

CPSC 304 Project Cover Page

Milestone #: 4

Date: 2023.8.4

Group Number: 12

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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your e-mail address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

Project Description

Our final project is a controlling interface for admins to manage the Anything forum, which is an online socializing platform for people to share their thoughts. We used Java and JDBC for the backend, and VueJS for the frontend implementation.

In the ui interface, the admins can add users to the forum and view user information (userID, username, email, password, registration date, and who are writers). For posts in the forum, admins can select attributes of the posts to view, such as postID, title, writer, publish date, content, and what category the posts belong to; also, admins can delete posts (including the comments of those posts), edit the title and the content of posts. Admins have access to collections that users make to view what posts are in their collections. Users have bookmark lists. Admins are able to view what bookmark lists each user has and what posts are in their bookmark lists. They can also create bookmark lists for users. “Filter Posts” let admins select a category and see posts under that category. Moreover, there are some functions for admins to see the statistics about this forum. The “Group By” function is to show how many posts are there in each category. The “Average Views” displays the average user view count across all posts made by each writer who has more than 1 followers. “Potential Spam” allows admins to see users who have made more than one comment but do not have any followers. “Users Make Posts in All Categories” shows all the users who have post(s) under all categories.

Differences in Schema

```
CREATE TABLE "Writer" (
    userID INT PRIMARY KEY,
    alias VARCHAR2(50) DEFAULT 'Anonymous',
    FOREIGN KEY (userID) REFERENCES "User"
        ON DELETE CASCADE
);
```

The constraint of the attribute “alias” of Writer is changed to “DEFAULT ‘Anonymous’”. This change is made in order to ensure every writer has an alias even if they didn’t set any, so that we could distinguish the writers from common users.

We also changed all CHAR data types to VARCHAR2 data types, since the latter is more efficient and saves space.

SQL Queries Used

Insert Operation

```
INSERT INTO "User" VALUES (?,?,?,?,?);
INSERT INTO "Writer" VALUES (?,?);
```

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```
INSERT INTO "BookmarkList" VALUES (?, (SELECT COALESCE(MAX(listID), 0) FROM "BookmarkList" WHERE userID = ?) + 1, ?);
```

Delete Operation

```
DELETE FROM "Post" WHERE postID=?;
```

Update Operation

```
UPDATE "Post" SET title= ?, content= ? WHERE postID= ?
```

Selection

```
SELECT userName FROM "User" WHERE email = ? AND userPassword = ?;  
SELECT * FROM "Category";  
SELECT * FROM "BookmarkList" WHERE userID = ?;  
SELECT * FROM "Post" JOIN "Writer" ON "Post".userID="Writer".userID JOIN "Category" ON "Post".categoryID="Category".categoryID WHERE "Post".categoryID = ?;
```

Projection

```
SELECT P.postID, W.userID, C.categoryID, C.categoryName, P.title, P.content, W.alias, P.publishDate FROM "Post" P JOIN "Writer" W ON P.userID=W.userID JOIN "Category" C ON P.categoryID=C.categoryID;  
SELECT P.postID, P.title, P.publishDate, P.userID, P.categoryID, C.categoryName, W.alias FROM "Post" P, "BookmarkListContains" B, "Writer" W, "Category" C WHERE P.postID = B.postID AND P.userID = W.userID AND P.categoryID = C.categoryID AND B.userID = ? AND B.listID = ?;
```

Join

```
SELECT * FROM "User" LEFT JOIN "Writer" ON "User".userID = "Writer".userID;  
SELECT * FROM "Post" JOIN "Writer" ON "Post".userID="Writer".userID JOIN "Category" ON "Post".categoryID="Category".categoryID;  
SELECT * FROM "Post" JOIN "Writer" ON "Post".userID="Writer".userID JOIN "Category" ON "Post".categoryID="Category".categoryID WHERE postID=?;  
SELECT * FROM "Post" JOIN "Writer" ON "Post".userID="Writer".userID JOIN "Category" ON "Post".categoryID="Category".categoryID WHERE "Post".categoryID = ?;  
SELECT * FROM "Collection" JOIN "Writer" on "Collection".userID = "Writer".userID;  
SELECT * FROM "Post" JOIN "CollectionContains" ON "Post".postID = "CollectionContains".postID JOIN "Category" ON "Post".categoryID = "Category".categoryID  
JOIN "Writer" ON "Post".userID = "Writer".userID WHERE "CollectionContains".collectionID =?;
```

Aggregation with Group By

```
SELECT "Category".categoryName, COUNT(*) AS "postCount" FROM "Category" JOIN "Post" ON "Post".categoryID="Category".categoryID GROUP BY "Category".categoryName;
```

Aggregation with Having

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```
SELECT C.userID, COUNT(*) AS numComments FROM "Comment" C GROUP BY C.userID HAVING COUNT(*) >= 2 AND 0 = (
    SELECT COUNT(*) FROM "Follows" F WHERE F.followeeID = C.userID
);
```

Nested Aggregation with Group By

```
SELECT R.userID, AVG(R.viewCount) AS avgViews FROM "ReadCount" R WHERE R.userID IN (
    SELECT userID FROM "Writer" W, "Follows" F WHERE F.followeeID = W.userID GROUP BY W.userID HAVING COUNT(*) >= 2
) GROUP BY R.userID;
```

ReadCount is a view created in DDL:

```
CREATE VIEW "ReadCount" AS
SELECT P.postID, W.userID, COUNT(R.postID) AS viewCount FROM "Reads" R RIGHT JOIN "Post" P ON R.postID = P.postID RIGHT JOIN "Writer" W ON P.userID = W.userID GROUP BY P.postID, W.userID;
```

Division

```
SELECT U.userID, U.email, U.userName, W.alias FROM "User" U, "Writer" W WHERE NOT EXISTS (SELECT categoryID FROM "Category" C WHERE NOT EXISTS (SELECT categoryID FROM "Post" P WHERE U.userID = P.userID AND C.categoryID = P.categoryID and U.userID=W.userID));
```

Sample Output of Queries

Insert Operation

Data in table User:

```
SQL> SELECT userID, userName FROM "User";

USERID USERNAME
-----
1 Diana
2 Suying
3 William
4 Admin
5 Visitor
```

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☰ Anything

Home	Users
Register	
Manage Users	
View Posts	
Collections	
Bookmark Lists	
Group By	
Average Views	
Potential Spam	
Filter Posts	
Delete Post	
Users Make Posts in All Categories	

Records per page: 5 ▾ 1-5 of 5

Query (by filling the boxes and clicking “sign up” button in editPost page):

☰ Anything

Home	Registration
Register	<input type="text" value="a@gmail.com"/> <input type="text" value="6"/> <input type="text" value="a"/> <input type="text" value="a"/> <input type="button" value="SIGN UP"/>
Manage Users	
View Posts	
Collections	
Bookmark Lists	
Group By	
Average Views	
Potential Spam	
Filter Posts	
Delete Post	
Users Make Posts in All Categories	

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After query: new user added to table User.

```
SQL> SELECT userID, userName FROM "User";
```

```
USERID USERNAME
```

```
-----  
1 Diana  
2 Suying  
3 William  
4 Admin  
5 Visitor  
6 a
```

```
6 rows selected.
```

☰ Anything

Home

Register

Manage Users

View Posts

Collections

Bookmark Lists

Group By

Average Views

Potential Spam

Filter Posts

Delete Post

Users Make Posts in All Categories

Users

ID	User Name	Email	Password	Registration Date	Alias	Actions
1	Diana	diana@gmail.com	112233	2023-07-24	Diana	BECOME WRITER
2	Suying	suying@suying.com	ccygfxfst	2023-07-24	Suying	BECOME WRITER
3	William	zwh@legendword.com	23454321	2023-07-24	William	BECOME WRITER
4	Admin	admin@admin.com	admin12345	2023-07-23		BECOME WRITER
5	Visitor	visitor	admin12345	2023-07-23		BECOME WRITER
6	a	a@gmial.com	a	2023-08-09		BECOME WRITER

Records per page: 7 ▾ 1-6 of 6

Delete Operation

Data in table Post and data in table Comment:

```
SQL> SELECT postID, title FROM "Post" JOIN "Writer" ON "Post".userID="Writer".userID;

    POSTID
    -----
    TITLE
    -----
        2
What about ChatGPT?

        5
Something

        1
My thoughts after the midterm
```

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Anything

Home
Register
Manage Users
View Posts
Collections
Bookmark Lists
Group By
Average Views
Potential Spam
Filter Posts
Delete Post
Users Make Posts in All Categories

Posts

postID	Title	Writer	Category	EDIT	VIEW
1	My thoughts after the midterm edited	Diana	Education		
2	What about ChatGPT?	Diana	Education		
5	Something	Diana	University		

Records per page: 5 ▾ 1-3 of 3

scripts — ssh yhq@remote.students.cs.ubc.ca — 80x24

```
[SQL> select * from "Comment" where postID = 1;

COMMENTID
-----
CONTENT
-----
REPLYINGTOID      POSTID      USERID COMMENTDA
-----  -----  -----
          1
This is fantastic!
          1          1 24-JUL-23

          2
Thanks!
          1          1 24-JUL-23

COMMENTID
-----
CONTENT
-----
REPLYINGTOID      POSTID      USERID COMMENTDA
-----  -----  -----

```

Query (By filling in the box with postID and click “delete” button):

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☰ Anything

Home Delete Post

Register

Manage Users

View Posts

Collections

Bookmark Lists

Group By

Average Views

Potential Spam

Filter Posts

Delete Post

Users Make Posts in All Categories

The screenshot shows a user interface for managing posts. On the left, there's a sidebar with various links: Home, Register, Manage Users, View Posts, Collections, Bookmark Lists, Group By, Average Views, Potential Spam, Filter Posts, and Delete Post. The 'Delete Post' link is highlighted with a blue background. The main panel has a header 'Delete Post'. Below it is a form field labeled 'postID' containing the value '1'. At the bottom of the main panel is a blue 'DELETE' button.

After query: post with postID=1 is deleted, and Comments to post with postID=1 are also deleted.

```
SQL> SELECT postID, title FROM "Post" JOIN "Writer" ON "Post".userID="Writer".userID;

    POSTID
    -----
    TITLE
    -----
        2
What about ChatGPT?

        5
Something
```

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≡ Anything

Home
Register
Manage Users
View Posts
Collections
Bookmark Lists
Group By
Average Views
Potential Spam
Filter Posts
Delete Post
Users Make Posts in All Categories

Posts

postID	Title	Writer	Category	
2	What about ChatGPT?	Diana	Education	EDIT VIEW
5	Something	Diana	University	EDIT VIEW

Records per page: 5 ▾ 1-2 of 2

```
SQL> select * from "Comment" where postID=1;  
no rows selected  
SQL> █
```

Update Operation

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Data in table Post:

```
SQL> SELECT * FROM "Post" WHERE postID=1;
```

POSTID	PUBLISHDA	CATEGORYID	USERID
1	24-JUL-23	1	1
CPSC 304 is such a great course!!! My thoughts after the midterm			

≡ Anything

- Home
- Register
- Manage Users
- View Posts
- Collections
- Bookmark Lists
- Group By
- Average Views
- Potential Spam
- Filter Posts
- Delete Post
- Users Make Posts in All Categories

My thoughts after the midterm

Published on 2023-07-24 Written by Diana

CPSC 304 is such a great course!!!

Comments

To be added.

Before query (by clicking “save” button in editPost page):

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Edit post

Title
My thoughts after the midterm edited

36 / 100

Content
CPSC 304 is such a great course!!! edited

41 / 4000

SAVE

After query (title and content updated):

```
SQL> SELECT * FROM "Post" WHERE postID=1;
```

POSTID
1

CONTENT
CPSC 304 is such a great course!!! edited

TITLE
My thoughts after the midterm edited

PUBLISHDA	CATEGORYID	USERID
24-JUL-23	1	1

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≡ Anything

Home

Register

Manage Users

View Posts

Collections

Bookmark Lists

Group By

Average Views

Potential Spam

Filter Posts

Delete Post

Users Make Posts in All Categories

My thoughts after the midterm edited

Published on 2023-07-24 Written by Diana

CPSC 304 is such a great course!!! edited

Comments

To be added.

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Selection

☰ Anything

Home

Register

Manage Users

View Posts

Collections

Bookmark Lists

Group By

Average Views

Potential Spam

Filter Posts

Delete Post

Users Make Posts in All Categories

Bookmark Lists

Select User

Diana

Diana's Bookmark Lists

Reading List

Favourites

New Bookmark List

List Name

CREATE

Default levels ▾ | 1 Issue: 1

Anything

Home

Register

Manage Users

View Posts

Collections

Bookmark Lists

Group By

Average Views

Potential Spam

Filter Posts

Delete Post

Users Make Posts in All Categories

Bookmark Lists

Select User: Diana

Diana's Bookmark Lists

1. Reading List

2. Favourites

New Bookmark List

List Name

CREATE

Reading List

My thoughts after the midterm
ID: 1 Published: 2023-07-24 Category: Education Writer: Diana

What about ChatGPT?
ID: 2 Published: 2023-07-24 Category: Education Writer: Diana

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Projection

☰ Anything

Project selected columns:

Post ID	Title	User ID	Writer	Publish Date	Category ID	Category	Content
1	My thoughts after the midterm	1	Diana	2023-07-24	1	Education	CPSC 304 is such a great course!!!
2	What about ChatGPT?	1	Diana	2023-07-24	1	Education	ChatGPT is not going to replace jobs, but it certainly will make teachers' jobs much harder.
3	Community Rules	3	William	2023-07-24	1	Education	Please do not post any offensive or inappropriate content, thanks!
4	Add friend!	2	Savina	2023-07-24	4	Friends	Add me as a friend and I'll send you a surprise

☰ Anything

Project selected columns:

Post ID	Title	User ID	Writer	Publish Date	Category ID	Category	Content
1	My thoughts after the midterm	1	Diana	2023-07-24	1	Education	CPSC 304 is such a great course!!!
2	What about ChatGPT?	1	Diana	2023-07-24	1	Education	ChatGPT is not going to replace jobs, but it certainly will make teachers' jobs much harder.
3	Community Rules	3	William	2023-07-24	1	Education	Please do not post any offensive or inappropriate content, thanks!
4	Add friend!	2	Savina	2023-07-24	4	Friends	Add me as a friend and I'll send you a surprise

☰ Anything

Project selected columns:

Post ID	Title	User ID	Writer	Publish Date	Category ID	Category	Content
1	My thoughts after the midterm	1	Diana	2023-07-24	1	Education	CPSC 304 is such a great course!!!
2	What about ChatGPT?	1	Diana	2023-07-24	1	Education	ChatGPT is not going to replace jobs, but it certainly will make teachers' jobs much harder.
3	Community Rules	3	William	2023-07-24	1	Education	Please do not post any offensive or inappropriate content, thanks!
4	Add friend!	2	Savina	2023-07-24	4	Friends	Add me as a friend and I'll send you a surprise

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Join

Data in table Post:

```
SQL> select postID, categoryID from "Post";
```

POSTID	CATEGORYID
1	1
2	1
3	1
4	4
5	3
6	1
7	3
8	2
9	5

9 rows selected.

The screenshot shows a web-based application interface. On the left is a sidebar with a blue header 'Anything' and a list of navigation items. The 'View Posts' item is highlighted with a blue background. The main area has a title 'Posts' and displays a table of nine posts. Each post row includes columns for postID, Title, Writer, and Category, along with 'EDIT' and 'VIEW' buttons. At the bottom right of the main area, there is a footer with 'Records per page: All ▾ 1-9 of 9'.

postID	Title	Writer	Category	EDIT	VIEW
1	My thoughts after the midterm	Diana	Education		
2	What about ChatGPT?	Diana	Education		
3	Community Rules	William	Education		
4	Add friend!	Suying	Friends		
5	Something	Diana	University		
6	CS Graduate Program Admission	Suying	Education		
7	UBC First Coop Term	Suying	University		
8	My Dog	Suying	Animal		
9	DON'T DELETE MY POSTS	Suying	Admin		

After query (by choosing a category in the dropdown menu): the posts in the selected category is selected.

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The screenshot shows a web application interface. On the left, a sidebar contains the following links:

- Home
- Register
- Manage Users
- View Posts
- Collections
- Bookmark Lists
- Group By
- Average Views
- Potential Spam
- Filter Posts** (highlighted in blue)
- Delete Post

Below the sidebar, a message reads: "Users Make Posts in All Categories".

The main content area has a title "Categories" and a dropdown menu set to "Education". It displays a table of posts:

postID	Title	Writer	CategoryID	Category	Actions
1	My thoughts after the midterm	Diana	1	Education	
2	What about ChatGPT?	Diana	1	Education	
3	Community Rules	William	1	Education	
6	CS Graduate Program Admission	Suying	1	Education	

At the bottom right of the table area, there is a pagination message: "Records per page: 5 ▾ 1-4 of 4".

```
[SQL> select postID, categoryID from "Post" where categoryID = 1;
```

```
POSTID CATEGORYID
```

POSTID	CATEGORYID
1	1
2	1
3	1
6	1

Aggregation with Group By

Data in table Post:

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```
SQL> SELECT postID, categoryID FROM "Post";
```

POSTID	CATEGORYID
1	1
2	1
3	1
4	2
5	3

Before query (by clicking “count group by category” button):

The screenshot shows a web-based application interface. On the left, there is a sidebar with various navigation links: Home, Register, Manage Users, View Posts, Collections, Bookmark Lists, Group By (which is highlighted in blue), Average Views, Potential Spam, Filter Posts, Delete Post, and a note at the bottom that says "Users Make Posts in All Categories". The main content area is titled "Posts" and contains a table with two columns: "Name" and "Count". A message "No data available" is displayed below the table. At the bottom of the main area, there is a blue button labeled "COUNT GROUP BY CATEGORY".

After query: show the count of posts in each category group by categoryName.

The screenshot shows the same web-based application interface after a query has been run. The sidebar remains the same. The main content area now displays a table with three rows of data, grouped by categoryName. The columns are "Name" and "Count". The rows are: Animal (Count 1), Education (Count 3), and University (Count 1). At the bottom of the main area, there is a blue button labeled "COUNT GROUP BY CATEGORY". Additionally, there is a footer message "Records per page: 5 ▾ 1-3 of 3".

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Aggregation with Having

Before query (by clicking “get result” button):

The screenshot shows a web application interface. On the left is a sidebar with a blue header "Anything" and various navigation links: Home, Register, Manage Users, View Posts, Collections, Bookmark Lists, Group By, Average Views, Potential Spam (which is highlighted in blue), Filter Posts, Delete Post, and Users Make Posts in All Categories.

The main content area has a title "Potential Spam Users" with a subtitle "These users have made more than one comment but do not have any followers." Below this is a table with two columns: "User ID" and "Number of Comments Made". A message "No data available" is displayed above the table. At the bottom of the table is a blue "GET RESULTS" button.

After query: show the userID of potential span users.

The screenshot shows the same web application interface after a query has been run. The sidebar and main content area are identical to the previous screenshot, except for the table data.

The table now contains one row with User ID 5 and Number of Comments Made 2. At the bottom right of the table, there is a footer with the text "Records per page: 5 ▾ 1-1 of 1".

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```
SQL> SELECT C.userID, COUNT(*) AS numComments FROM "Comment" C GROUP BY C.userID
      HAVING COUNT(*) >= 2 AND 0 = (
          SELECT COUNT(*) FROM "Follows" F WHERE F.followeeID = C.userID
);
2      3
USERID NUMCOMMENTS
-----
5          2
```

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Division

Data in table Post:

Anything				
Home		Posts		
Register		postID	Title	Writer
Manage Users		1	My thoughts after the midterm	Diana
View Posts		2	What about ChatGPT?	Diana
Collections		3	Community Rules	William
Bookmark Lists		4	Add friend!	Suying
Group By		5	Something	Diana
Average Views		6	CS Graduate Program Admission	Suying
Potential Spam		7	UBC First Coop Term	Suying
Filter Posts		8	My Dog	Suying
Delete Post		9	DON'T DELETE MY POSTS	Admin
Users Make Posts in All Categories				
Records per page: All ▾ 1-9 of 9				

[SQL> select postID, userID, categoryID from "Post";]

POSTID	USERID	CATEGORYID
1	1	1
2	1	1
3	3	1
4	2	4
5	1	3
6	2	1
7	2	3
8	2	2
9	2	5

9 rows selected.

Before query (by clicking “show users make posts in all categories” button):

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☰ Anything

Home Register Manage Users View Posts Collections Bookmark Lists Group By Average Views Potential Spam Filter Posts Delete Post

Users Make Posts in All Categories

userID	userName	email	alias
⚠ No data available			

SHOW USERS MAKE POSTS IN ALL CATEGORIES

After query: show the userID, userName, and email of users who made posts in all categories.

☰ Anything

Home Register Manage Users View Posts Collections Bookmark Lists Group By Average Views Potential Spam Filter Posts Delete Post

Users Make Posts in All Categories

userID	userName	email	alias
2	Suying	suying@suying.com	Suying

Records per page: 5 ▾ 1-1 of 1

SHOW USERS MAKE POSTS IN ALL CATEGORIES

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```
SQL> SELECT U.userID, U.email, U.userName, W.alias FROM "User" U, "Writer" W WHERE NOT EXISTS (SELECT categoryID FROM "Category" C WHERE NOT EXISTS (SELECT categoryID FROM "Post" P WHERE U.userID = P.userID AND C.categoryID = P.categoryID and U.userID=W.userID));
```

USERID	EMAIL	USERNAME	ALIAS
2	suying@suying.com	Suying	Suying

Nested Aggregation with Group By

≡ Anything

Home

Register

Manage Users

View Posts

Collections

Bookmark Lists

Group By

Average Views

Potential Spam

Filter Posts

Delete Post

Users Make Posts in All Categories

Average Post Views For Popular Writers

The average user view count across all their posts, for each writer that has more than 1 followers.

User ID

Average Views

⚠ No data available

GET RESULTS

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☰ Anything

Home

Register

Manage Users

View Posts

Collections

Bookmark Lists

Group By

Average Views

Potential Spam

Filter Posts

Delete Post

Users Make Posts in All Categories

Average Post Views For Popular Writers
The average user view count across all their posts, for each writer that has more than 1 followers.

User ID	Average Views
1	1
2	1
3	1

1-3 of 3

GET RESULTS

After query (by clicking “get result” button: show the table of average post views for writers with >1 followers.