National University of Computer and Emerging Sciences, Lahore Campus

Course:	*Database Systems Lab*	**Course Code:**	CL203
Program:	BS (Computer Science)	**Semester:**	**Fall 2019**
Duration:	2.5 Hours	**Total Marks:**	70
Paper Date:	30-Nov-2019	**Weight**	40%
Section:	All	**Page(s):**	3
Exam:	Lab Final Exam	**Reg. No**	

Important Instructions (Please read them before attempting the exam):

- Submit **ONLY .sql File** in this format (All parts of a question in one SQL File **named** with your **Roll Number** e.g., L13-4152). Do not zip your file.
- Solve all questions in one **.sql** file.
- Use your own credentials (username and password) to log in the system.
- Copy the schema from the following path \\cactus\xeon\Ishaq\Database Systems- spring 2019\Lab Material\final_schema.sql. Put the sql file in your D drive, and then **unplug the ethernet cable.**
- **Plagiarism** will result in **F grade** in lab.
- No cell phones are allowed. Sharing of **USBs** or any other items is **not allowed.**
- Submission path will be announced soon.
- **Write your roll number on this paper, and submit this paper to invigilator before leaving the lab.**
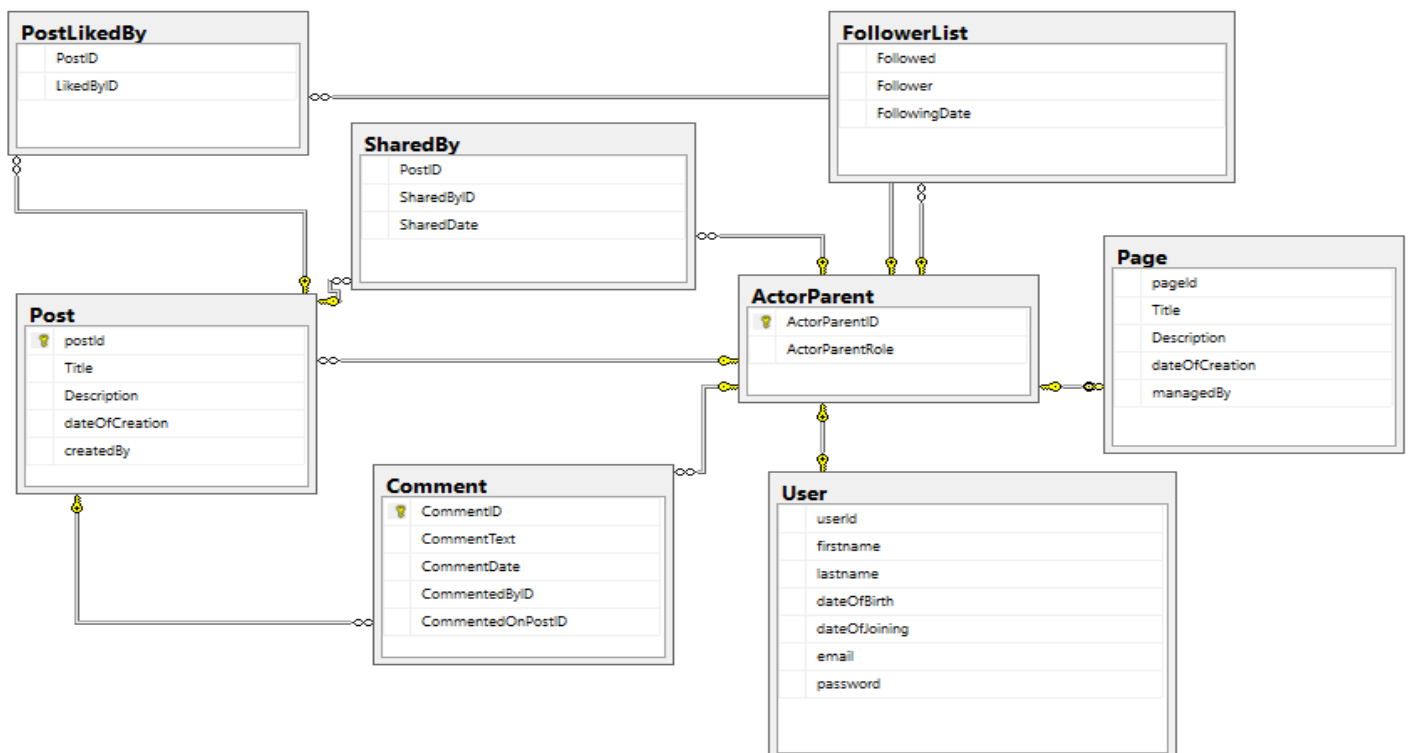
SQL Server Login Details:

- ➢ **Server: localhost**
- ➢ **username: sa**
- ➢ **password: fstky2e4mdt (OR) 12345678**

Question #1 Write the SQL solution of the following questions. Clearly mention the part number above each SQL solution in comments.

1) Whenever a page is updated you need to check whether given information is valid.
    i. PageID must exist in ActorParent table with Role 2.
    ii. ManagedBy must be in ActorParent table and must have a role 1. (ManagedBy must be user).
    iii. DateOfCreation must not be beyond currentDate.
    You need to write an after trigger, which checks the values of inserted tuples. If a tuple is valid, it allows to update and if tuple violates any condition, do not allow this tuple to be updated.

2) Write a user defined function which finds the number of followers of an ActorParent using FollowerList.
    For an ActorParent C there are two types of followers:
    i. Explicit Followers: Who follow C directly.
    ii. Implicit Followers: Who are actually the followers of followers of C.
    The total number of followers of an ActorParent C is the sum of explicit and implicit followers. You need to print the ID of ActorParent and the sum of implicit and explicit followers.

3) Write a view 'popActors' which lists the POPULAR ACTORS along with their all roles. 'popular Actors' are the users who have created more than 2 posts or have shared more than 2 posts or have at least 5 comments. Actors term is used for both page and user.

4) Write a user define function named as 'bestFriends' which takes ActorParentID as input. This function finds the best friend of this ActorParent. Best friends are a pair of actors which follow each other. You need to print these things:

For the pair of best friends print these:
   i.   Print First name of both friends.
   ii.   The count of posts on which both friends have commented.
   iii.   The count of likes (for how many times they liked the common posts).
   iv.   You need to print the friendship age (consider the latest followingDate for friendship age).

5) Write a stored procedure for insertUser which takes First Name, Last Name, Email, Password and DateOfBirth as parameter. This procedure checks whether any user with same email address exists already in User table or not. If already exists return -1. If User with same email address does not already exist, insert a tuple in ActorParent. The id of this tuple is the maximum value of Already exiting IDs plus one. And the role of this tuple is 1. Now insert the user in users table with id of this inserted tuple. And Date of Joining should be current Date. If the data is inserted successfully return 1. Otherwise return 2.

6) Write a procedure to suggest the friends to those two ActorParents who have joined most recently. Suggest those ActorParents who are Popular Actors. Use the view 'popActors' to suggest the friends.

7) Whenever a post is shared by some ActorParent. This post is replicated automatically. So, write a trigger which replicates the post in Post table. This trigger finds the id of current post, sharedByID and sharedDate from inserted table. Now inserts a new tuple in Post table with previous title and description. But new postId, new creationDate and createdBy. This createdBy is actually the person/page who is sharing the post.
Hint: New Post ID = max(postId) + 1.

Schema: This schema is about a social website where **users** and **pages** can create, like and share the **posts**. **ActorParent** is parent of **user** and **page**. **ActorParent** can **comment** on a specific **post**. **Users** and **pages** can follow each other. To resolve the issue of many to many relationship, **SharedBy** and **PostLikedBy** tables are used.

PostLikedBy
- PostID
- LikedByID

FollowerList
- Followed
- Follower
- FollowingDate

SharedBy
- PostID
- SharedByID
- SharedDate

Page
- pageId
- Title
- Description
- dateOfCreation
- managedBy

Post
- postId
- Title
- Description
- dateOfCreation
- createdBy

ActorParent
- ActorParentID
- ActorParentRole

Comment
- CommentID
- CommentText
- CommentDate
- CommentedByID
- CommentedOnPostID

User
- userId
- firstname
- lastname
- dateOfBirth
- dateOfJoining
- email
- password

Database values:

	ActorParentID	ActorParentRole
1	1	1
2	2	2
3	3	1
4	4	1
5	5	1
6	6	2
7	7	2
8	8	1
9	9	2

	SharedByID	SharedDate
		2013-01-01
		2013-01-15
		2011-03-04
		2011-03-14
		2011-04-04
		2012-11-04
		2012-11-10
		2012-11-14
		2011-01-04
		2011-01-23

	userId	firstname	lastname	dateOfBirth	dateOfJoining	email	password
1	1	Muhammad	Ali	1992-11-11	2009-11-11	muhammad_ali@hotmail.com	ali123
2	3	Soban	Ali	1995-06-23	2010-05-10	Soban_ali@live.com	659854
3	4	Saad	Ali	2001-10-08	2010-07-07	Saad_ali@outlook.com	AllahisO...
4	5	Adeel	Ahmed	1996-05-13	2012-04-29	adeel_ahmed@gmail.com	dumma...
5	8	Abdul Wa...	Akram	1990-06-12	2015-05-31	wahab_akram@gmail.com	987654...

Follower	FollowingDate
6	2013-01-01
4	2013-01-15
1	2011-03-04

	pageId	Title	Description	dateOfCreation	managedBy
1	2	Mualam Study Anything	The mission of page is to teach needy.	2010-12-31	1
2	6	Maria B	The updates of Brand.	2015-06-16	4
3	7	Prof. A. Rafique Akhtar	Allah or Insaan ka rishta	2012-10-08	1
4	9	DummyPage	This page is used for temporary purp...	2018-02-28	3

	PostID	LikedByID
1	5	1
2	2	2
3	4	6
4	4	4
5	3	3
6	1	5
7	2	8
8	3	1
9	3	2
10	5	6
11	5	4
12	2	3
13	3	5
14	2	8
15	1	1
16	9	2
17	4	6
18	7	7
19	5	3
20	7	5
21	3	8

	postId	Title	Description	dateOfCreation	createdBy
1	1	Lets create a page	thinking to create a page for database systems.	2010-12-26	1
2	2	My page #mualamofficial	Checkout the page and study from anywhere	2010-12-31	1
3	3	Database Connectivity	Checkout the first lecture on database conne...	2011-01-01	2
4	4	DML exercises	Checkout the Second lecture on database D...	2011-01-11	2

	CommentID	CommentText	CommentDate	CommentedByID	CommentedOnPostID
1	1	Its is great news	2010-12-26	4	1
2	2	Happy to see the post	2010-12-31	4	1
3	4	I will be loving this	2011-01-01	5	2
4	5	Hurray a good portal	2011-01-01	8	2
5	6	I will be loving this	2011-01-01	4	2
6	7	a good lecture	2011-01-11	8	2
7	8	Loved this	2011-01-11	4	2
8	9	Really, a beautifull l...	2012-10-03	1	9