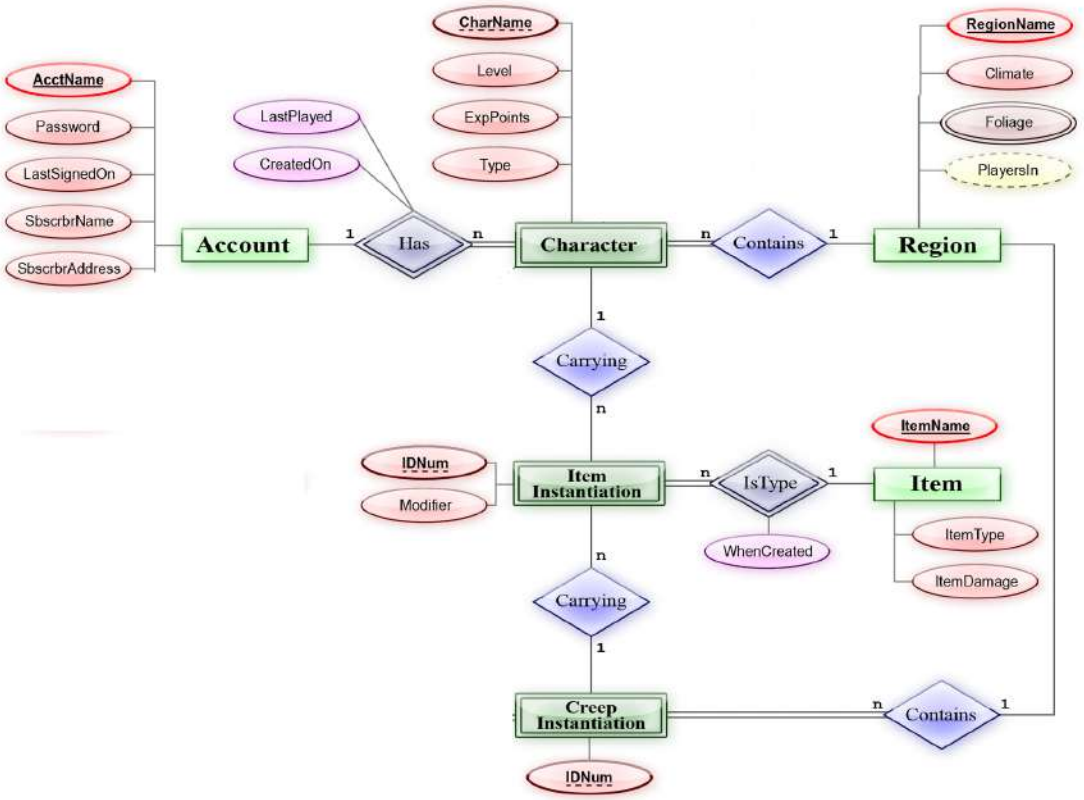
United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

Mid Term Exam, Trimester: Summer 2022
Course Code: CSE-3521, Course Title: Database Management Systems
Total Marks: 30, Duration: 1 hour 45 minutes

Any examinee found adopting unfair means will be expelled from the trimester / program as per UIU disciplinary rules.

1.	a) What do you understand by discriminator? Differentiate between identifying and non-identifying relationships. b) Consider the scenario for Online Art Gallery: The Art Gallery stores all the artist information including unique artist_id, name, age, and address. An artist can have multiple addresses containing holding no., street name, and city. An artist can have many arts. Art is described by unique art_id, title. Every art has art details. This detail contains category, style, subject, medium, material, and tag. This system also stores the date when the art was created. Curators take care of the arts and place them in the right places(rooms). Art can be taken care of by many curators and a curator can take care of many arts. Curators assign a virtual room for each art. A room has a unique room_id, title, and size. The system also stores the date when a curator places art in a room. Curators have unique curator_id, name, and hiring date. Art lovers can see the arts and they have a unique id, name, and address. Design an ER diagram for the scenario.	2+6
2.	a) Give a brief explanation about data abstraction in the case of database management systems. Can all candidate keys be a primary key? Justify your answer with proper explanation. b) Write the corresponding schema of the ER diagram given below.	4+7



3. 8+3

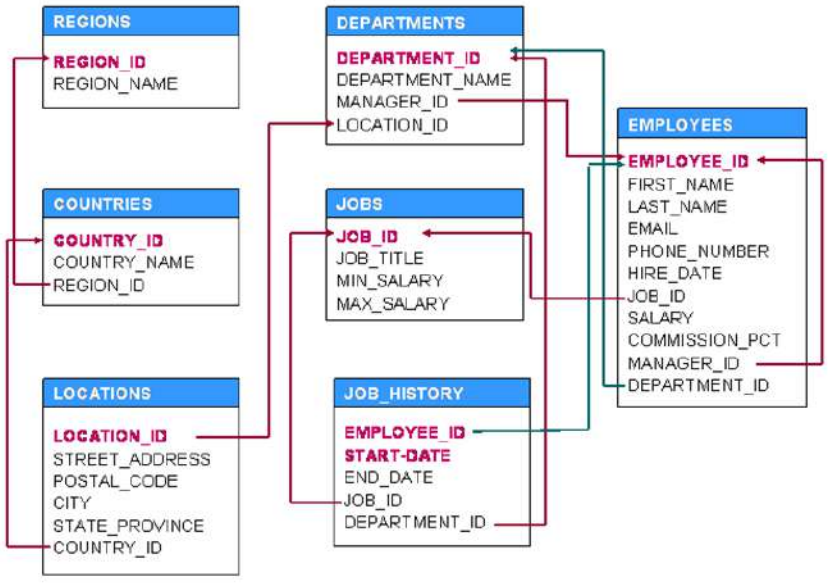


Figure 1: HR Schema

a) Use the given HR schema (Figure 1) to write the following queries (I-V)

I. Show the employee id, email and full name of those employees whose employee id ranges between 110 and 200. Full name format: first_name<space>last_name

II. Write a query to display the top 5 jobs details considering Max_Salary. (Hint: Higher Max_Salary means better job).

III. Write a query to get the department id-wise difference between the average salary and minimum salary of the employees. Only consider the departments having minimum salary of less than 4000.

IV. Write a query to display the city and number of departments in each of the cities by the descending order of the cities.

V. Write a query to find the name (first_name, last_name), and salary of the employees who earn more than the average salary and have the string 'er' starting at the 3rd position of their first name. (use subquery)

b) Consider the following relations for question (I) and (II):

Course

Course_ID	Course_Name	Department
1151	Fundamental Calculus	MATH
1115	OOP	CSE
2123	Electronics	EEE
1111	SPL	CSE

Students

Student_ID	Student_Name	Course_ID
550	Steve	1115
670	Dustin	2123
865	Nancy	1111
984	Max	4001

I. Write relational algebra for the following query:
Show Student_Id, Student_Name and Course_Name for the students whose Student_Id is greater or equal to 550 and consider the courses of 'CSE' department only.

II. Show the output relation:
[]Student_Id, Course_Id, Department(σCourse_ID>1151(Course ⋈ Students))