CS315: P	315: Principles of Database Systems, IIT Kanpur Quiz		Quiz I ((23 Aug 2024)	
Name	DEEBO				20 marks
Roll No	24007	Dept.	AWSM		Page 1 of 2
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Instructions:

- 1. This question paper contains 1 page (2 sides of paper). Please verify.
- 2. Write your name, roll number, department above in **block letters neatly with ink**.
- 3. Write your final answers neatly with a blue/black pen. Pencil marks may get smudged.
- 4. Don't overwrite/scratch answers especially in MCQ ambiguous cases may get 0 marks.
- 5. Hardcoding attempts will not get any credit.

6. Be extremely precise in your answers and be careful not to make spelling or punctuation mistakes. We may type your answers as SQLite queries to actual DB and give marks based on how correct the retrieved results are.

The gaana database designed by our DB engineers Deebo and Deeba has 3 tables artist, album and song. song.length is always a strictly positive integer. artist.aadhar_no is the artist's Aadhar number and is unique for every artist. album.id is a unique number given to every album by the music industry. An artist will never release two albums with the same name, but albums by two different artists may have the same name. An

artist			
aadhar_no	first_name	last_name	
2011-21	Teebo	Totter	
1002-12	Melbo		
1911-11	Beeba	Bopper	
1011-11	Корі		
9022-92	Ceebo	Carnum	
album			

id	album_title	artist_id	release_year
101	B-Smash	1911-11	2024
102	M-Swing	1002-12	2022
103	B-Smash	1011-11	2024
104	C-Drow	9022-92	2022
105	A-Par	1011-11	2023
106	Zing-T	2011-21	2023
107	T-Zing	2011-21	2023

album will never contain two songs of the same name, but two different albums may contain songs with same name.

song			
name	album_id	length	
Buk Buk	101	22	
Bok Bok	101	33	
Bak Bak	101	100	
MunMun	102	25	
Min Min	102	1	
MonMon	102	45	
Kob Kob	103	22	
Kub Kub	103	88	
Can Can	104	33	
Con Con	104	55	

name	album_id	length
Cun Cun	104	101
PoorPoor	105	11
PaarPaar	105	2
Tyt Tyt	106	56
Tot Tot	106	333
Tet Tet	106	222
Tyt Tyt	107	99
Tut Tut	107	2
Tot Tot	107	42
Tat Tat	107	111
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(1 mark)

Q1. Write an SQL query to help Deebo count the number of songs of length ≥ 100 .

SELECT COUNT(*) FROM song WHERE length >= 100;

Alternatives such as using COUNT(name) are admissible (will receive full marks) but are riskier in case the name column is NULL in certain rows.

Q2. Write a query to retrieve the Aadhar numbers of all artists without a last name. (2 marks)

SELECT aadhar_no FROM artist WHERE last_name IS NULL;

Please note that using the predicate "last_name = NULL" will not give intended results and such solutions will receive only partial marks. The NULL value cannot be compared with using usual comparison operators such as <> or = or !=



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Q3. (Foreign Relations) Deeba suspects certain columns might be foreign keys. Given are some column names. If a column should be a foreign key, write the table and column it should reference (i.e., its parent). If it shouldn't be a foreign key, write "None" (don't just leave blank). (4 marks)

Child Table.Column	Parent Table	Parent Column
song.album_id	album	Id
album.artist_id	artist	aadhar_no
album.album_title	None	None
album.id	None	None

Q4. (The Key to Success) Deebo wishes to design a primary key for the table album. Which of the following combinations would work? Write Y/N for Yes/No. (4 marks)

Proposed Primary Key	Y/N	Proposed Primary Key	
id	Y	album_title, release_year	N
artist_id, release_year	N	album_title, artist_id	Y

Q5. Write a query to retrieve name and album_id of songs from albums released in 2023. If two songs released in 2023 have the same name, then that name should appear twice in the output. Sort the output in increasing order of song length (song length is not to be retrieved). (4 marks)

SELECT name, album_id FROM song, album WHERE song.album_id = album.id AND album.release_year = 2023 ORDER BY song.length ASC;

Q6. Write a query to get aadhar_no and first_name of artists who have at least one song of length ≥ 100. Artist details should not repeat if they have released multiple such songs.(**5 marks**)

It is possible to solve this problem in several ways e.g., using (correlated) nested queries. However, simple joins (implicit or explicit) will also do the job and may be much faster.

SELECT aadhar_no, first_name FROM artist, album, song WHERE song.length >= 100 AND song.album_id = album.id AND album.artist_id = artist.aadhar_no GROUP BY artist.aadhar_no;