

Enterprise Web Software Development

Course: COMP1640

Submitted To:

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Title page

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1) Introduction:

This assignment refers to a group coursework for Enterprise Web Enabled Software Development. In this group coursework we have been asked to build a secure web-enabled role based system for collecting ideas from student in a large University. The main objective of this system is student can submit ideas from several department by following the categories of topic and both the student and staff can comment or give reaction on the ideas that are submitted. There two categories of user here in this system which are student and staff, also there are administrator, QAC and QAM. We have developed this system by forming four members group and my part was to develop the database system. We have followed agile scrum methodology to develop the system and we become successful in it. We have met all the requirement that had been asked and also we have included some extra feature like live notification along with email notification.

2) Evaluation of the system

2.1) Description of the built system:

Here in this section we will look the finished system along with its functionality and screen shot of it. Also the assumption that have made will present here.

The final system that we have developed meets the following criteria:

- It allow student and staff to log in to the system
- Student can submit idea by following the topic category

- It also allow student and staff to see all the ideas that have been submitted to the university forum.
- Student can submit idea and can comment on ideas both as following their real identification or anonymously.
- Student won't be able to see staff comment on their ideas.
- Student will get notification at the time of submitting ideas as well as if someone give comment or reactions on their ideas.
- Each student has their own dashboard where they could see how many comment and reaction they got against their submitted ideas.
- The QAC will also get notification in any student want to submit their ideas.
- The ideas will be deleted after the final closure date of it.
- Student can attach evidence with their shared ideas both as image or text files.
- The administrator can add upcoming topic to submit ideas.
- The QAM could be able to download the contributors as zip files.
- They system has also generated some statistical report like number of ideas per department, ideas of each department, number of contributors within each department etc. and this will be seen only by the higher level staff like admin, QAM etc.

2.2) Assumption:

Assumptions that have been made while developing this system are given below:

- All the users who will be presented in the system are predefined as the system is a single part of a large University system.
- As the users the departments are also predefined and the QAM and Admin will be able to see the list of departments.
- The topic will be generated by the admin as well as fixing the deadline of the topic.
- Live notification will be provided for the authors who will submit ideas.
- Student can upload attachments both in text or image formats.
- Reaction on comment might be available for both staff and student.
- Reports would be provided in different types of graphical view.

2.3) Strength of the system:

Strength of the system are given below:

- Roles of the users are strictly maintained.
- Well secured system and it is hard to hack this system. Also the password are properly hashed.
- The system is user friendly and easy to use for users while surveying on it.
- Live notification for the admin.
- Well maintained and properly normalized database system to store data in an organized way.

- Properly maintained object oriented formation to develop the system.
- The system could be able to prevent SQL injection.
- Script of the system are not being able to edit from outside of system.
- The system is properly validated which is an important issue.
- Reports are being shown in a proper way which will not create difficulty for admin or QAM to understand.

2.4) Weakness of the system:

There are some weakness in our system, those are given below:

- All the users' role are predefined so that administrator would not be able to add or change any role in it.
- The UI could be more attractive.
- To add information about topic or closure date it has become administrator dependent.

2.5) Further development:

With adding some extra features the system could be more informative as well as robust. But because of time consuming this has not become possible for us to adding those features. What we could have done more to add features and functionalities are given below:

- Two steps log in system could be added to enhance the system security.
- Live chat & notification the staff and student.
- Password retrieval process could also be added to the system.

2.6) System Walkthrough:

Though this system refers to a role bases system so that there are different kind of users based on their role. Here in this system QAM & Admin can oversee the whole process of the system as well as they have the power to add topic and delete them if there are no any submitted idea against that topic. Student can submit and can comment on ideas but staff can only comment on ideas. To access this system firstly user need to login to the system and the system will show the page based on their role which is defined by the provided email address.

Login page:

This page shows the login page of the system where user need to provide exact email address and password which is required by the system.

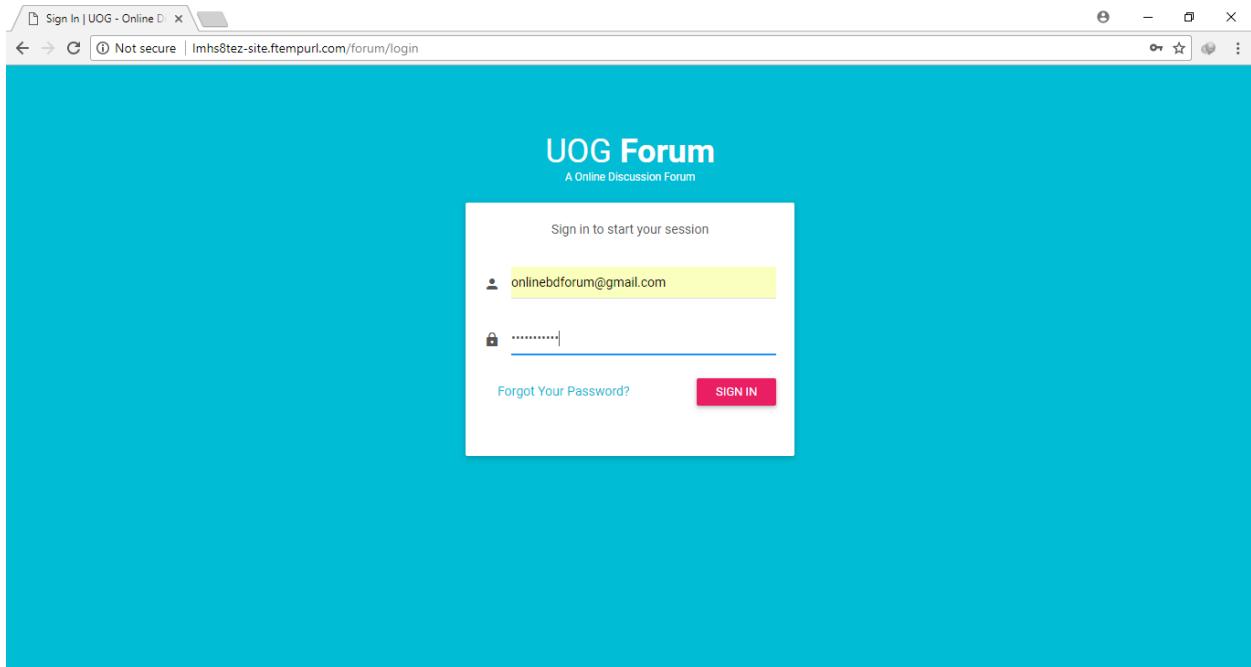
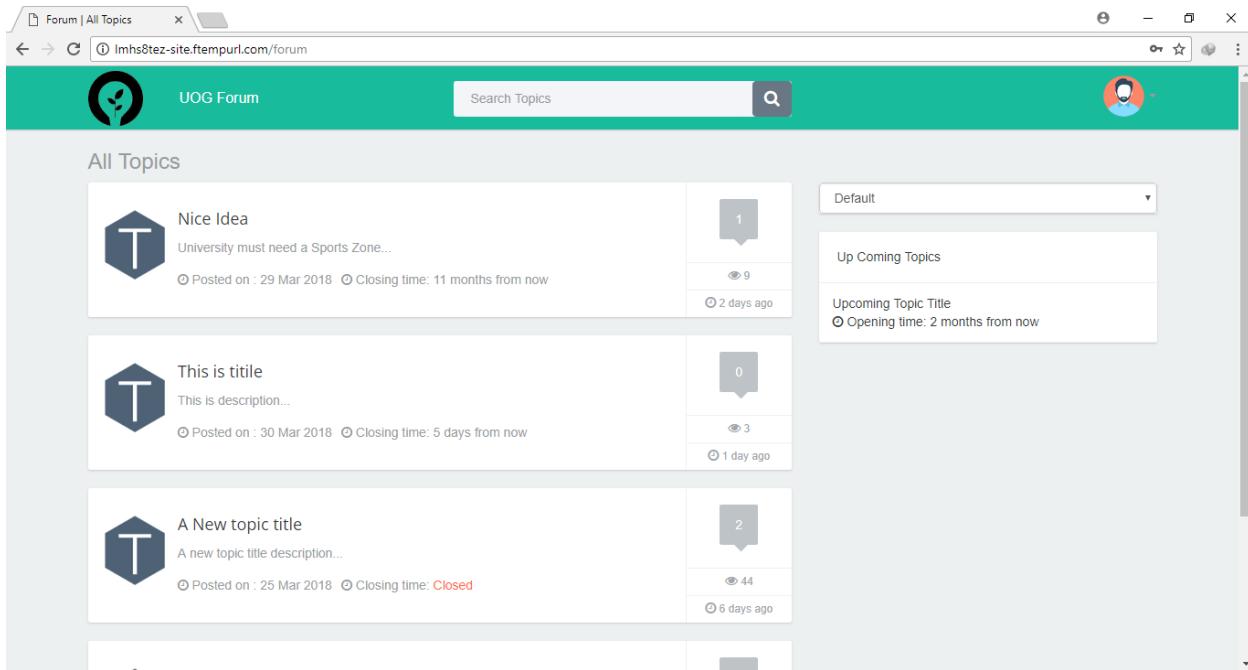


Figure 1: Log in page for user

Administration:

After login it goes to the admin section as the email and password was belong to administrator.



The screenshot shows a web browser window displaying the 'UOG Forum' homepage. The URL in the address bar is 'lmhs8tez-site.ftpurl.com/forum'. The page has a green header with the title 'UOG Forum' and a search bar. A user profile icon is visible in the top right corner. The main content area is titled 'All Topics' and lists three topics:

- Nice Idea**
University must need a Sports Zone...
Posted on : 29 Mar 2018 | Closing time: 11 months from now
1 reply | 9 views | 2 days ago
- This is title**
This is description...
Posted on : 30 Mar 2018 | Closing time: 5 days from now
0 replies | 3 views | 1 day ago
- A New topic title**
A new topic title description...
Posted on : 25 Mar 2018 | Closing time: Closed
2 replies | 44 views | 6 days ago

On the right side of the page, there is a sidebar with a dropdown menu set to 'Default' and a section titled 'Up Coming Topics' which lists an upcoming topic with its details.

Figure 2: Home page after Admin Log in

This page shows the admin dashboard and an overall view of the system.

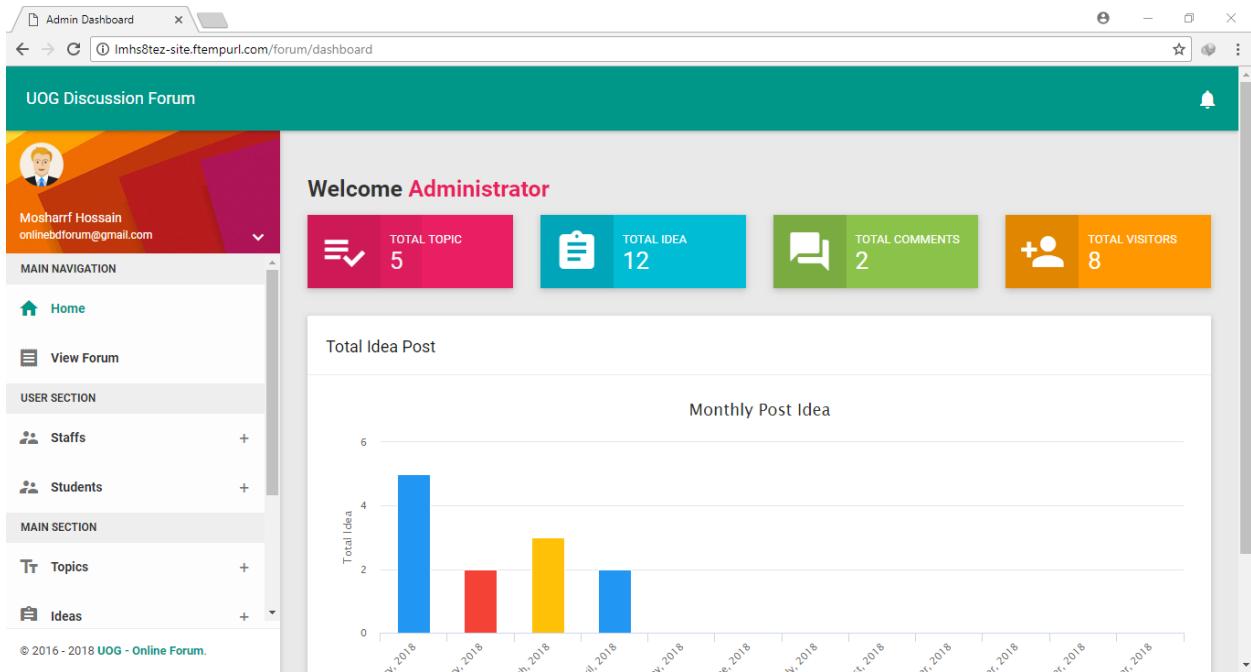
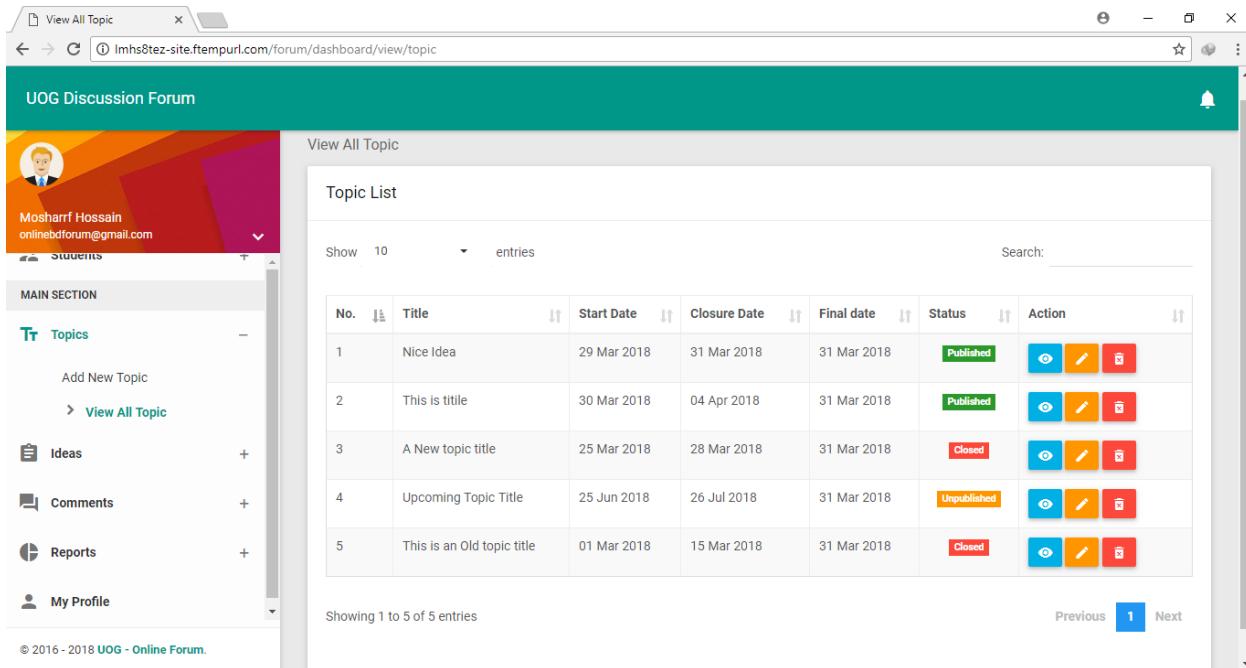


Figure 3: Admin dashboard

From the dashboard admin can see all the topic that has been created as well as their status and also can modify the topic as well as deleting them.



The screenshot shows a web browser window titled "View All Topic" with the URL "Imhs8tez-site.ftempurl.com/forum/dashboard/view/topic". The page header is "UOG Discussion Forum". On the left, there is a sidebar with a user profile picture and name "Mosharrif Hossain onlinebdforum@gmail.com", followed by sections for "Students", "MAIN SECTION", and "Topics" (with options to "Add New Topic" or "View All Topic"). Below these are sections for "Ideas", "Comments", "Reports", and "My Profile". The main content area is titled "Topic List" and displays a table of 5 entries:

No.	Title	Start Date	Closure Date	Final date	Status	Action
1	Nice Idea	29 Mar 2018	31 Mar 2018	31 Mar 2018	Published	
2	This is title	30 Mar 2018	04 Apr 2018	31 Mar 2018	Published	
3	A New topic title	25 Mar 2018	28 Mar 2018	31 Mar 2018	Closed	
4	Upcoming Topic Title	25 Jun 2018	26 Jul 2018	31 Mar 2018	Unpublished	
5	This is an Old topic title	01 Mar 2018	15 Mar 2018	31 Mar 2018	Closed	

At the bottom, it says "Showing 1 to 5 of 5 entries" and has navigation buttons for "Previous" (blue), "1" (highlighted blue), and "Next".

Figure 4: All topic list that are being created

Admin can also add new topic by filling up the form correctly which has given below.

The screenshot shows a web browser window for the 'UOG Discussion Forum'. The URL is <https://imhs8tez-site.ftempurl.com/forum/dashboard/add/topic>. The page title is 'Add new Topic'. On the left, there's a sidebar with a user profile for 'Mosharrif Hossain' and links for 'Topics', 'Ideas', 'Comments', 'Reports', and 'My Profile'. The main content area is titled 'Topic Form' and contains the following fields:

Field	Value	Status
Topic Title	Discussion about library facility	✓
Description	May the spaces in library are small and there might lacking of other facilities, so need some ideas to improve the facilities.	
Start Date	31 March 2018	✓
Closure Date	30 April 2018	✓
Final Closure Date	07 May 2018	✓
Publication Status	Active	

At the bottom of the form is a blue 'Add Topic' button.

Figure 5: Adding new topic with setting date

After submitting all the add topic button and filling up all the required field it will added to the topic list and show that topic has been added successfully.

The screenshot shows a web browser window for the 'UOG Discussion Forum'. The URL is lmhs8tez-site.ftempurl.com/forum/dashboard/view/topic. The page displays a green success message bar at the top stating 'Topic created successfully!'. Below this, there is a 'Topic List' table with the following data:

No.	Title	Start Date	Closure Date	Final date	Status	Action
1	Discussion about library facility	31 Mar 2018	30 Apr 2018	31 Mar 2018	Published	
2	Nice Idea	29 Mar 2018	31 Mar 2018	31 Mar 2018	Published	
3	This is title	30 Mar 2018	04 Apr 2018	31 Mar 2018	Published	
4	A New topic title	25 Mar 2018	28 Mar 2018	31 Mar 2018	Closed	
5	Upcoming Topic Title	25 Jun 2018	26 Jul 2018	31 Mar 2018	Unpublished	

The left sidebar contains a navigation menu with 'Topics' selected, showing options like 'Add New Topic' and 'View All Topic'. Other menu items include 'Ideas', 'Comments', 'Reports', and 'My Profile'. The footer of the page includes a copyright notice: '© 2016 - 2018 UOG - Online Forum.'

Figure 6: Message of Topic added successfully

Students performing area:

Student's main role in this system is to submit idea as well as uploading evidence against that idea and to comment or react on ideas. Also they can see all the topic and ideas after log in to the system.

The screenshot shows the 'UOG Forum' interface. At the top, there is a navigation bar with links for 'Forum | All Topics', a search bar, and a user profile icon. Below the header, the title 'UOG Forum' is displayed next to a logo. A search bar labeled 'Search Topics' is present, along with a magnifying glass icon. On the right side of the header, there is a user profile picture. The main content area is titled 'All Topics' and displays three posts:

- Discussion about library facility**
May the spaces in library are small and there migh...
0 replies, 0 views, posted on 31 Mar 2018, closing time: 1 month from now, 15 hours ago.
- Nice Idea**
University must need a Sports Zone...
1 reply, 9 views, posted on 29 Mar 2018, closing time: 11 months from now, 2 days ago.
- This is title**
This is description...
0 replies, 3 views, posted on 30 Mar 2018, closing time: 5 days from now, 1 day ago.

On the right side of the main content area, there are two sidebar sections:

- Up Coming Topics**
Upcoming Topic Title
Opening time: 2 months from now
- My Active Topics**
Nice Idea
A New topic title

Figure 7: Home page after student Log in

After login to the system student can chose topic and can submit ideas against the chosen topic.

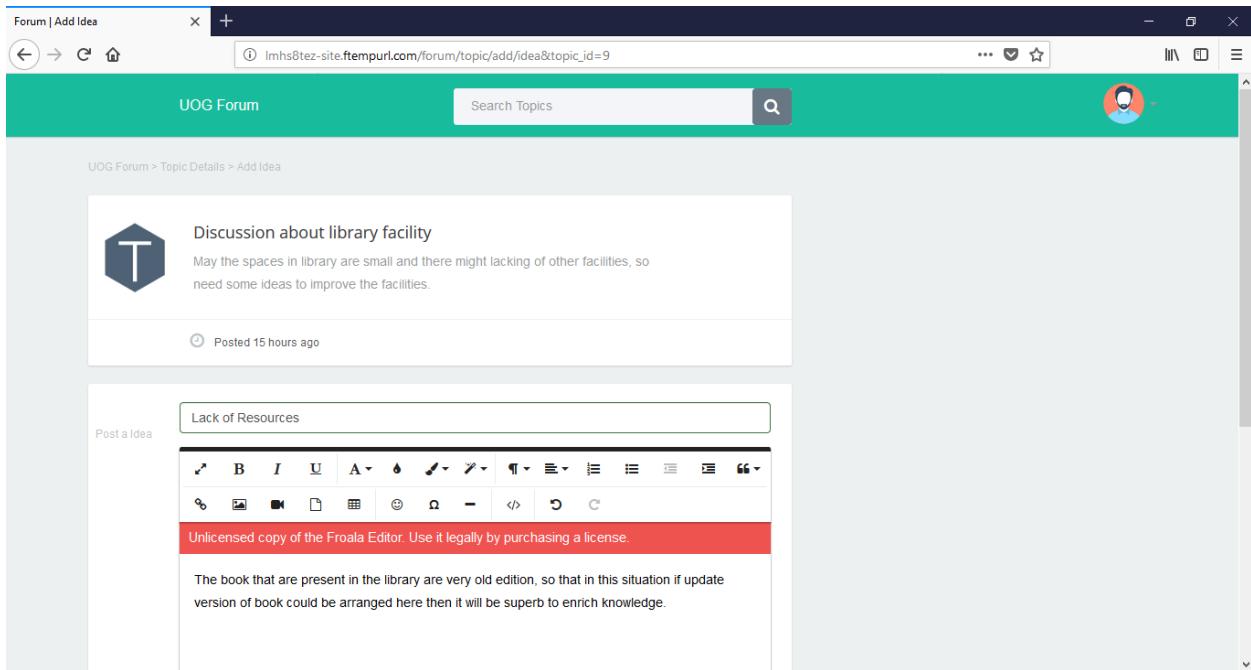


Figure 8: Sharing new ideas against given topic

Also it is needed to allow the terms and condition, otherwise it would be unable to submit the comment and user can submit ideas either as real user or as anonymous user.

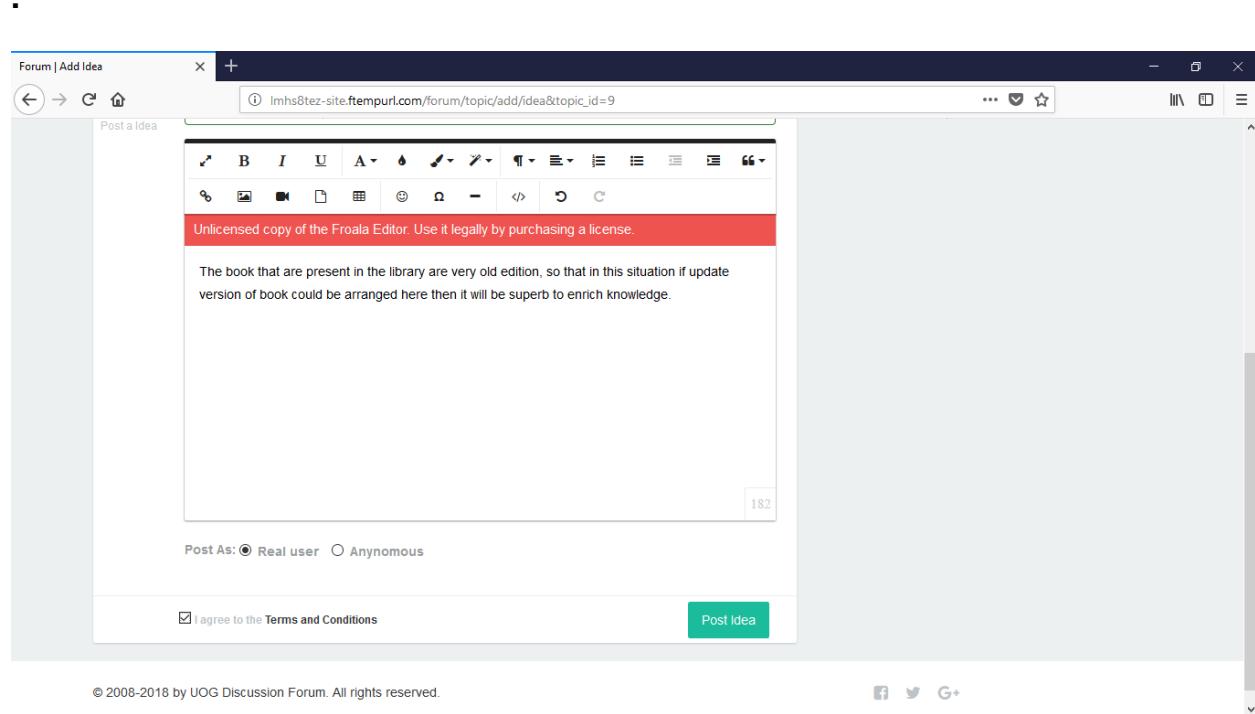


Figure 9: Sharing new topic

After submitting idea it shows message that idea has submitted and waits for admin approval.

The screenshot shows a web browser window for the UOG Forum. The URL in the address bar is http://lmhs8tez-site.ftempurl.com/forum/topic/view&topic_id=9. The page title is "Forum | View Topic". The main content area displays a topic titled "Discussion about library facility" with the message: "May the spaces in library are small and there might lacking of other facilities, so need some ideas to improve the facilities." Below the message, it says "Posted 15 hours ago". To the right of the main content, there are two sidebar boxes: "Up Coming Topics" (listing "Upcoming Topic Title" and "Opening time: 2 months from now") and "My Active Topics" (listing "Discussion about library facility", "Nice Idea", and "A New topic title"). At the bottom left of the main content area, there are buttons for "Post a Idea" and "Back". A status message at the top of the page reads "Your Idea has been posted. Waiting for Admin Approval!"

Figure 10: Pending ideas for admin approval

After that notification goes to admin for is approval of new ideas that student want to submit and he updates the idea list.

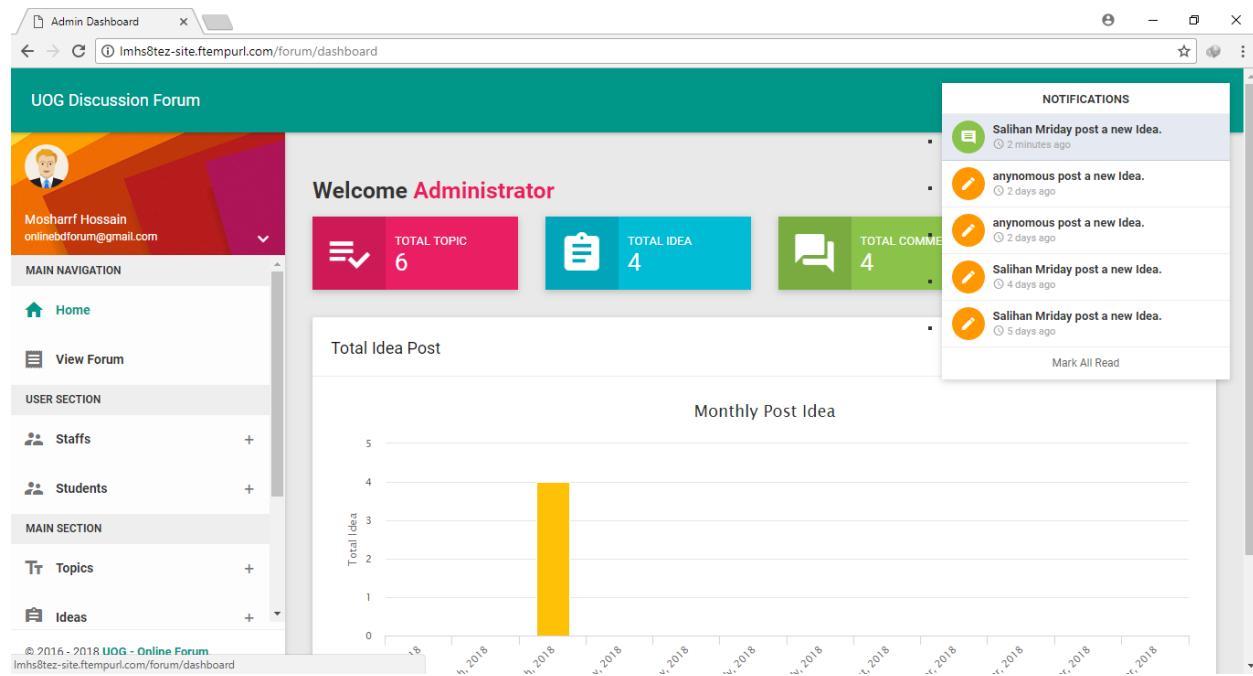


Figure 11: Live notification in admin dashboard for approval of ideas

Newly submitted ideas goes to the main page by accepting of administrator.

The screenshot shows a web browser window titled "Edit Existing Idea". The URL in the address bar is "imhs8tez-site.ftpurl.com/forum/dashboard/idea/edit&idea_id=4". The main content area is titled "Edit Existing Idea" and contains a form titled "Idea Edit Form". The form has the following fields:

- Idea Title:** Lack of Resources
- Description:** The book that are present in the library are very old edition, so that in this situation if update version of book could be arranged here then it will be superb to enrich knowledge.
- Publication Status:** Active

At the bottom of the form are two buttons: "Update Idea" (blue) and "Back" (cyan).

The left sidebar of the forum interface includes the following sections:

- MAIN SECTION**:
 - Students
 - Topics
 - Ideas
 - Comments
 - Reports
 - My Profile
- View All Idea**

At the bottom of the sidebar, it says "© 2016 - 2018 UOG - Online Forum."

Figure 12: Checking ideas if they are correct

If ideas updated successfully then it shows a message to the administrator.

The screenshot shows a web browser window for the UOG Discussion Forum. The URL in the address bar is lmhs8tez-site.firebaseio.com/forum/dashboard/view/idea. The page title is "UOG Discussion Forum". On the left, there is a sidebar with a user profile for "Mosharrif Hossain" and email "onlinebdforum@gmail.com". The sidebar also includes sections for "Students", "MAIN SECTION", "Topics", "Ideas" (which is expanded to show "View All Idea"), "Comments", "Reports", and "My Profile". The main content area has a green header bar with the text "Idea updated successfully!". Below this, there is a table titled "Idea List" showing four entries:

No.	Title	Posted as	Real Name	Posted date	Views	Status	Action
1	Lack of Resources...	Salihan Mriday	Salihan Mriday	31 Mar 2018	0	Published	
2	Super this...	Anynomous	Salihan Mriday	29 Mar 2018	1	Published	
3	Idea Title...	Salihan Mriday	Salihan Mriday	28 Mar 2018	4	Published	
4	This is a test Idea title (rea...	Anynomous	Salihan Mriday	26 Mar 2018	12	Published	

At the bottom, there is a footer with the text "Showing 1 to 4 of 4 entries", a page number "1", and navigation links "Previous" and "Next".

Figure 13: Update idea successfully

After completing the procedure submitted idea comes to the main idea page where all ideas are shown serially.

The screenshot shows a web browser window with a green header bar. The header bar contains the text "Forum | View Topic" and a "+" button. Below the header is a navigation bar with icons for back, forward, search, and user profile. The main content area has a teal header "UOG Forum" and a search bar. The URL in the address bar is "http://lmhs8tez-site.ftempurl.com/forum/topic/view&topic_id=9".

The main content area displays two ideas:

- Discussion about library facility**: A hexagonal icon with a large letter "T". The text: "May the spaces in library are small and there might lacking of other facilities, so need some ideas to improve the facilities." Status: "Posted 15 hours ago". Buttons: "Edit" and "0".
- Lack of Resources**: A hexagonal icon with a large letter "I". The text: "The book that are present in the library are very old edition, so that in this situation if update version of book could be arranged here then it will be superb to enrich knowledge." Status: "Salhan Mriday 4 minutes ago". Buttons: "Edit", "0", "0".

On the right side, there are two sidebar boxes:

- Up Coming Topics**: "Upcoming Topic Title" and "Opening time: 2 months from now".
- My Active Topics**: "Discussion about library facility", "Nice Idea", and "A New topic title".

At the bottom left of the main content area are buttons: "Post a Idea" and "Back".

Figure 14: Newly shared ideas on idea list

Also user can comment on ideas either as real user or as anonymous user by agreeing the terms and condition.

The screenshot shows a web browser window for the UOC Forum. The URL is https://imhs8tez-site.ftempurl.com/forum/topic/idea/view&idea_id=4. The page displays a topic titled "Lack of Resources" with a description: "The book that are present in the library are very old edition, so that in this situation if update version of book could be arranged here then it will be superb to enrich knowledge." Below the post, it shows "Salihan Mirday" posted on 31 Mar 2018, with 0 likes and 0 dislikes. To the right, there are sections for "Up Coming Topics" (listing "Upcoming Topic Title" and "Opening time: 2 months from now") and "My Active Topics" (stating "You has not posted any idea yet"). On the left, under "Comments", there is a text input field containing "New book is needed to research". Below the input field are buttons for "Post As: Real user" and "Anonymous". At the bottom, there is a checkbox for "I agree to the Terms and Conditions" and two buttons: "Back" and "Add Comment". The footer of the page includes a copyright notice: "© 2008-2018 by UOG Discussion Forum. All rights reserved." and social sharing icons for Facebook, Twitter, and Google+.

Figure 15: Submitting comments with accepting terms & condition

After submitting comment the system provide a message of comment has been posted successfully.

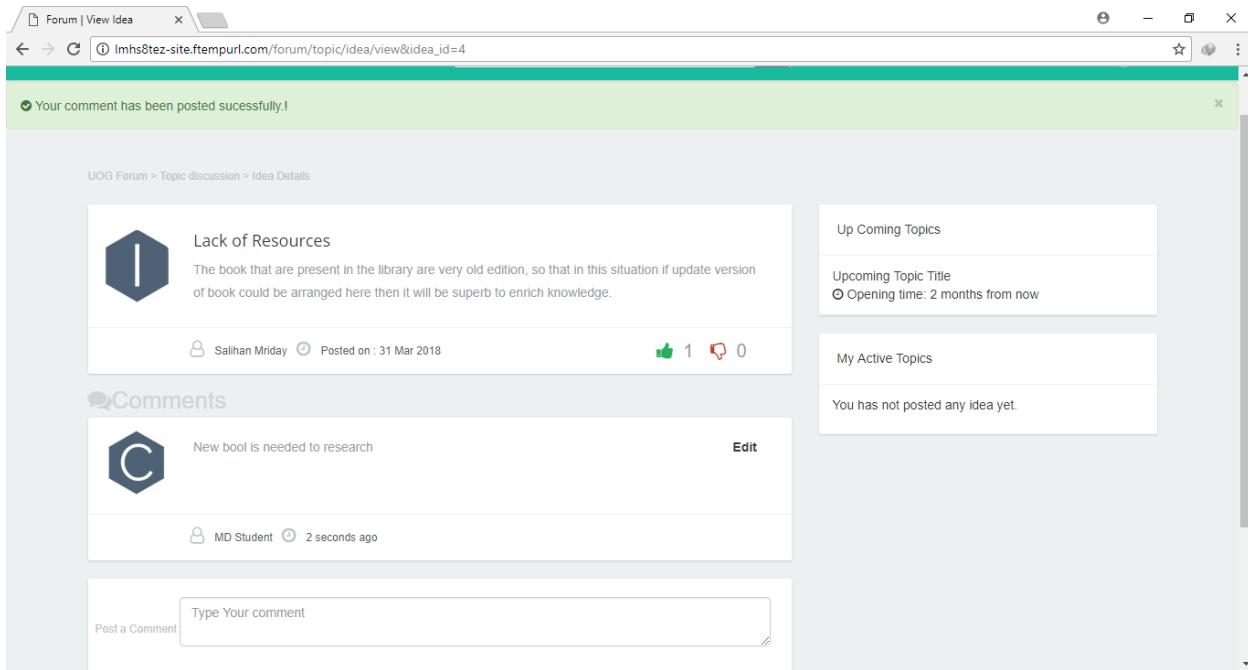


Figure 16: Comments submitted successfully

Also student can see how many idea they have submitted and how many reply they have left on different ideas.

The screenshot shows a web browser window titled "Forum | View Topic" with the URL "lmhs8tez-site.ftempurl.com/forum/my-dashboard". The page is titled "UOG Forum" and features a search bar. A user profile icon is visible in the top right corner. The main content area is titled "Welcome Salihan Mriday!". It displays two large boxes: "Idea" (containing the number 4) and "Replies" (containing the number 4). Below these are sections for "Latest Idea" and "Latest Replies", each listing two recent posts with their timestamps.

Idea	Replies
4	4

Latest Idea	Latest Replies
Lack of Resources 🕒 30 minutes ago	this is comment as any 🕒 2 days ago
Super this 🕒 2 days ago	This is comment 🕒 2 days ago

Figure 17: Dashboard of student

Reports seen by administrator QAM:

The administrator as well as the QAM can see all these reports that are given below.

This report shows number of ideas shared by different department's student.

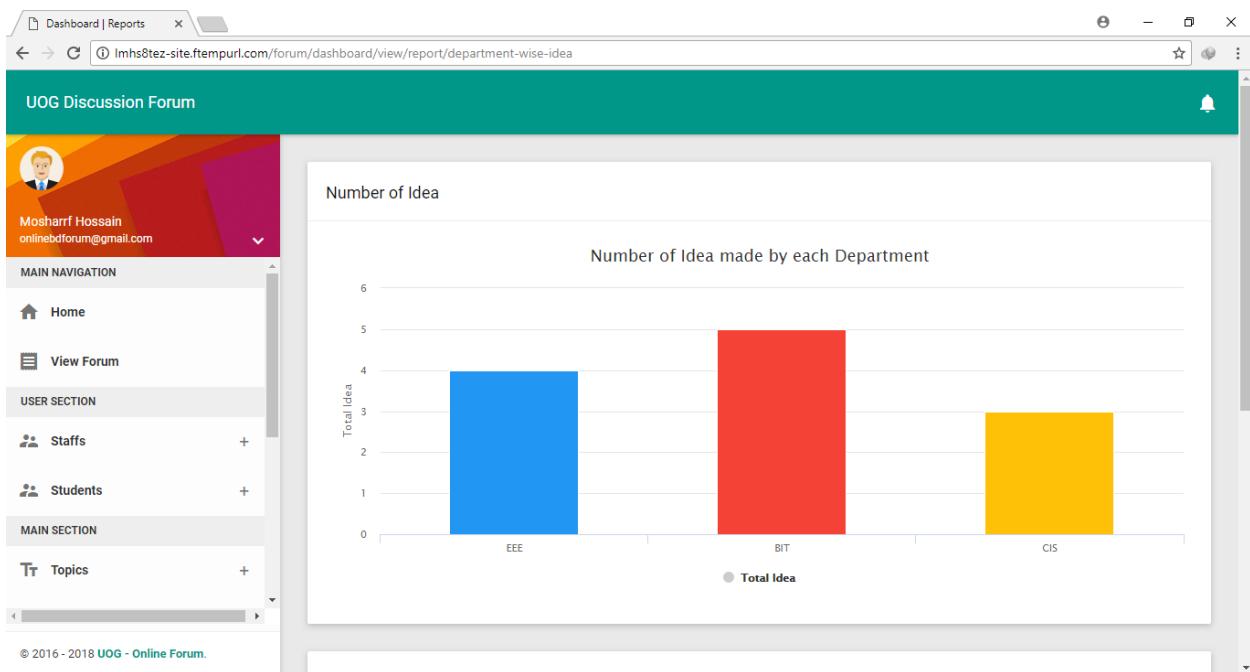


Figure 18: Number of ideas within each department

This report shows the percentage of idea made by each department

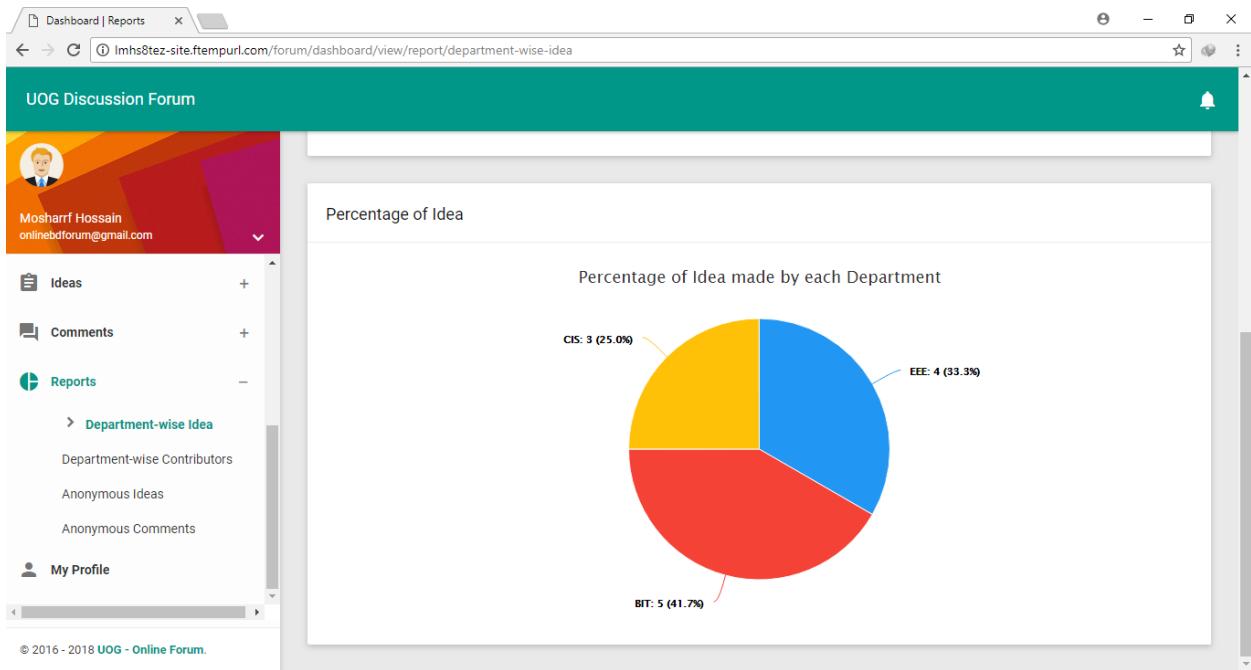


Figure 19: percentage of ideas within each department

Here it shows contributor within each department

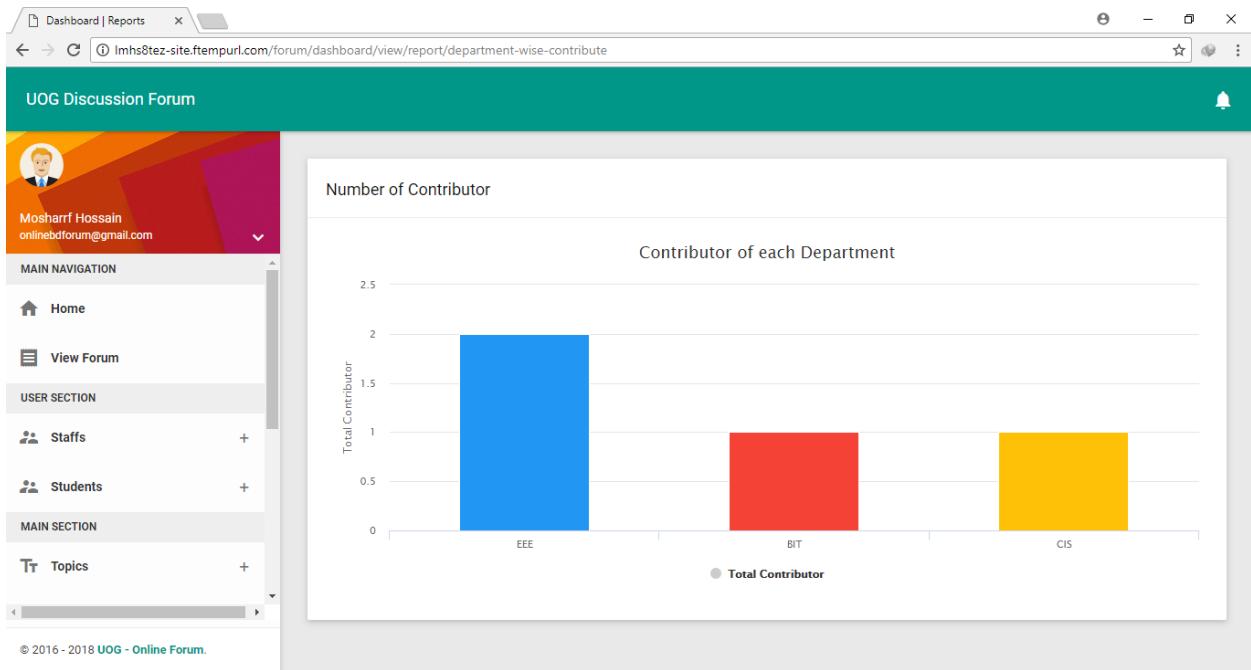


Figure 20: Total contributor in each department

Here it shows the idea list which is only seen by the admin and the QAM rather than all the staff.

The screenshot shows a web browser window titled "Anonymous Idea" with the URL "lmhs8tez-site.ftempurl.com/forum/dashboard/view/report/anonymous-idea". The main content area is titled "Idea List" and displays a table of six anonymous ideas. The table has columns for No., Title, Posted as, Real Name, Posted date, Status, and Action. Each row contains a set of icons for viewing and editing. The sidebar on the left includes links for Topics, Ideas, Comments, Reports (with sub-links for Department-wise Idea, Department-wise Contributors, and Anonymous Ideas), and My Profile. The user profile on the sidebar is Mosharrif Hossain with the email onlinebdforum@gmail.com.

No.	Title	Posted as	Real Name	Posted date	Status	Action
1	No we don't need...	Anonymous	Salihan Mriday	26 Apr 2018	Published	
2	This is a test idea title (rea...	Anonymous	Salihan Mriday	26 Mar 2018	Published	
3	This is a test idea title (Any...	Anonymous	Salihan Mriday	26 Feb 2018	Published	
4	This is a test idea title (Any...	Anonymous	APu Hasan	26 Jan 2018	Published	
5	Another new idea (Anonymous)...	Anonymous	Mahedi Hasan Rudro	26 Jan 2018	Published	
6	This is a test idea title (Any...	Anonymous	Salihan Mriday	26 Jan 2018	Published	

Figure 21: Idea list with description

Below on this report it shows that how many anonymous comment that has been posted against different ideas.

The screenshot shows a web browser window titled "Anonymous Comment" with the URL "Imhs8tez-site.ftempurl.com/forum/dashboard/view/report/anonymous-comment". The page is titled "UOG Discussion Forum" and features a sidebar on the left with user profile information (Mosharrif Hossain, onlinebdforum@gmail.com) and navigation links for Topics, Ideas, Comments, Reports (Department-wise Idea, Department-wise Contributors, Anonymous Ideas, Anonymous Comments), and My Profile. The main content area is titled "Anonymous Comment" and "Comment List". It displays a table with one entry:

No.	Description	Posted as	Real Name	Posted date	Status	Action
1	Also an AC coul...	Anonymous	Salihan Mriday	04 Apr 2018	Published	

Below the table, it says "Showing 1 to 1 of 1 entries". There are navigation buttons for Previous, Next, and a page number indicator "1".

Figure 22: Anonymous comments list

3) Team Evaluation:

The name that we have given to our team is called “The Ultimate” which is a four members group. The first and foremost task for our team after forming it, was to build up communication and collaboration with all our team members and to matched up with everyone. The main target of our team was to complete the task with fulfilling all the requirement as well as within the time that has been given as finishing time and we become successful to fulfil all those criteria.

After forming the group the first task was done by our analyst. She has breakdown the requirement form the scenario and requirement list of the coursework as needed to complete the system in more efficient way. Also she has deliver the working process which is also known as activity diagram so that it would be easier for the programmer to complete the task. Furthermore she has also added some extra feature rather than existing requirement like live notification.

After analyzing the system functions and features the designer of our team has designed the system as user friendly and attractive as possible. Also the designer has provide some sketch of the User Interface for making it sure.

Now in this section the role of database designer comes which is played by me. I have designed the database as efficiently as possible. The designed database system is properly normalized and there is no way of data redundancy. Also the designed database is able to prevent the SQL injection from the outside hacker. And it is secured to store data properly.

By collection all data programmer of our team has started the development part of the system and he is an outstanding developer and designer as he has played two role which is developing and designing. The programmer of our team has developed the system secured, dynamically and as responsive as possible and completed the program successfully by fulfilling the requirement within the timeline.

At last the part of tester comes to complete and to give the finishing touch. He has played an important part by testing different part of the system while developing it by our programmer. By the ending of each sprint of working time the tester of our team test the part of the system and assure us the quality of the system. He has done all the test case along with providing feedback constantly.

At last of my team evaluation it could be said that the team was good enough and there were also regular team meeting to discuss the working progress and discussing the difficulty if someone face and it was an important part of this coursework as we are following agile scrum methodology.

The contribution and the punctuality of each team member following some criteria are given below:

Assessment Criteria	Group Member Names			
	Irina Alam (Analyst)	Arman Hossain (Database Design)	Mosharrf Hossain (Programmer)	Mahadi hasan (UI Design & Tester)
Availability	8	10	9	10
Communication skill	9	10	9	10
Technical Skill	8	9	10	8
Team Collaboration	9	10	10	9
Adaptability	9	9	9	9
Skills on own area	9	10	10	9
Total mark = 60	52	58	57	55

4) Self-Evaluation:

To complete the given task of developing an enterprise system we have formed a group which is named by “The Ultimate’s”. In this group coursework my role was to design the database for the system in short it could be said that I was the database designer.

Though designing database system is a first and foremost task to complete before starting development so that firstly we held a meeting to attend for discussion about the important things. Also I have worked directly with the developer of our team.

After analyzing the whole coursework properly our analyst share her requirement with the team and after collecting the requirement from several meetings I have started designing database system and become successful to complete it properly as our team required. Detailed designing procedures of database are given below:

4.1) Designing procedures of database:

To design the database for the proposed system at first I have find out some entities initially, what we needed to store the important data. After collecting the entities I have drawn a conceptual diagram where I have shown the entities along with their initial relationship.

After finding the entities and drawing the initial conceptual diagram I have find out all the possible attribute for the entities. Then I have tried my best to complete the mapping process as accurately as possible. In mapping process it shows the relationship among the table and how tables are linking up with each other along with defining the primary keys and foreign keys.

After that I have formed a logical diagram and there by following the mapping process. I have also draw a physical diagram where all the attributes are shown along with their proper relationship and data type. Also I have designed an EERD diagram for the database system.

All this diagram helps to design a database system for the program and to remove data redundancy, duplicity etc. Also the diagram and the mapping helps to build a proper normalized database management system.

After completing these tasks I have made a data dictionary where all the primary and foreign keys are presented. Also the data dictionary shows the data type of all attribute that are being provide within each table. Also it has shown from which table foreign keys are coming. And after completing data dictionary finally I have formed a physical database by discussing with my team members.

4.2) Data Dictionary:

User Table:

Attribute	Data Type	Length	Primary	Foreign	Reference
			Key	Key	Table
user_id	Int	50	Yes		
user_email	varchar	70			
password	varchar	90			
user_role	varchar	80			
user_status	int	10			

Staff_type Table:

Attribute	Data Type	Length	Primary	Foreign	Reference
			Key	Key	Table
staff_type_id	varchar	82	Yes		
staff_type_name	varchar	120			

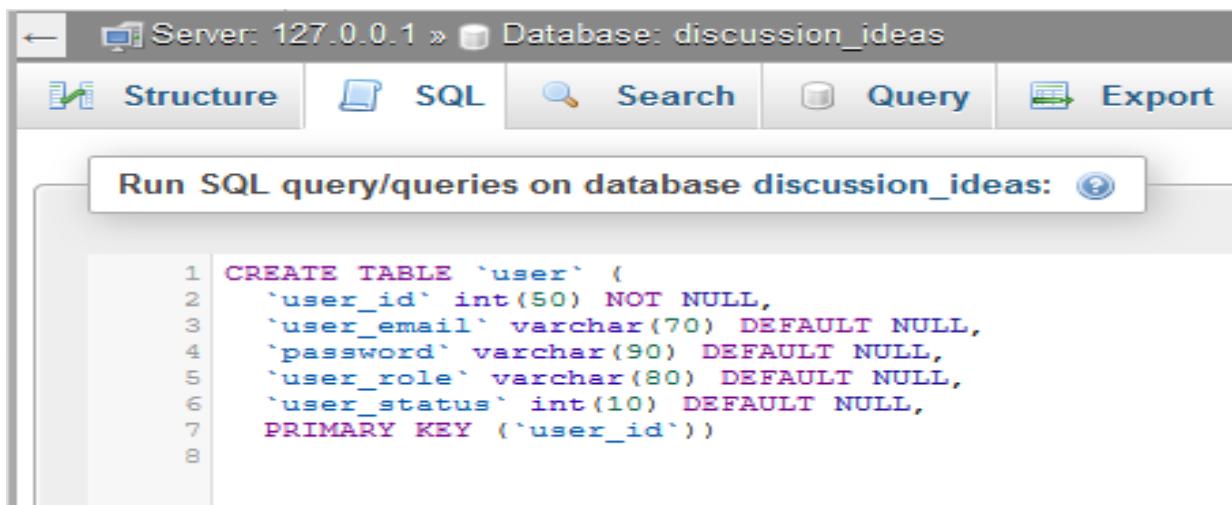
[More Data Dictionary table will be found in Appendix as well as in repository

https://github.com/mhmojon/the_ultimate/tree/master/Database%20Designer]

4.3) Table Creation Code & Output:

User table:

Table creation code of user table.

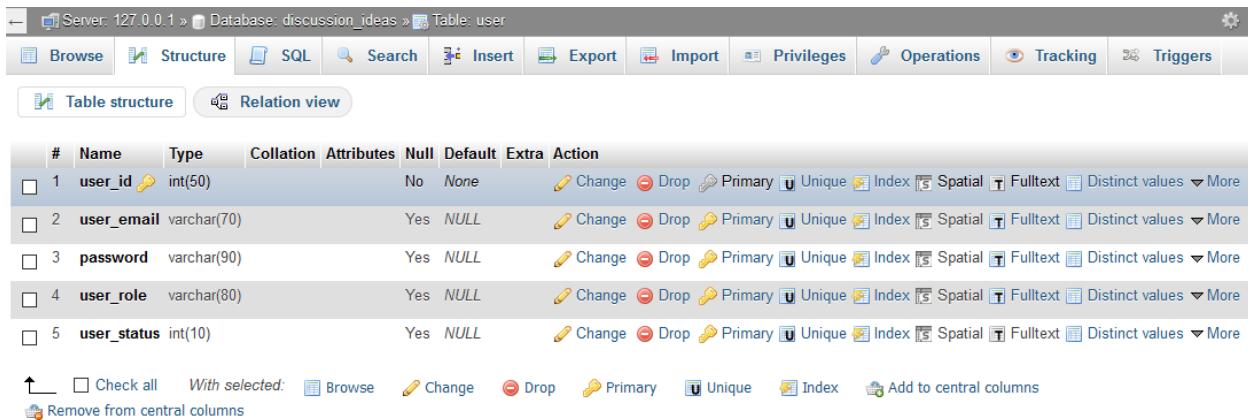


The screenshot shows the MySQL Workbench interface. The top bar displays "Server: 127.0.0.1 » Database: discussion_ideas". Below the bar are tabs for "Structure", "SQL", "Search", "Query", and "Export". The "SQL" tab is active, containing the following code:

```
1 CREATE TABLE `user` (
2     `user_id` int(50) NOT NULL,
3     `user_email` varchar(70) DEFAULT NULL,
4     `password` varchar(90) DEFAULT NULL,
5     `user_role` varchar(80) DEFAULT NULL,
6     `user_status` int(10) DEFAULT NULL,
7     PRIMARY KEY (`user_id`)
8 )
```

Figure 23: Table creation code of user table

Output of table creation code.



The screenshot shows the MySQL Workbench interface with the "Table structure" tab selected for the "user" table. The top bar shows "Server: 127.0.0.1 » Database: discussion_ideas > Table: user". The table structure is displayed in a grid:

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	user_id	int(50)			No	None		Change Drop Primary Unique Index Spatial Fulltext Distinct values More
2	user_email	varchar(70)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Distinct values More
3	password	varchar(90)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Distinct values More
4	user_role	varchar(80)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Distinct values More
5	user_status	int(10)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext Distinct values More

Below the table, there are buttons for "Check all", "With selected:", "Browse", "Change", "Drop", "Primary", "Unique", "Index", "Add to central columns", and "Remove from central columns".

Figure 24: Structure of user table

[For more screenshots will be found in Appendix as well as in repository

https://github.com/mhmohon/the_ultimate/tree/master/Database%20Designer]

4.4) Conceptual Diagram:

Conceptual diagram is the initial diagram before forming actual ERD. The conceptual diagram is given below.

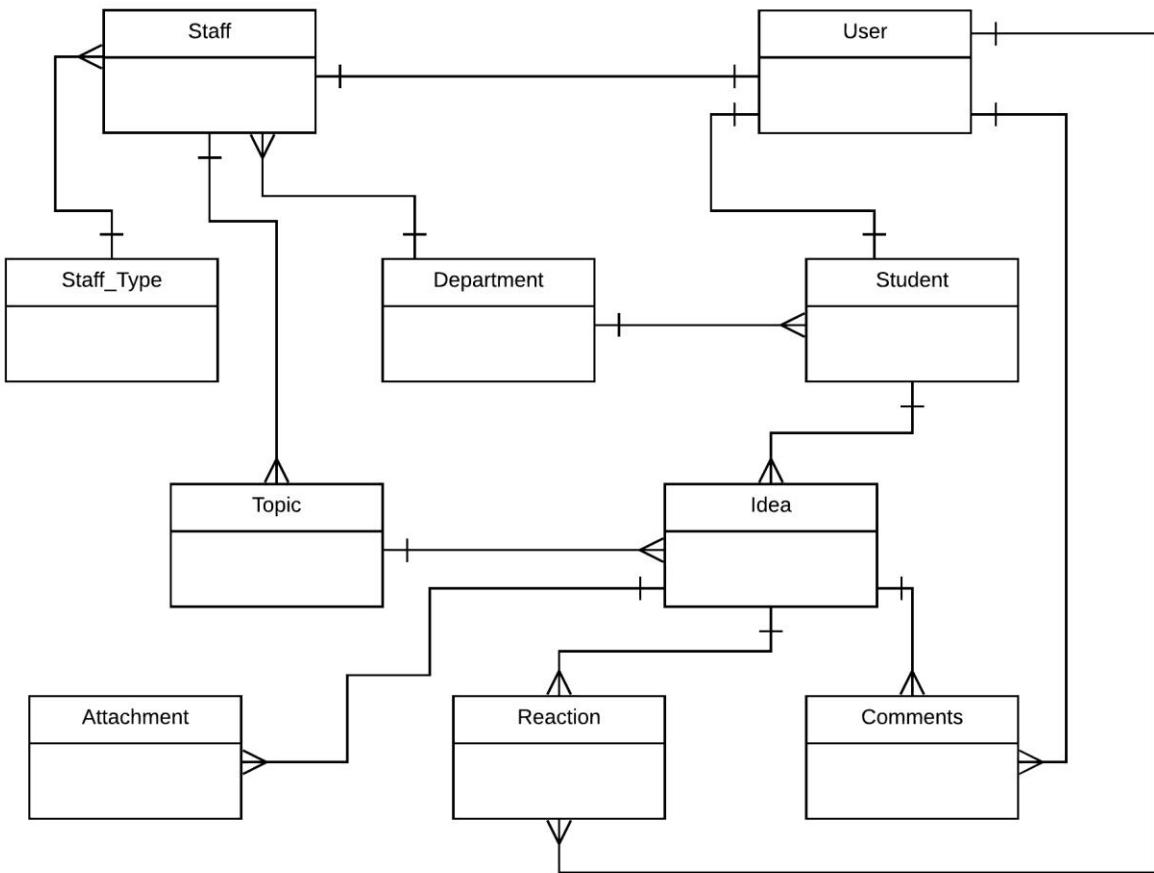


Figure 25: Conceptual diagram of the discussion_idea database system

4.5) EERD Diagram:

Finalized EERD diagram of the database system along with proper relationship and attributes as well as primary and foreign keys.

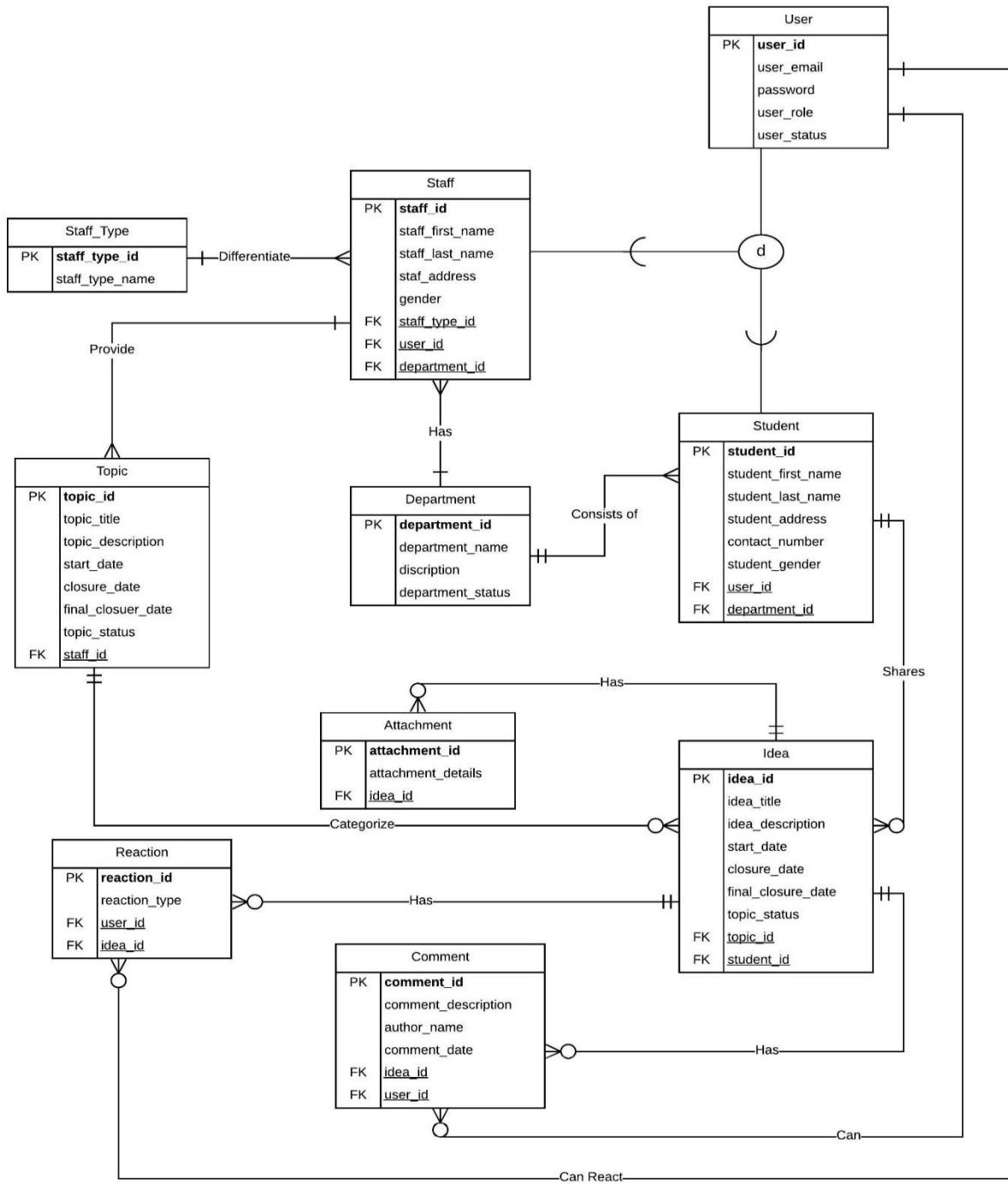


Figure 26: Final EERD Diagram of the proposed database system

4.6) Physical Diagram:

Physical diagram of the proposed system along with attribute, relationship, primary & foreign keys and data type are given below.

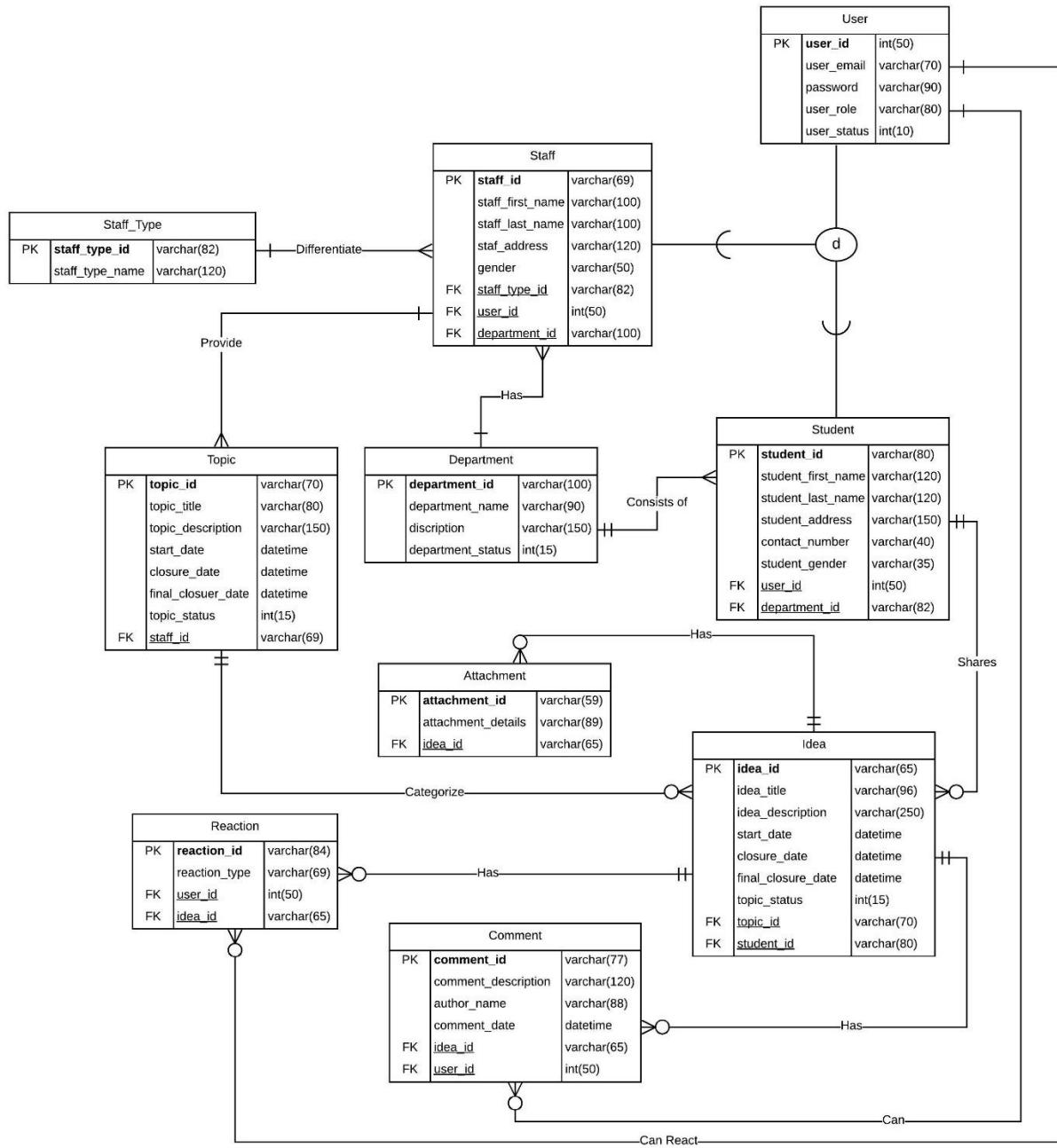


Figure 27: Physical diagram of the database system

4.7) Relational Schema:

Relational schema of the database system along with the relationship, primary and foreign keys are given below.

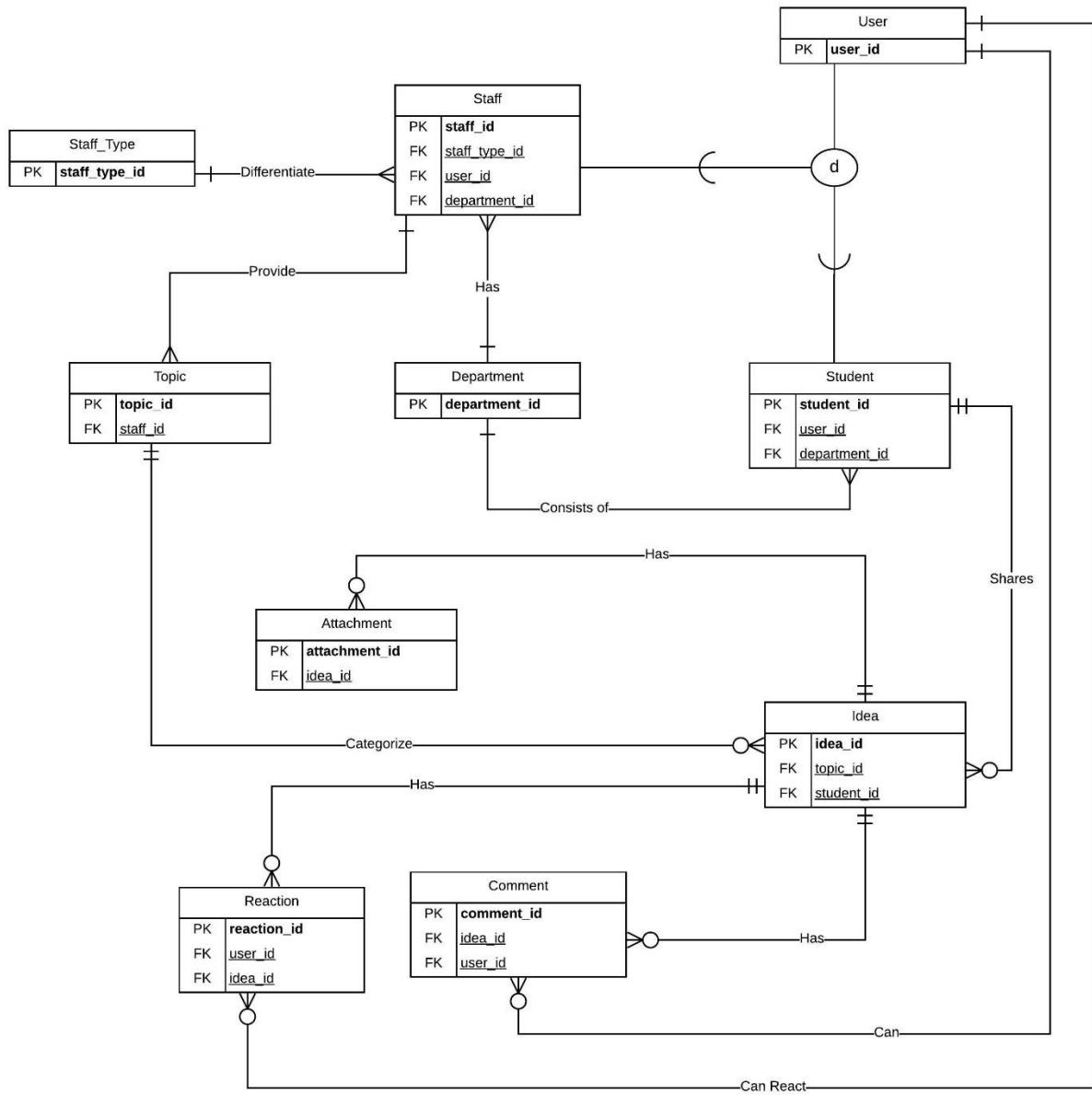


Figure 28: Relational schema of the database system

4.8) Mapping:

The table names of the database system, their attribute name and where the foreign keys goes age being shown through the mapping. It also helps to breakdown the database system properly. Mapping of the database system are given below.

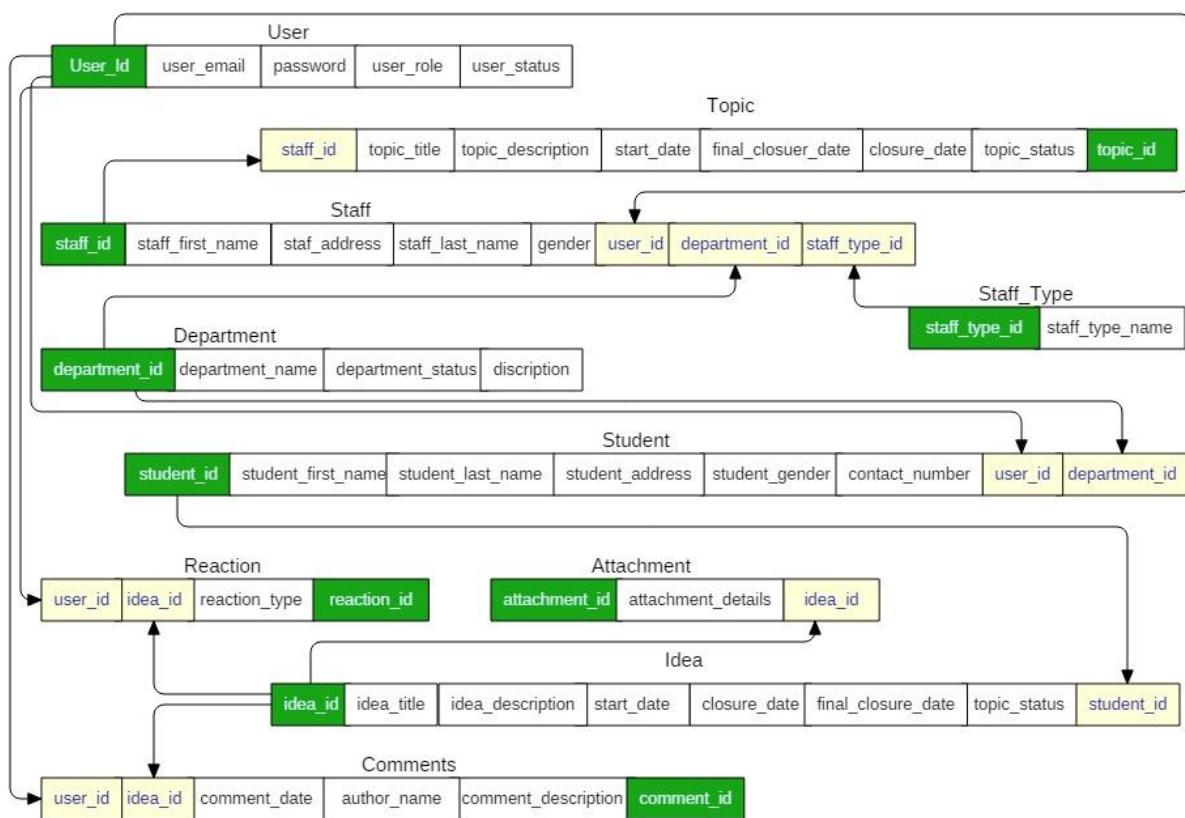


Figure 29: Mapping of the database system

4.9) Summary of self-evaluation:

During the development time I have discussed about all things with my team members which are connected with the system development. I have complete database designing section by discussion with all team members and also try to help everyone in their section of work as it is a group coursework and we are following agile scrum methodology as for development. Also I have attended all the meetings and was connected with the team members till the coursework ended successfully.

4.10) Lesson Learned:

While working on this group coursework for development of an enterprise software I have been taught a lot of thing from my course teacher as well as from my team members. The lesson I have learned from this coursework are given below.

- Designing a proper database system for an enterprise website based on maintaining different types of role.
- Maintaining leadership within the team.
- Working throw helping each other as well as solving problem through proper discussion.
- Sharing important resources with each other.

Also I have learned how to complete a project by following agile scrum. At the time of working by following scrum methodology I have learnt about daily, weekly meeting with my team as well as solving problems including being aware of every type of threats that

could happen. Furthermore I have learned using of product backlog, sprint backlog, user story, burn down chart which help us to use resources properly as well as making plan accurately and effectively in order to complete the whole work within the given time by maintain the priority that the functionality have.

5) Conclusion:

UOG Discussion forum is a subsystem of a large University system. Here in this system the main functionality is to submit ideas against topic including proper evidence if it has any as well as leaving comment and reaction against the ideas. Here I am really thankful to my team because they have given their best effort to successfully complete the whole system as it is required. Without their proper effort it would not be possible to complete the system. Also I am confident about my team that if we get more time then there would be no any further development for the system to do. Also following scrum methodology and attending with team member by maintain schedule to solve problem and discuss about critical section was really enjoyable and it shows an important pathway about working within a team with collaboration. At last it could be said that the coursework was really enjoyable and informative which could be helpful in our future life.

Appendix A:

Data Dictionary:

Department Table:

Attribute	Data Type	Length	Primary	Foreign		Reference
				Key	Key	
department_id	varchar	100	Yes			
department_name	varchar	90				
discription	varchar	150				
department_status	int	15				

Staff Table:

Attribute	Data Type	Length	Primary	Foreign		Reference
				Type	Key	
staff_id	varchar	69	Yes			
staff_first_name	varchar	100				
staff_last_name	varchar	100				
staf_address	varchar	120				
gender	varchar	50				
staff_type_id	varchar	82		Yes		Staff_type
user_id	int	50		Yes		User
department_id	varchar	100		Yes		Department

Student Table:

Attribute	Data	Length	Primary	Foreign	Reference
			Type	Key	Key
student_id	varchar	80	Yes		
student_first_name	varchar	120			
student_last_name	varchar	120			
student_address	varchar	150			
contact_number	varchar	40			
student_gender	varchar	35			
user_id	int	50		Yes	User
department_id	varchar	82		Yes	Department

Topic Table:

Attribute	Data	Length	Primary	Foreign	Reference
			Type	Key	Key
topic_id	varchar	70	Yes		
topic_title	varchar	80			
topic_description	varchar	150			
start_date	datetime				
closure_date	datetime				
final_closuer_date	datetime				
topic_status	int	15			

staff_id	varchar	69		Yes	Staff
----------	---------	----	--	-----	-------

Idea Table:

Attribute	Data Type	Length	Primary	Foreign	Reference
			Key	Key	Table
idea_id	varchar	65	Yes		
idea_title	varchar	96			
idea_description	varchar	250			
start_date	datetime				
closure_date	datetime				
final_closure_date	datetime				
topic_status	int	15			
topic_id	varchar	70		Yes	Topic
student_id	varchar	80		Yes	Student

Attachment Table:

Attribute	Data Type	Length	Primary	Foreign	Reference
			Key	Key	Table
attachment_id	varchar	59	Yes		
attachment_details	varchar	89			
idea_id	varchar	65		Yes	Idea

Comment Table:

Attribute	Data Type	Length	Primary	Foreign	Reference
			Key	Key	Table
comment_id	varchar	77	Yes		
comment_description	varchar	120			
author_name	varchar	88			
comment_date	datetime				
idea_id	varchar	65		Yes	Idea
user_id	int	50		Yes	User

Reaction Table:

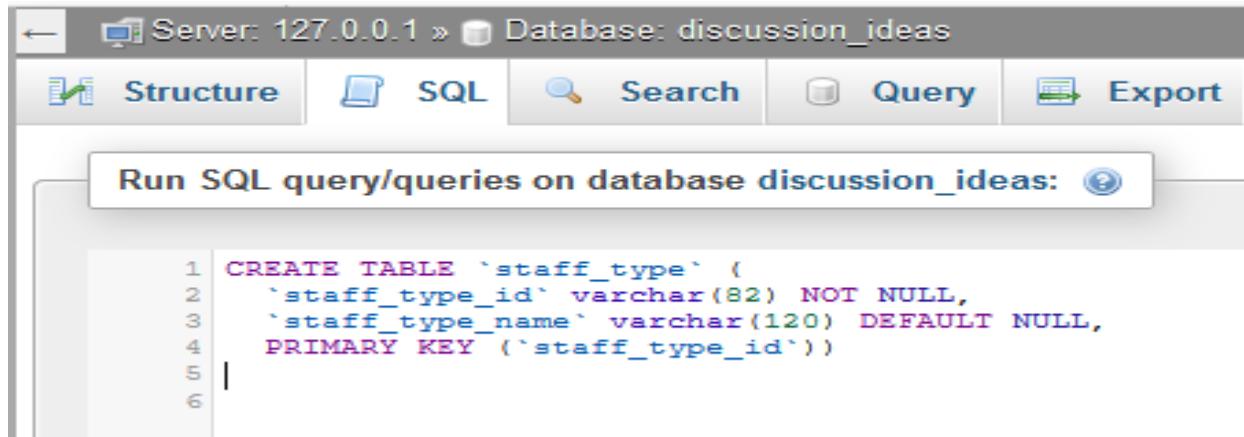
Attribute	Data Type	Length	Primary	Foreign	Reference
			Key	Key	Table
reaction_id	varchar	84	Yes		
reaction_type	varchar	69			
user_id	int	50		Yes	User
idea_id	varchar	65		Yes	Idea

Appendix B:

Table Creation:

Staff_type table:

Table creation code of staff_type table.

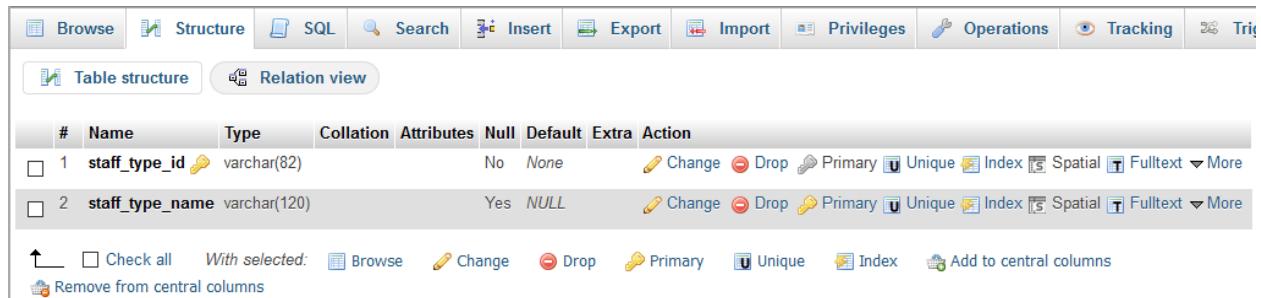


The screenshot shows the MySQL Workbench interface. The title bar indicates the server is 127.0.0.1 and the database is discussion_ideas. The tabs at the top are Structure, SQL, Search, Query, and Export. The SQL tab is active. A large text area below contains the SQL code for creating the staff_type table:

```
1 CREATE TABLE `staff_type` (
2     `staff_type_id` varchar(82) NOT NULL,
3     `staff_type_name` varchar(120) DEFAULT NULL,
4     PRIMARY KEY (`staff_type_id`)
5 )
6
```

Figure 30: Table creation code of Staff_Type Table

Output of table creation code.



The screenshot shows the MySQL Workbench interface with the Table structure tab selected. The table structure is displayed in a grid:

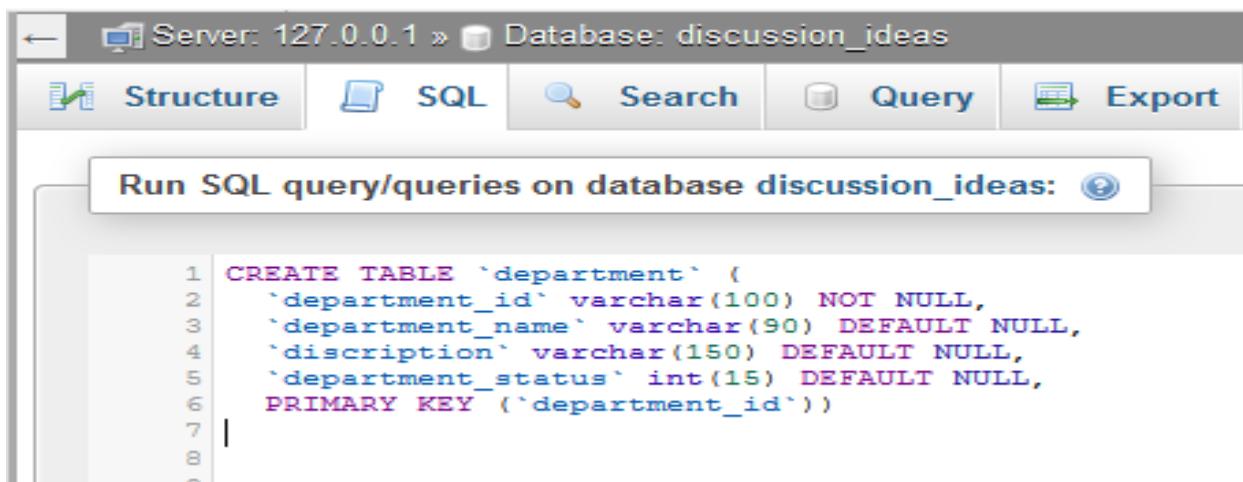
#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
<input type="checkbox"/>	1 staff_type_id	varchar(82)			No	None		Change Drop Primary Unique Index Spatial Fulltext More
<input type="checkbox"/>	2 staff_type_name	varchar(120)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More

Below the grid, there are buttons for Check all, With selected:, Browse, Change, Drop, Primary, Unique, Index, Add to central columns, and Remove from central columns.

Figure 31: Structure of Staff_Type table

Department table:

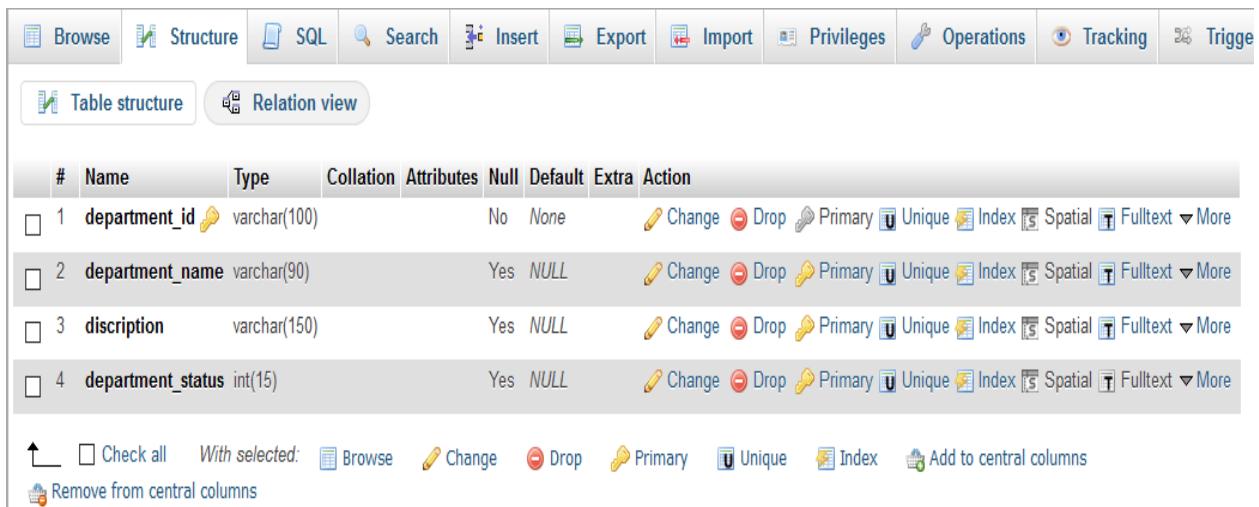
Table creation code of department table.



```
1 CREATE TABLE `department` (
2     `department_id` varchar(100) NOT NULL,
3     `department_name` varchar(90) DEFAULT NULL,
4     `description` varchar(150) DEFAULT NULL,
5     `department_status` int(15) DEFAULT NULL,
6     PRIMARY KEY (`department_id`)
7
8
9
```

Figure 32: Table creation code of department table

Output of table creation code.



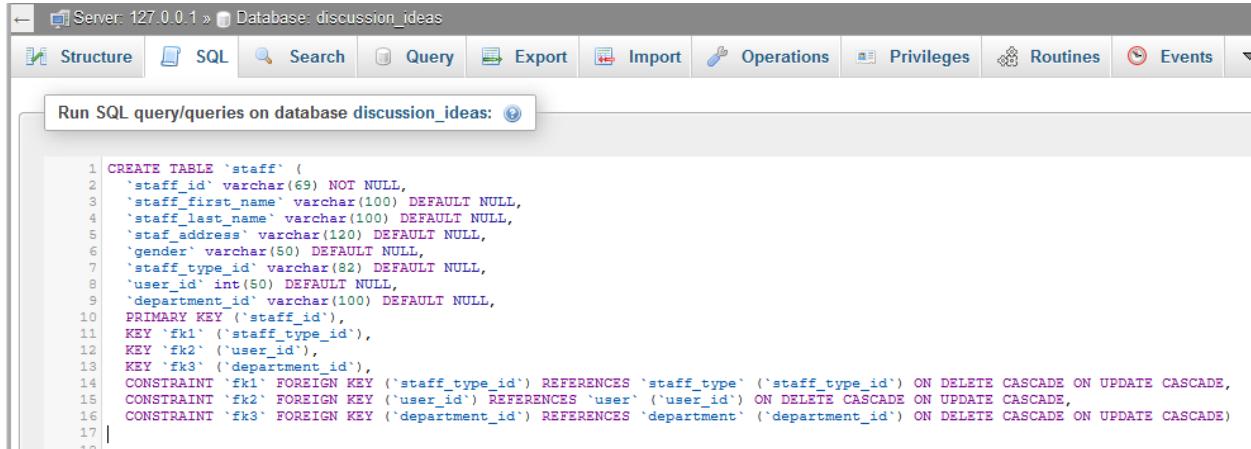
#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	department_id	varchar(100)			No	None		Change Drop Primary Unique Index Spatial Fulltext More
2	department_name	varchar(90)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
3	description	varchar(150)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
4	department_status	int(15)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More

Check all With selected: Browse Change Drop Primary Unique Index Add to central columns
 Remove from central columns

Figure 33: Structure of department table

Staff table:

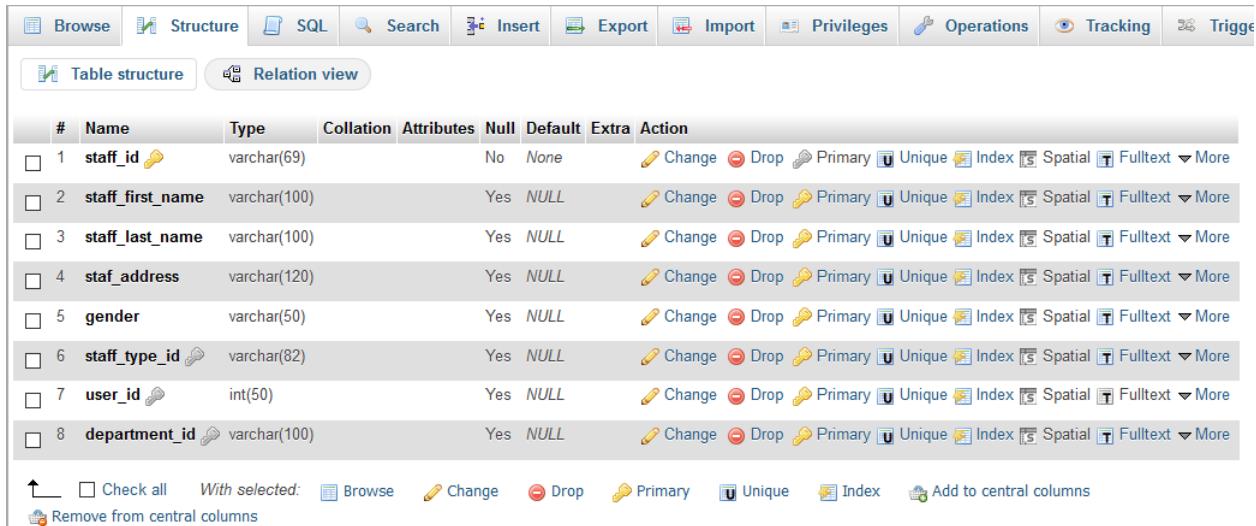
Table creation code of Staff table.



```
1 CREATE TABLE `staff` (
2   `staff_id` varchar(69) NOT NULL,
3   `staff_first_name` varchar(100) DEFAULT NULL,
4   `staff_last_name` varchar(100) DEFAULT NULL,
5   `staf_address` varchar(120) DEFAULT NULL,
6   `gender` varchar(50) DEFAULT NULL,
7   `staff_type_id` varchar(82) DEFAULT NULL,
8   `user_id` int(50) DEFAULT NULL,
9   `department_id` varchar(100) DEFAULT NULL,
10  PRIMARY KEY (`staff_id`),
11  KEY `fk1` (`staff_type_id`),
12  KEY `fk2` (`user_id`),
13  KEY `fk3` (`department_id`),
14  CONSTRAINT `fk1` FOREIGN KEY (`staff_type_id`) REFERENCES `staff_type` (`staff_type_id`) ON DELETE CASCADE ON UPDATE CASCADE,
15  CONSTRAINT `fk2` FOREIGN KEY (`user_id`) REFERENCES `user` (`user_id`) ON DELETE CASCADE ON UPDATE CASCADE,
16  CONSTRAINT `fk3` FOREIGN KEY (`department_id`) REFERENCES `department` (`department_id`) ON DELETE CASCADE ON UPDATE CASCADE)
17 |
18 |
```

Figure 34: Table creation code of staff table

Output of Staff table.



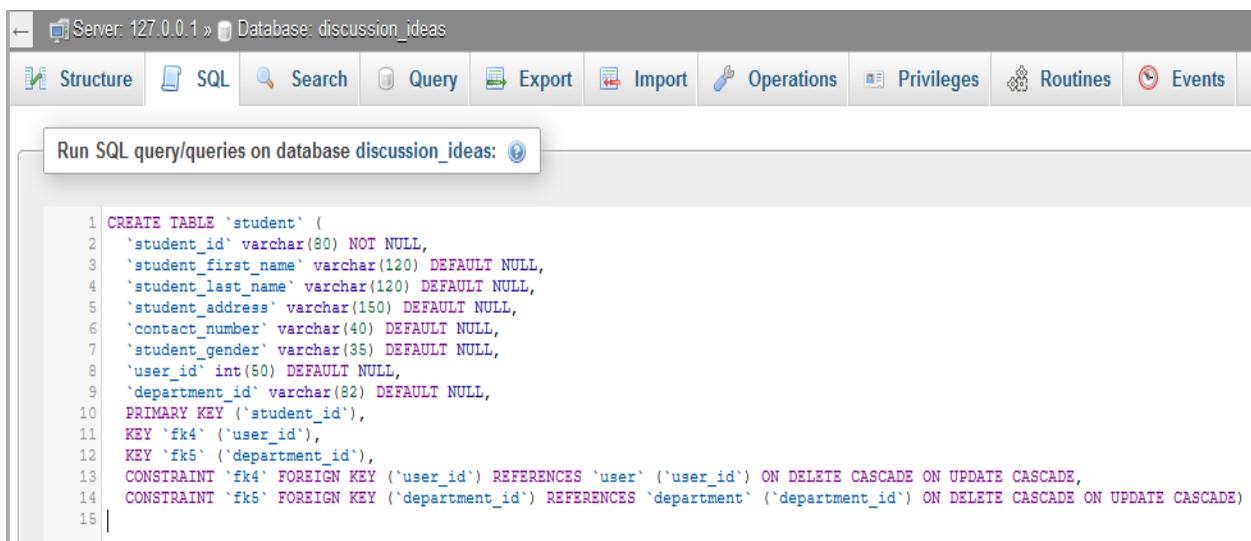
#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	staff_id	varchar(69)			No	None		Change Drop Primary Unique Index Spatial Fulltext More
2	staff_first_name	varchar(100)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
3	staff_last_name	varchar(100)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
4	staf_address	varchar(120)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
5	gender	varchar(50)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
6	staff_type_id	varchar(82)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
7	user_id	int(50)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
8	department_id	varchar(100)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More

Check all With selected: Browse Change Drop Primary Unique Index Add to central columns
 Remove from central columns

Figure 35: Structure of staff table

Student table:

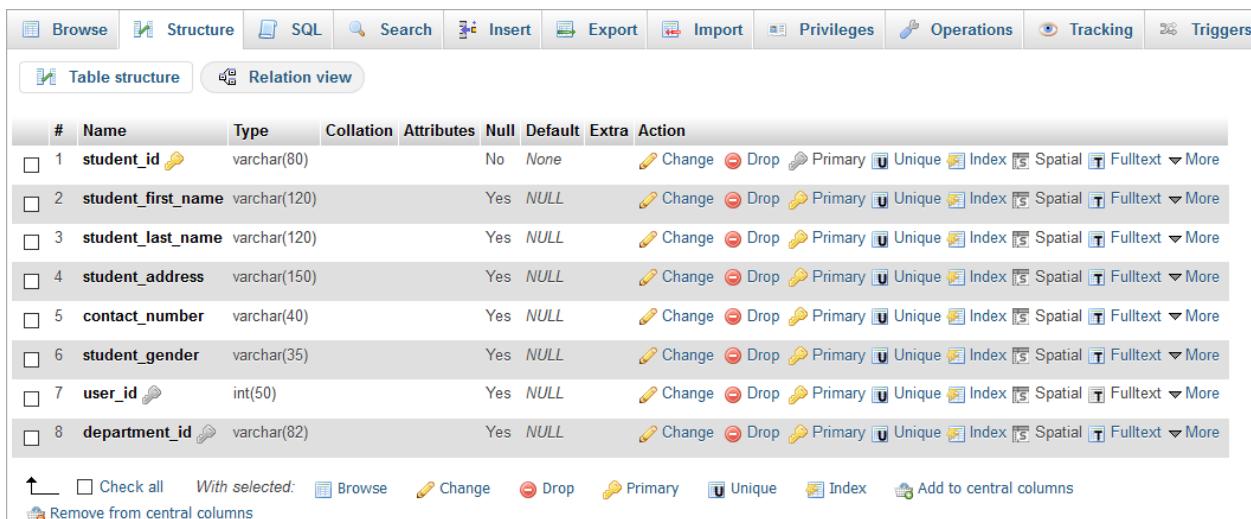
Table creation code of student table



```
1 CREATE TABLE `student` (
2     `student_id` varchar(80) NOT NULL,
3     `student_first_name` varchar(120) DEFAULT NULL,
4     `student_last_name` varchar(120) DEFAULT NULL,
5     `student_address` varchar(150) DEFAULT NULL,
6     `contact_number` varchar(40) DEFAULT NULL,
7     `student_gender` varchar(35) DEFAULT NULL,
8     `user_id` int(50) DEFAULT NULL,
9     `department_id` varchar(82) DEFAULT NULL,
10    PRIMARY KEY (`student_id`),
11    KEY `fk4` (`user_id`),
12    KEY `fk5` (`department_id`),
13    CONSTRAINT `fk4` FOREIGN KEY (`user_id`) REFERENCES `user` (`user_id`) ON DELETE CASCADE ON UPDATE CASCADE,
14    CONSTRAINT `fk5` FOREIGN KEY (`department_id`) REFERENCES `department` (`department_id`) ON DELETE CASCADE ON UPDATE CASCADE)
15 |
```

Figure 36: Table creation code of student table

Output of student table.



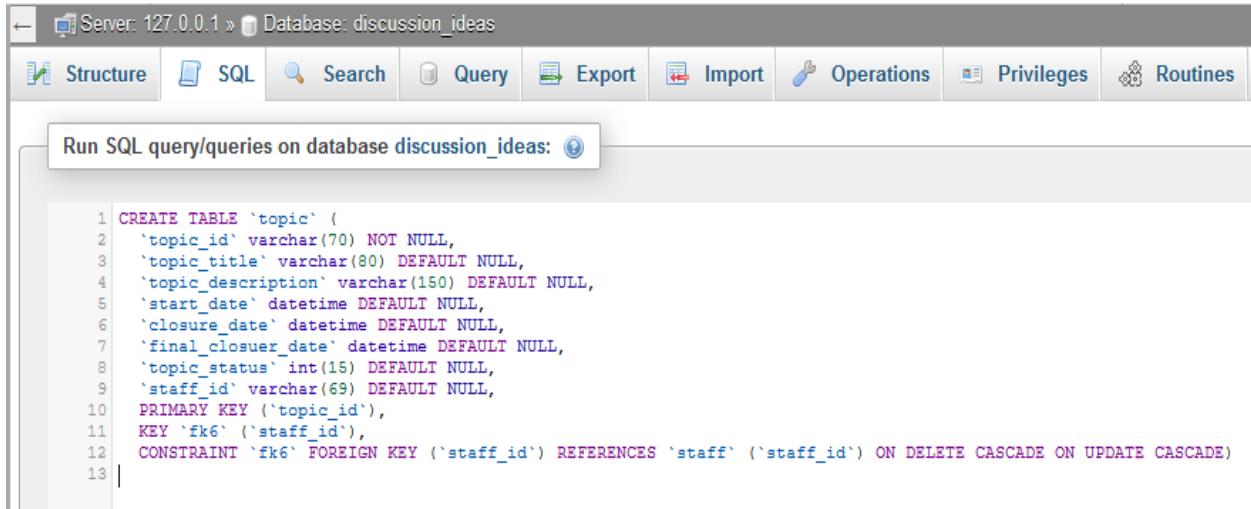
#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	student_id	varchar(80)			No	None		Change Drop Primary Unique Index Spatial Fulltext More
2	student_first_name	varchar(120)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
3	student_last_name	varchar(120)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
4	student_address	varchar(150)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
5	contact_number	varchar(40)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
6	student_gender	varchar(35)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
7	user_id	int(50)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
8	department_id	varchar(82)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More

Check all With selected: Browse Change Drop Primary Unique Index Add to central columns
 Remove from central columns

Figure 37: Structure of student table

Topic table:

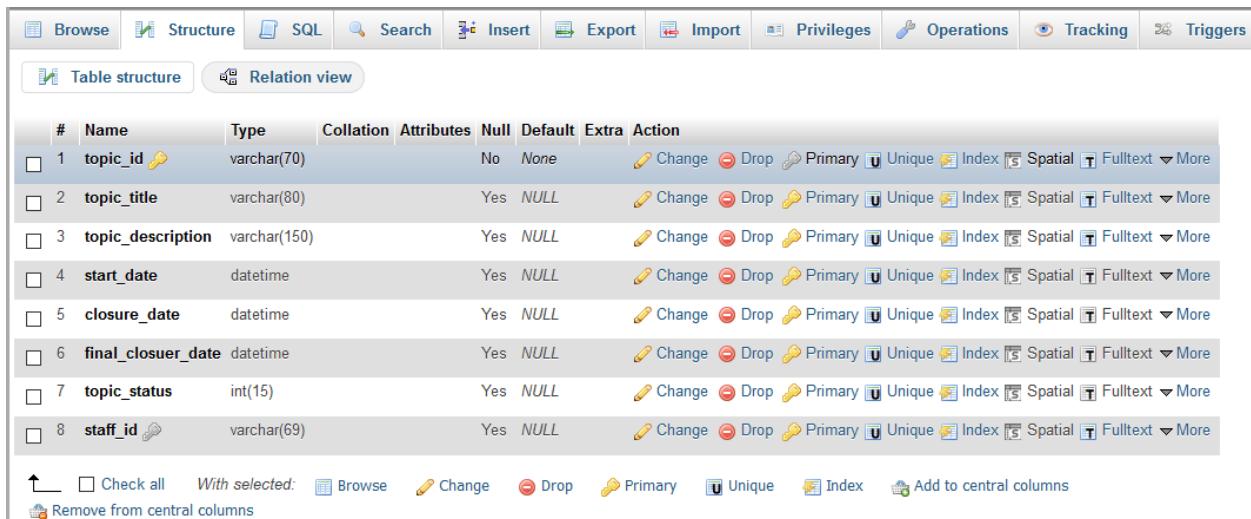
Table creation code of topic table.



```
1 CREATE TABLE `topic` (
2     `topic_id` varchar(70) NOT NULL,
3     `topic_title` varchar(80) DEFAULT NULL,
4     `topic_description` varchar(150) DEFAULT NULL,
5     `start_date` datetime DEFAULT NULL,
6     `closure_date` datetime DEFAULT NULL,
7     `final_closuer_date` datetime DEFAULT NULL,
8     `topic_status` int(15) DEFAULT NULL,
9     `staff_id` varchar(69) DEFAULT NULL,
10    PRIMARY KEY (`topic_id`),
11    KEY `fk6` (`staff_id`),
12    CONSTRAINT `fk6` FOREIGN KEY (`staff_id`) REFERENCES `staff` (`staff_id`) ON DELETE CASCADE ON UPDATE CASCADE)
13 |
```

Figure 38: Table creation code of topic table

Output of topic table.

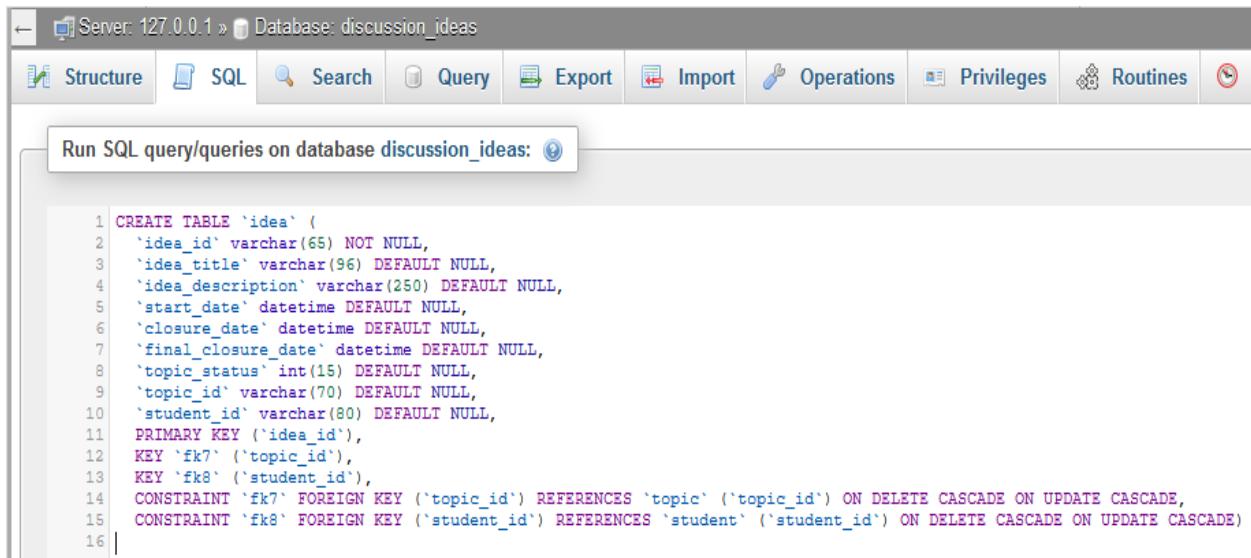


#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	topic_id	varchar(70)			No	None		
2	topic_title	varchar(80)			Yes	NULL		
3	topic_description	varchar(150)			Yes	NULL		
4	start_date	datetime			Yes	NULL		
5	closure_date	datetime			Yes	NULL		
6	final_closuer_date	datetime			Yes	NULL		
7	topic_status	int(15)			Yes	NULL		
8	staff_id	varchar(69)			Yes	NULL		

Figure 39: Structure of topic table

Idea table:

Table creation code of idea table.



```
1 CREATE TABLE `idea` (
2     `idea_id` varchar(65) NOT NULL,
3     `idea_title` varchar(96) DEFAULT NULL,
4     `idea_description` varchar(250) DEFAULT NULL,
5     `start_date` datetime DEFAULT NULL,
6     `closure_date` datetime DEFAULT NULL,
7     `final_closure_date` datetime DEFAULT NULL,
8     `topic_status` int(15) DEFAULT NULL,
9     `topic_id` varchar(70) DEFAULT NULL,
10    `student_id` varchar(80) DEFAULT NULL,
11    PRIMARY KEY (`idea_id`),
12    KEY `fk7` (`topic_id`),
13    KEY `fk8` (`student_id`),
14    CONSTRAINT `fk7` FOREIGN KEY (`topic_id`) REFERENCES `topic` (`topic_id`) ON DELETE CASCADE ON UPDATE CASCADE,
15    CONSTRAINT `fk8` FOREIGN KEY (`student_id`) REFERENCES `student` (`student_id`) ON DELETE CASCADE ON UPDATE CASCADE)
16 |
```

Figure 40: Table creation code of idea table

Output of table creation code.



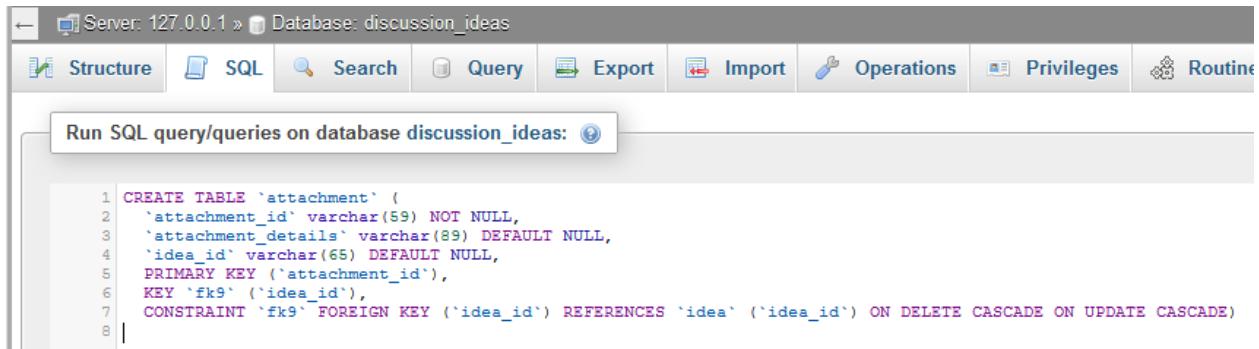
#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	idea_id	varchar(65)			No	None		Change Drop Primary Unique Index Spatial Fulltext More
2	idea_title	varchar(96)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
3	idea_description	varchar(250)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
4	start_date	datetime			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
5	closure_date	datetime			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
6	final_closure_date	datetime			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
7	topic_status	int(15)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
8	topic_id	varchar(70)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
9	student_id	varchar(80)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More

Check all With selected: Browse Change Drop Primary Unique Index Add to central columns
 Remove from central columns

Figure 41: Structure of idea table

Attachment table:

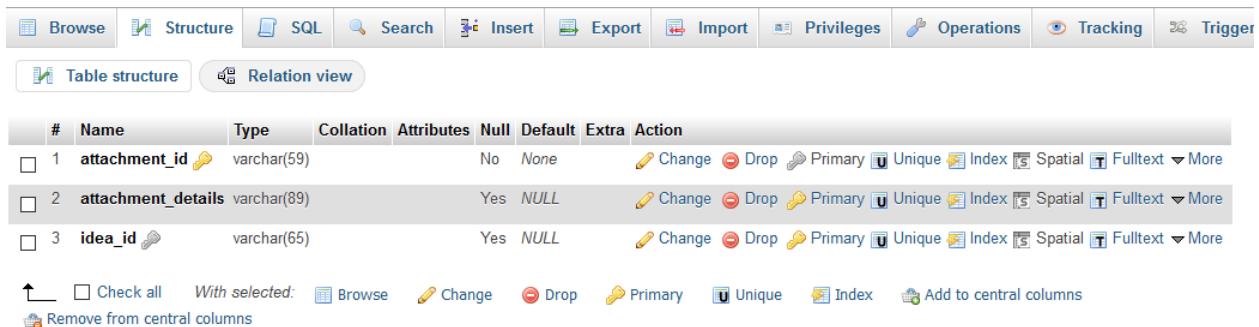
Table creation code of attachment table.



```
CREATE TABLE `attachment` (
  `attachment_id` varchar(59) NOT NULL,
  `attachment_details` varchar(89) DEFAULT NULL,
  `idea_id` varchar(65) DEFAULT NULL,
  PRIMARY KEY (`attachment_id`),
  KEY `fk9` (`idea_id`),
  CONSTRAINT `fk9` FOREIGN KEY (`idea_id`) REFERENCES `idea` (`idea_id`) ON DELETE CASCADE ON UPDATE CASCADE)
```

Figure 42: Table creation code of attachment table

Output of table creation code.



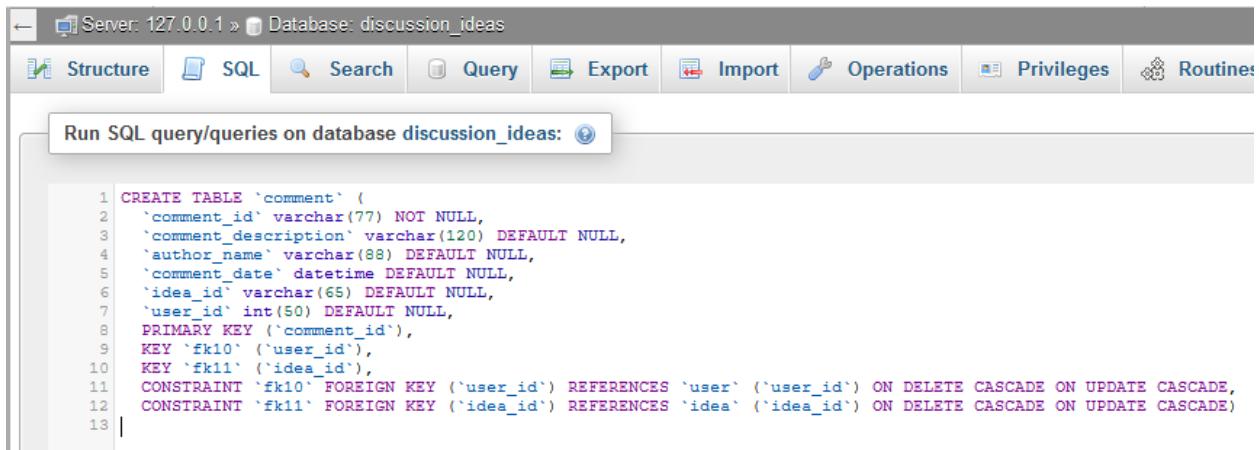
#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	attachment_id	varchar(59)			No	None		Change Drop Primary Unique Index Spatial Fulltext More
2	attachment_details	varchar(89)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
3	idea_id	varchar(65)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More

Check all With selected: Browse Change Drop Primary Unique Index Add to central columns
 Remove from central columns

Figure 43: Structure of attachment table

Comment Table:

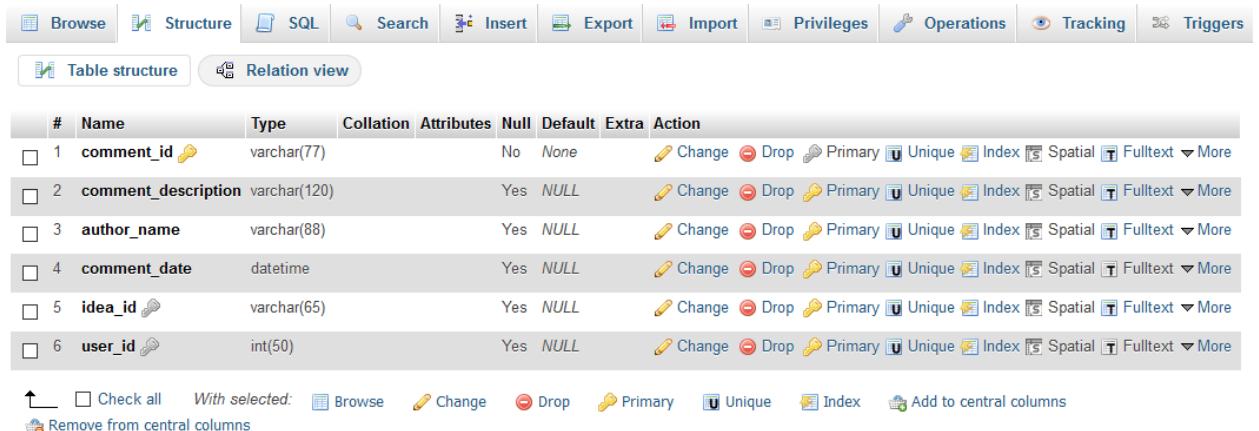
Table creation code of comment table.



```
1 CREATE TABLE `comment` (
2     `comment_id` varchar(77) NOT NULL,
3     `comment_description` varchar(120) DEFAULT NULL,
4     `author_name` varchar(88) DEFAULT NULL,
5     `comment_date` datetime DEFAULT NULL,
6     `idea_id` varchar(65) DEFAULT NULL,
7     `user_id` int(50) DEFAULT NULL,
8     PRIMARY KEY (`comment_id`),
9     KEY `fk10` (`user_id`),
10    KEY `fk11` (`idea_id`),
11    CONSTRAINT `fk10` FOREIGN KEY (`user_id`) REFERENCES `user` (`user_id`) ON DELETE CASCADE ON UPDATE CASCADE,
12    CONSTRAINT `fk11` FOREIGN KEY (`idea_id`) REFERENCES `idea` (`idea_id`) ON DELETE CASCADE ON UPDATE CASCADE
13 )
```

Figure 44: Table creation code of comment table

Output of table creation code.



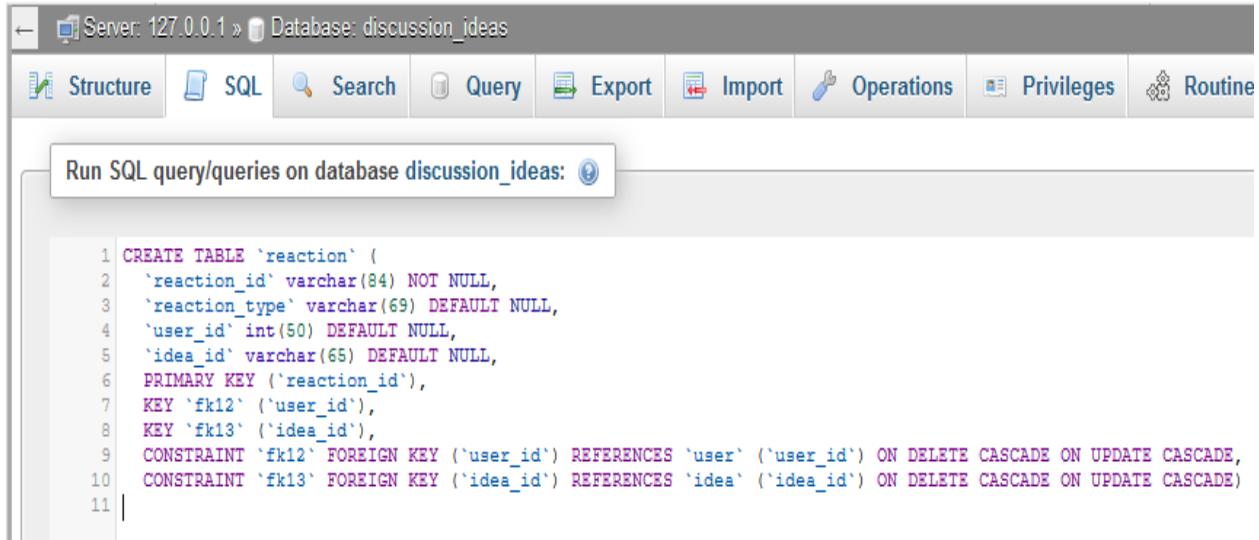
#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	comment_id	varchar(77)			No	None		<input type="button" value="Change"/> <input type="button" value="Drop"/> <input type="button" value="Primary"/> <input type="button" value="Unique"/> <input type="button" value="Index"/> <input type="button" value="Spatial"/> <input type="button" value="Fulltext"/> <input type="button" value="More"/>
2	comment_description	varchar(120)			Yes	NULL		<input type="button" value="Change"/> <input type="button" value="Drop"/> <input type="button" value="Primary"/> <input type="button" value="Unique"/> <input type="button" value="Index"/> <input type="button" value="Spatial"/> <input type="button" value="Fulltext"/> <input type="button" value="More"/>
3	author_name	varchar(88)			Yes	NULL		<input type="button" value="Change"/> <input type="button" value="Drop"/> <input type="button" value="Primary"/> <input type="button" value="Unique"/> <input type="button" value="Index"/> <input type="button" value="Spatial"/> <input type="button" value="Fulltext"/> <input type="button" value="More"/>
4	comment_date	datetime			Yes	NULL		<input type="button" value="Change"/> <input type="button" value="Drop"/> <input type="button" value="Primary"/> <input type="button" value="Unique"/> <input type="button" value="Index"/> <input type="button" value="Spatial"/> <input type="button" value="Fulltext"/> <input type="button" value="More"/>
5	idea_id	varchar(65)			Yes	NULL		<input type="button" value="Change"/> <input type="button" value="Drop"/> <input type="button" value="Primary"/> <input type="button" value="Unique"/> <input type="button" value="Index"/> <input type="button" value="Spatial"/> <input type="button" value="Fulltext"/> <input type="button" value="More"/>
6	user_id	int(50)			Yes	NULL		<input type="button" value="Change"/> <input type="button" value="Drop"/> <input type="button" value="Primary"/> <input type="button" value="Unique"/> <input type="button" value="Index"/> <input type="button" value="Spatial"/> <input type="button" value="Fulltext"/> <input type="button" value="More"/>

Check all With selected:

Figure 45: Structure of comment table

Reaction table:

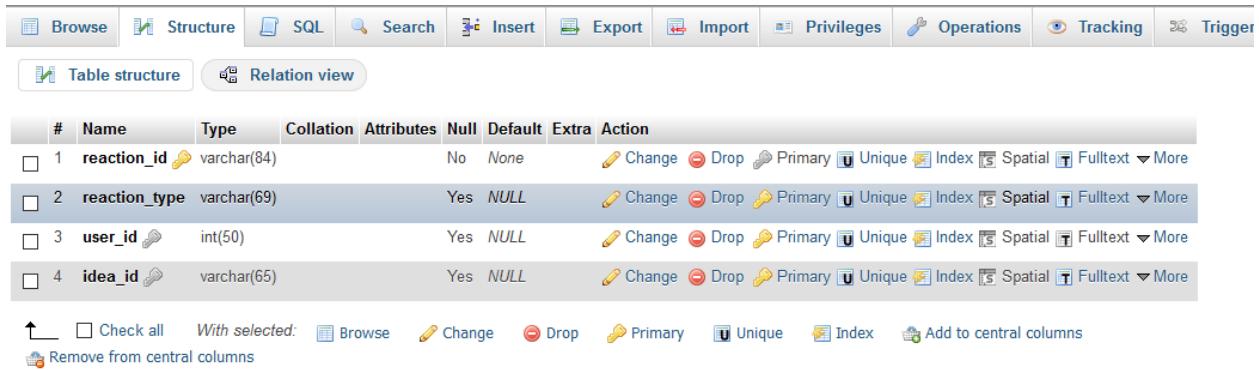
Table creation code of reaction table.



```
1 CREATE TABLE `reaction` (
2     `reaction_id` varchar(84) NOT NULL,
3     `reaction_type` varchar(69) DEFAULT NULL,
4     `user_id` int(50) DEFAULT NULL,
5     `idea_id` varchar(65) DEFAULT NULL,
6     PRIMARY KEY (`reaction_id`),
7     KEY `fk12` (`user_id`),
8     KEY `fk13` (`idea_id`),
9     CONSTRAINT `fk12` FOREIGN KEY (`user_id`) REFERENCES `user` (`user_id`) ON DELETE CASCADE ON UPDATE CASCADE,
10    CONSTRAINT `fk13` FOREIGN KEY (`idea_id`) REFERENCES `idea` (`idea_id`) ON DELETE CASCADE ON UPDATE CASCADE)
11
```

Figure 46: Table creation code of reaction table

Output of table creation code.



#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	reaction_id	varchar(84)			No	None		Change Drop Primary Unique Index Spatial Fulltext More
2	reaction_type	varchar(69)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
3	user_id	int(50)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More
4	idea_id	varchar(65)			Yes	NULL		Change Drop Primary Unique Index Spatial Fulltext More

Check all With selected: Browse Change Drop Primary Unique Index Add to central columns
 Remove from central columns

Figure 47: Structure of reaction table