UNIVERSITY OF WESTMINSTER

FACULTY OF SCIENCE & TECHNOLOGY

Department of Computer Science

Module: Database Systems
Module Code: 5COSC002W

Module Leader: **Francois Roubert**
Date: **10 January 2018**
Start: **10:00**
Time allowed: **1 Hour**

Instructions for Candidates:
You are advised (but not required) to spend the first five minutes of the examination reading the questions and planning how you will answer them.

This paper contains 3 Questions.

ALL 3 QUESTIONS ARE COMPULSORY, ANSWER ALL QUESTIONS

QUESTION 1 CARRIES 10 MARKS
QUESTION 2 CARRIES 10 MARKS
QUESTION 3 CARRIES 10 MARKS

The examination is marked out of 30 marks (it is worth 30% of the overall module assessment).

DO NOT TURN OVER THIS PAGE
UNTIL THE INVIGILATOR INSTRUCTS YOU TO DO SO

AmazingProjects is a company that undertake projects in the telecommunication industry. Teams of engineers work on various telecom projects, under the guidance of their team leaders. These team leaders are frequently assessed during performance reviews to ensure that they are the right fit to lead the team.

AmazingProjects is seeking to design and develop a database-driven management system to be used internally to help organise the management and monitoring of projects.

The Conceptual Entity-Relationship Diagram (ERD) for part of the AmazingProjects management system is shown below (figure 1). Carefully consider this conceptual ERD.

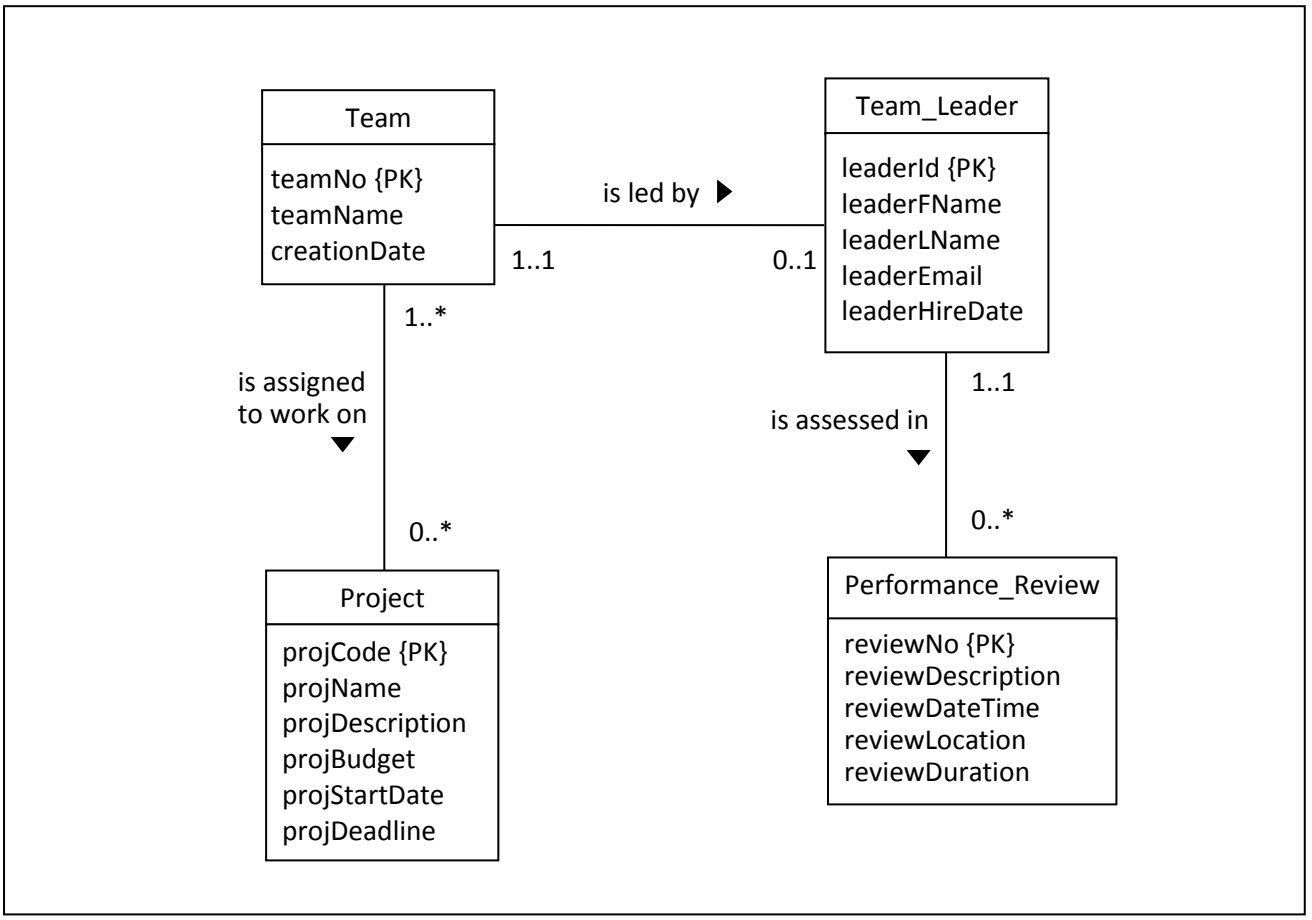

Figure 1: Conceptual ERD for part of the AmazingProjects management system

Question 1

(a) Discuss in detail the multiplicity of the relationship *'is led by'* (between the entities Team and Team_Leader). Provide adequate justifications to support your answers.

[4 Marks]

(b) Briefly explain how you would map the relationship *is led by'* (between the entities Team and Team_Leader) to a logical ERD. Provide a diagram to support your answer. Make sure you include all the correct attributes and keys.

[6 Marks]

Question 2

(a) Discuss in detail the multiplicity of the relationship '*is assigned to work on'* (between the entities Team and Project). Provide adequate justifications to support your answers.

[4 Marks]

(b) Briefly explain how you would map the relationship '*is assigned to work on'* (between the entities Team and Project) to a logical ERD. Provide a diagram to support your answer. Make sure you include all the correct attributes and keys.

[6 Marks]

Question 3

(a) Write a SQL query to display the complete names and email addresses of the team leaders who were hired after 7 January 2017 and whose surnames start with the letter R.

[5 Marks]

(b) Write a SQL query to display the surnames of the team leaders and the locations of the performance reviews for those team leaders who were reviewed in London.

[5 Marks]