and keys. Provide a diagram to support your answer.

[10 Marks]

Question 3

Consider the 3 functional requirements of the CoolRadio database-driven management system below, which indicate particular functionalities that the system can enable the user to perform.
R431: View available radio shows.
R432: Select and view details of a radio show.
R433: View the various instances when the show is being scheduled.
R434: Select a particular instance of a scheduled show.
R435: View the tracks to be played during that scheduled show.

Carefully consider the ERD for CoolRadio on appendix A. For each requirement R431 to R435, explain which entities, attributes and relationships are used and how they are used to ensure that this requirement is fulfilled.

[6 Marks]

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Question 4

(a) Discuss what the '*performs live'* relationship (between the entities Artist, Track, Scheduled_Show and Live_Tech) is and what the semantic (i.e. the meaning) of this relationship is. In your answer, also explain what the attribute startTime is used for.

[5 Marks]

(b) Discuss in detail the multiplicity of the '*performs live'* relationship (between the entities Artist, Track, Scheduled_Show and Live_Tech).

[5 Marks]

(c) Explain how you would map the relationship '*performs live'* relationship (between the entities Artist, Track, Scheduled_Show and Live_Tech). Make sure you include all the correct attributes and keys. Provide a diagram to support your answer.

[10 Marks]

Question 5

(a) Discuss what the connection is between the entity Staff and the entities LiveTech and Presenter, what the value of using this modelling technique is and why it is entirely justified to use it here.

[8 Marks]

(b) Explain how you would map the relationship between the entity Staff and the entities LiveTech and Presenter to a Logical ERD. Make sure you include all the correct attributes and keys. Produce a diagram to support your answer.

[10 Marks]

Question 6

Consider the Conceptual Entity-Relationship Diagram (ERD) for the CoolRadio management system which is given in Appendix A (page 4) and answer the questions below.

(a) Write a SQL query to display the names and genres of all artists for which the name starts with the letter A or the letter D and who started working in music in 2010.

[10 Marks]

(b) Write a SQL query to display the names of all the radio shows with the dates at which these shows are scheduled and their start times and end times.

[10 Marks]

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APPENDIX A

CoolRadio Conceptual Entity-Relationship Model