National University of Computer and Emerging Sciences

In-Lab 5 Exercise

"Nested Queries"

Database Systems

Spring 2024

Department of Computer Science
FAST-NU, Lahore, Pakistan

Total Time: 120 Minutes

Schema:

For this exercise use the following schema, the script to create this schema and populate data is given in Twitter.SQL file.

users

	UserName	Age	Country
1	Ali123	18	Pakistan
2	Aliza	40	USA
3	Aysha	19	Iran
4	DonaldTrump	60	USA
5	ImranKhan	55	Pakistan
6	Natasha	28	USA
7	Samuel	37	Australia
8	Sara	30	Iran

Following

	FollowerUserName	FollowedUserName
1	Ali123	DonaldTrump
2	Aliza	Ali123
3	Aliza	DonaldTrump
4	Aliza	ImranKhan
5	Aysha	ImranKhan
6	DonaldTrump	ImranKhan
7	ImranKhan	DonaldTrump
8	Natasha	ImranKhan
9	Samuel	DonaldTrump
10	Samuel	ImranKhan
11	Sara	DonaldTrump

Hashtags

	HashtagID	Hashtag
1	1	#Census
2	2	#ClassiqueMatin
3	3	#MasseCritique
4	4	#piratage
5	5	#DrugMovies

user interests

	UserName	InterestID
1	Ali123	10
2	Ali123	11
3	Ali123	13
4	Ali123	14
5	Aliza	10
6	Aliza	11
7	Aliza	13
8	Aliza	14
9	ImranKhan	10

interests

	InterestID	Description
1	10	Politics
2	11	Sports
3	12	Movies
4	13	Education
5	14	Video Ga...

	TweetID	LikeByUserName	LikeOnDate	
1	1	Aliza	2017-02-02	likes
2	2	Aliza	2017-02-02	

	TweetID	UserName	Text	
1	1	Ali123	Pakistan's largest-ever population #Census start…	
2	2	ImranKhan	Pakistan's largest-ever population #Census start…	
3	3	Sara	Take the soldier who come to our door for #Cens…	
4	4	ImranKhan	Pakistan is going to experience 6th #Census 2017.	tweets
5	5	Sara	Only #census can reveal where this aunty lives	
6	6	ImranKhan	Quand tu te lèves 3h en avance (littéralement) po…	
7	7	Sara	Over 1 million decrypted Gmail and Yahoo accou…	
8	8	Sara	Harry pot-head and the Sorcerer's stoned	
9	9	DonaldT…	LSDespicable Me #DrugMovies	
10	10	ImranKhan	Forrest Bump #DrugMovies @midnight	
11	12	DonaldT…	Quand tu te lèves 3h en avance (littéralement) po…	
12	13	Sara	#DrugMovies	
13	14	DonaldT…	Quand tu te lèves 3h en avance (littéralement) po…	
14	15	Aliza	Quand tu te lèves 3h en avance (littéralement) po…	

Exercise:

1. What is maximum, minimum, average and standard deviation of ages of the users?
   (Search Standard Dev function)
   Expected Output:

	MaxAge	MinAge	StdevAge
1	60	18	15.431299362011

2. Give name of the user who has the highest number of followers.
   Expected Output:

	UserName	NoOfFollowers
1	DonaldTrump	5
2	ImranKhan	5

3. Give name of the user who has second highest followers.
   Expected Output:

	UserName	NoOfFollowers
1	Ali123	1

4. List names of all the users who have never tweeted.
   Expected Output:

	UserName
1	Aysha
2	Natasha
3	Samuel

5. List all the hashtags and usernames and number of times that user used that hashtag.
   Expected Output:

	hashtag	username	noOfTimes
1	#Census	Ali123	1
2	#MasseCritique	Aliza	1
3	#DrugMovies	DonaldTrump	1
4	#MasseCritique	DonaldTrump	2
5	#Census	ImranKhan	2
6	#DrugMovies	ImranKhan	1
7	#MasseCritique	ImranKhan	1
8	#Census	Sara	2
9	#DrugMovies	Sara	1
10	#piratage	Sara	1

6. Find the users who have never used the hashtag #Census.
   Expected Output:

	username
1	Aliza
2	DonaldTrump

7. List all the usernames that have never been followed. Using Set operation
   Expected Output:

	UserName
1	Aliza
2	Aysha
3	Natasha
4	Samuel
5	Sara

8. List all the usernames that have never been followed. Using Exist Clause.
   Expected Output:
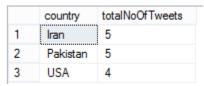
	UserName
1	Aliza
2	Aysha
3	Natasha
4	Samuel
5	Sara

9. Find the most common interest of users. (The interest with largest number of users). Also find the least common interest.
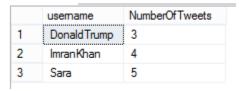
Expected Output:

	InterestID	CountInterest
1	10	3

	InterestID	CountInterest
1	11	2
2	13	2
3	14	2

10. Show total tweets per country. The result should be in order of country name.
Expected Output:

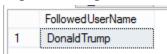|	country	totalNoOfTweets
1	Iran	5
2	Pakistan	5
3	USA	4

11. List names of all the users whose number of tweets is more than average number of tweets per user.
Expected Output:

	username	NumberOfTweets
1	DonaldTrump	3
2	ImranKhan	4
3	Sara	5

12. Give the name of the users who have at least one follower from Pakistan.
Expected Output:

	FollowedUserName
1	DonaldTrump

13. Show the interest ID and description of interest with the most number of users.
Expected Output:

	InterestID	Description	CountInterest
1	10	Politics	3