Cairo University
Faculty of Computers and Artificial Intelligence

Midterm Model Answer

Question 1: Given the following relations of a movie database, write **SQL** statements to express each of the following queries. **[14 marks]**

Movie (<u>Title</u>, Duration, Type, StudioName, ProducerNo)

ActsIn (<u>MovieTitle</u>, <u>StarName</u>, MovieYear)

MovieStar (<u>Name</u>, Address, Gender, BirthDate)

MovieProducer (<u>ProducerNum</u>, Name, Address, Rank)

MovieStudio (<u>Name</u>, Address, ProducerNo, Size)

1. Construct table MovieStudio. Assume that all other tables are already created. [2 marks]

Create Table MovieStudio

(

Name VARCHAR(70) Primary Key,

Address VARCHAR(100),

ProducerNo int Foreign Key References MovieProducer(ProducerNum),

Size VARCHAR(50)

);

Note: students can write any valid data types.

2. Add a new movie studio named "Ahram" which has a "Big" size. [1 mark]

Insert into MovieStudio (Name, Size) values ('Ahram', 'Big');

3. Find the title, type and year of all movies produced by Disney Studios in 2023. [3 marks]

Select Title, Type, MovieYear

From Movie, ActsIn

Where Movie.Title = ActsIn.MovieTitle

And StudioName = 'Disney'

And MovieYear = 2023;

4. Retrieve the movie titles that starts with "Speed". [2 marks]

Select Title

From Movie

Where Title LIKE 'Speed%';

5. Retrieve the names and addresses of movie stars who are not movie producers. [2 marks]

Select Name, Address

From MovieStar

Except

Select Name, Address

From MovieProducer;

6. For each producer name, get the total duration of all movies produced. Restrict the result for those movies which have a total duration between 90 and 120 minutes. Sort the result by the producer name of the movie in ascending order. [4 marks]

Select Name, Sum(Duration)

From MovieProducer, Movie

Where MovieProducer.ProducerNum = Movie.ProducerNo

Group by Name

Having Sum(Duration) between 90 and 120

Order by Name;

Question 2: Consider the following database schema, write the **relational algebra** expressions to express each of the following queries. **[6 marks]**

STUDENT (<u>SID</u>, Sname, Address, Dept, GPA)   **PROF** (<u>PID</u>, Pname, Works-In, Salary)

COURSE (<u>C-Code</u>, C-Name)   **ATTEND** (<u>S-ID</u>, <u>C-Code</u>)

TEACH (<u>P-ID</u>, <u>C-Code</u>)

1. Get all the names of both students and professors. [3 marks]

π_{Sname} (STUDENT) $\cup$ π_{Pname} (PROF)

2. Find names of students who attend either course 'IS231' or course 'IS232'. [3 marks]

π_{Sname} ($\sigma_{C\text{-}Code = \text{"IS231"} \ or \ C\text{-}Code = \text{"IS232"}}$ (STUDENT $\bowtie_{SID = S\text{-}ID}$ ATTEND)