



SCS1309 Database Management

Lab Sheet - MySQL 05

Global Educational Exchange Network (GEEN)

GEEN facilitates global educational exchanges, allowing institutions, educators, and students to collaborate on educational programs, research, and events.

Database Schema Overview

1. Educators

EducatorID	Name	Age	Country	InstitutionID	Expertise
1	Dr. Wishmith	42	Spain	101	Data Science
2	Dr. Ravi	50	Sri Lanka	102	Machine Learning

2. Institutions

InstitutionID	InstitutionName	Country
101	University of Madrid	Spain
102	UCSC	SriLanka

3. Programs

ProgramID	ProjectName	StartDate	EndDate	LeadEducatorID
201	Advanced Data Analytics	2024-01-1	2024-12-31	1
202	MachinLearning Mastery	2024-03-01	2024-11-30	2

4. Publications

PublicationID	Title	PublishedDate	ProgramID	LeadEducatorID
301	"Future of Data Science"	2024-05-15	201	1
302	"AI in Education"	2024-07-01	202	2

5. Events

EventID	Name	Location	EventDate
401	Data Science Summit	Barcelona	2024-06-20
402	ML Research Workshop	Colombo	2024-07-10

6. Participation

ParticipationID	EducatorID	EventID
1	1	401
2	2	402

Tasks:

1. Query to list all programs that have at least one associated publication.
2. Query to list institutions that have more than the average number of educators.
3. Identify educators involved in more than one program.
4. Query to list publication details along with program name and educator's name.
5. Optimize performance when querying publications for a specific program with an index.
6. Optimize participation queries with a composite index.
7. Optimize queries involving conferences, *Participation*, and *Educators*.
8. Optimize publication queries involving *Project* and *Educator*.

9. GEEN wants to identify educators participating in multiple events and compare their participation rates across institutions. Optimize the query to make this process efficient.
 - I. Create a composite index on the Participation table to improve queries related to EducatorID and EventID.
 - II. Write a query to retrieve the names of educators, their associated institutions, and the count of events they've participated in.
10. GEEN aims to analyze trends in educator participation at events held in specific locations, focusing on efficiency.
 - I. Optimize queries filtering events by location and participants by educator expertise.
 - II. Write a query to retrieve event names, locations, and participant details for events in "Barcelona."
11. Identify the programs with the most publications. Optimize queries to analyze publication volume per program.
 - I. Create indexes for efficient grouping of publications by program.
 - II. Write a query to retrieve program names and the count of publications, ordered by count.
12. GEEN wants to identify lead educators managing programs in fields beyond their primary expertise. Optimize queries to handle these checks efficiently.
 - I. Create indexes on *Programs* and *Educators* for filtering by expertise and program.
 - II. Write a query to find educators leading programs outside their expertise