



# Summer Fellowship Report

On

**Django/Python**

Submitted by

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Under the guidance of

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# Acknowledgment

The fellowship opportunity I had with FOSSEE IIT Bombay was a great chance for me to learn and experience professional software development. Therefore, I consider myself as a very lucky individual to have been provided with such a wonderful opportunity.

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I perceive this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and will continue to work on their improvement, in order to attain desired career objectives. I also hope to continue cooperation with all of you in the future.

Sincerely,  
Priyansh Garg

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# Chapter 1

## Introduction

FOSSEE (Free and Open Source Software in Education) project promotes the use of free and open-source tools to improve the quality of education in our country. They aim to reduce dependency on proprietary software in educational institutions. They encourage the use of FOSS tools through various activities to ensure that commercial software is replaced by equivalent FOSS tools. They also develop new FOSS tools and upgrade existing tools to meet requirements in academia and research. Incorporated to FOSSEE program, this fellowship's main aim is to introduce students to the FOSS in various engineering fields and to become a part of this big community.

As part of the fellowship program, I was assigned the task of fixing existing bugs and introduce some new features on the website of [FOSSEE Forums](#). FOSSEE Forums website is built on Django Web Framework of Python.

### 1.1 Django

Django is a Python-based free and open-source web framework that follows the model-template-view (MTV) architectural pattern and enables rapid development of secure and maintainable websites. It is maintained by the Django Software Foundation (DSF).

Django is really awesome at building dynamic website really fast. It has default admin section to handle the database easily. It has Magical ORM(Object Relational Mapper) and provides better security.

### 1.2 FOSSEE Forums

FOSSEE Forums is a website where users can discuss questions on different topics and get responses from other users and FOSSEE Experts in the form of Answers and Comments.

FOSSEE Forums operates in three different modes:

### 1.2.1 Moderator Mode

- Moderator can edit the question, answer and comment of his category through Moderator panel.
- Moderator can also delete or restore them and mark them as Spam or Non-Spam.
- Moderator can ask questions, submit an answer and post a comment through his user panel.
- Moderators can only maintain the content posted on categories assigned to them by System Admin.
- System Admin can also make a user as Super Moderator who can maintain all the categories on the Forums.

### 1.2.2 User Mode

- Users can ask questions, submit answers on already posted questions or post comments on the answers.
- Users can also edit or delete questions, answers and comments posted by them with some restrictions.

### 1.2.3 Anonymous User Mode

- Anonymous Users (non-logged in users) can only *view* the questions, answers and comments posted on the forum.
- They cannot post any answers or comments or ask questions on the forum.

# Chapter 2

## Bug Fixes

### 2.1 Replacing ‘MODERATOR\_ACTIVATED’ settings variable with sessions variable

**Problem:**

Navbar sometimes shows ‘AnonymousUser’ as username on the questions page if the user is not logged in and any user can see the options and features restricted to Moderators only if a Moderator recently accessed the Moderator Panel.

This problem aroused due to the use of a settings variable for defining if Moderator Panel is activated or not. As settings variables are common to all the users using the site, changing the value of the variable affects all the users using the site at the time.

**Solution:**

The problem is solved using a sessions variable instead of settings variable for defining the if the Moderator Panel is activated or not.

A sessions variable named ‘MODERATOR\_ACTIVATED’ is created as soon as a user logs into the site with a default value of False and deleted as the user logs out. Thus, no sessions variable for anonymous user.

Also, the session variable can be set as True only if the user is a moderator of at least one category, so the Moderator features can never be accessed by a non-moderator or an anonymous user.

### 2.2 Comments on a Spam answer are not blurred

**Problem:**

Answer is checked for Spam only while displaying answer body and not while displaying the comments.

**Solution:**

Every time an answer turns out to be a spam, a value 'blur' (a class name in CSS for displaying contents as blurred) is stored in a variable named 'blur' and used in the class attribute of that answer and all its comments.

## 2.3 Users can access Spam Questions

**Problem:**

Users were able to access Spam Questions by sending GET Request to the server.

**Solution:**

Server now throws a Http404 exception when anyone (other than moderator) tries to access a question marked as spam.

## 2.4 No '404 Not Found' template

**Problem:**

Whenever a Http404 exception is raised, the server renders the default Not Found page.

**Solution:**

A 404.html template is created at the top-level of the template tree so that it can be rendered whenever a Http404 exception occurs instead of server's default page.

## 2.5 Added 'Cancel' Button while Editing a Comment

**Problem:**

Cannot close the CKEditor once opened while editing a comment.

**Solution:**

Added a 'Cancel' Button to cancel comment editing and close the CKEditor.

## 2.6 Styling Issues in Buttons

Improved the styling of 'Add Comment', 'Post Comment', 'Cancel Comment' and 'Login to Add Comment' buttons.



## 2.7 Text Area rendered instead of CKEditor

### Problem:

While editing an answer with Moderator Panel activated, sometimes Text Area was being rendered in the template instead of CKEditor as answer.id used as the ids of the text areas (to be rendered as CKEditor) used to edit answers sometimes overlapped with comment.id used as the ids of text areas used for editing comments. Due to this, either the comment's text area was rendered as CKEditor or the answer's text area.

### Solution:

Answer's text area ids are now prefixed with 'ate' and while comment's are prefixed with 'cte' so that they no longer overlap now and the CKEditor is now rendered for all answers and comments.

## 2.8 CKEditor opening in vain for first comment

### Problem:

An instance of CKEditor was opening in vain for the first comment on the site which showed some random text and wasn't allowing the author to edit the comment. The problem was with the 'id' attribute of the div enclosing the contents of the form for "Edit Comment" feature which was taking the value as "editor1" for the first comment due to which an instance of the CKEditor was getting created automatically for that div and wasn't allowing any other instances to be created for actually editing the answer.

### Solution:

Added "c" as the prefix in the id attribute of that div so that the div for the first comment is now rendered with the id as "ceditor1" and for all other comments as

```
ceditor{{ comment.id }} .
```

## 2.9 Answer Author not able to delete their answer

### Problem:

Answer is not marked as inactive if anyone other than a Moderator does so.

### Solution:

Answer can now be marked as spam by Answer Author.

## 2.10 Questions, Answers and Comments can be deleted by sending GET Requests

### Problem:

A User (Author or Moderator) can delete a question, answer or comment by sending a GET Request to the server (by directly entering a URL)

### Solution:

Sending GET Requests for deleting a question, answer or comment now renders get-requests-not-allowed template instead of deleting the content.

## 2.11 Restoring a Question restores all its answers and comments (even deleted ones)

### Problem:

While deleting a question, all its answers and comments are marked as deleted. So, when the question is restored, all its answers and comments are restored too.

### Solution:

Deleting a question no longer marks its answers and comments as deleted. Instead, access to deleted question's answers and comments has been restricted. So, when the question is restored, its answers and comments are not touched.

## 2.12 Restoring an Answer restores all its Comments

### Problem:

When an answer is deleted, all its comments are also marked as deleted. So, when the answer is restored, all its comments are also restored along.

### Solution:

Comments are no longer marked as deleted while deleting an answer. So, restoring an answer do not require to restore any comments.

## 2.13 Moved Email Body from views to separate templates

### Problem:

Email Body was present in the views functions which was causing repetition of same email body with few changes at multiple places and any changes needed to be applied at multiple places.

### Solution:

Moved the Email Body to separate html templates, one template for similar email bodies.

## 2.14 Separate functions to send Emails

Created a separate function for sending emails which takes mandatory arguments as subject, plain message, html message, from, to and optional arguments as bcc, cc and reply\_to and sends the same email to everyone. In this case, all the recipients of the email will be able to see the email ids of all other recipients in 'to' and 'cc' list.

Created another function for sending emails to everyone in the 'to' list individually so that the recipients of the email will be able to see only their email id in the details of the email. It takes mandatory arguments as subject, plain message, html message, from, to and optional arguments as reply\_to.

## 2.15 Added 'Cancel' Button while Editing an Answer

### Problem:

Cannot close the CKEditor once opened while editing an Answer.

### Solution:

Added a 'Cancel' Button to cancel answer editing and close the CKEditor.

## 2.16 Question count on Home Page includes Spam Questions

Fixed the issue by adding `is_spam=False` filter in the respective template filter.

## **2.17 Answer Count on various pages includes Spam Answers**

Fixed the issue by making requires changes changes to respective templates and template filters.

## **2.18 Spam Questions not accessible to its authors**

### **Problem:**

Whenever a question is classified as spam, its author is redirected to the Home Page unnotified and can no longer access the question or edit it.

### **Solution:**

Question Authors can now access their questions classified as spam with a note “Oops! Looks like spam! Waiting for moderator approval” and can also update or delete them but cannot post an answer on them.

Also, Spam Questions will be visible to their authors on their profile with a red colored title to distinguish between genuine and spam questions.

## **2.19 Moderators can see Questions/Answers of all categories of User Profile**

### **Problem:**

With Moderator Panel activated, moderators can see the Questions/Answers of all categories authored by a user on his/her profile.

### **Solution:**

Added a filter in accounts view profile view to filter out Questions and Answers of all categories which a moderator does not moderate.

## **2.20 Moderators cannot distinguish Spam/Deleted Questions/Answers from genuine ones on User Profiles**

### **Problem:**

The Spam or Deleted Questions/Answers on User Profiles appear the same as genuine ones.

**Solution:**

The title of Spam and Deleted Questions and answers are now styled with Red color to distinguish them from genuine Question/Answers.

## 2.21 Moderator Questions Page accessible even without activating Moderator Panel

Moderator is now redirected to normal Questions Page if Moderator tries to access Moderator Questions Page without activating the Moderator Panel.

## 2.22 Moderator Panel Navbar not available on Not-Authorized Page

**Problem:**

Not-Authorized Page do not display Moderator Panel Navbar if Moderator Panel is activated.

**Solution:**

Added Moderator Panel Navbar to the Not-Authorized template.

## 2.23 Super Moderator have very limited access

**Problem:**

Super Moderator cannot access the Question Page and have very limited access on the site.

**Solution:**

Super Moderator can now access and control all Questions, Answers and Comments on the entire site, *except for the hidden and disabled categories.*

## 2.24 Search for Question Title matches is case-sensitive

**Problem:**

When a user searches for Question Title matches on the Search Page, the results obtained are based on case-sensitive search.

**Solution:**

Searching for question title matches on Search Page is now case-insensitive.

## **2.25 Accessing a Question with no Moderator Group raises DoesNotExist exception**

**Problem:**

If a user tries to access a Question with category (possibly a newly added category) with no Moderator Group, a DoesNotExist exception is raised which is not handled.

**Solution:**

Now the server raises a Http404 exception instead.

## **2.26 Deleting Comment don't ask for confirmation or reason**

**Problem:**

Deleting a Comment don't ask for confirmation from the user and if a Moderator does so, then also no reason is asked.

**Solution:**

Now, a modal appears while deleting Comment asking for confirmation and delete reason if being deleted by a moderator.

## **2.27 User is always redirected to Profile Page after completing Profile details**

**Problem:**

When a user tries to post something on the forum without completing his/her profile, he is redirected to Complete Profile page. But, after completing the profile, instead of being redirected to the previous page, user is always redirected to his/her Profile Page.

**Solution:**

Now, the users are always redirected to the same page after completing profile details, from where they were taken.

## 2.28 Messages displayed on Question Page only

### Problem:

The messages are only displayed on Question Page due to which all the messages generated during the interaction of the user with the site are displayed simultaneously on the same page at the same time.

### Solution:

Message toasts are now added on every page where there may be a need to display messages.

## 2.29 More than one User Group can be created for the same Category

### Problem:

More than one Moderator Group can be formed for a single category and hence, more than one User Groups can also be formed for a single category.

### Solution:

Changed category field in Moderator Group model to OneToOneField restricting Moderator Group and hence User Group to create only one instance for a Category.

## 2.30 Answer not checked for Spam upon edit

### Problem:

Answer body is not checked for Spam when the author updates the answer and hence can post Spam Answers on the Forum.

### Solution:

It has been fixed now.

## 2.31 Added “Mark Not-Spam” button for approving Questions

“Mark Not-Spam” button has been added at the top-right corner of the question for moderators to approve the question if wrongly predicted as spam.

## 2.32 Deleted and Active Comments not distinguishable

### Problem:

Deleted and Active Comments are not distinguishable to the Moderators on the Question Page and they can only tell the difference upon hovering on them.

### Solution:

Deleted comments are now highlighted with a Red Border at the bottom of the comment in order to distinguish them from Active Comments.

## 2.33 Improved Links throughout the site

### Problem:

All the links on the site and those sent through the e-mails always takes the user only to the Question Page and not to the specific Answer or Comment for which the link is provided.

### Solution:

All the links related to Answers/Comments on the whole site now contains the id of the div of Answer/Comment as hash values so the users are now redirected to not just the Question Page but to the specific location on the page.

## 2.34 Answer/Comment now highlighted when accessed through a link

### Problem:

Links now takes the user to the specific content location on the Question Page for which the link is provided but still sometimes it becomes hard to tell the exact location of the content due to shorter page lengths due to which page does not scrolls completely to the content location.

### Solution:

Answers/Comments when accessed through a link are now highlighted for 3 seconds to let the user reach that particular location of the content on the page for which the link is provided without much effort.



## 2.35 Created separate views for activating/deactivating the Moderator Panel

### Problem:

Moderator Panel is currently activated by visiting the Moderator Home Page and then redirecting the user back to the same Page. Similarly, Moderator Panel is deactivated by visiting the Home Page and then redirecting the user back to the same page which made the process quite complex and lot more checks had to be implemented.

### Solution:

Created separate views accessible to Moderators only for activating/deactivating the Moderator Panel. Now, instead of visiting Home Pages for activation/deactivation, user is taken to these views then then redirected back to the appropriate pages making the process much simpler by keeping activation/deactivation away from other Home Pages views.

## 2.36 Same Answer can be marked Spam/Not-Spam twice

### Problem:

Same answer can be marked Spam/Not-Spam twice which results in sending of duplicate notifications to Author regarding Spam classification/Approval of the Answer.

### Solution:

Now, the view checks if the Answer is already Spam before marking an Answer as Spam and hence skips the process if the Answer is already Spam. Similar process is followed for approving the Answer.

## 2.37 Converted Unnecessary AJAX views to normal views and vice-versa

### Problem:

Many views are put as AJAX views while no AJAX is being used in those views. Similarly, some views put in the normal views section are based on AJAX.

### Solution:

Transferred answer\_update, answer\_comment\_update and answer\_comment\_delete views from AJAX to normal views as AJAX was not being used in these functions anyway.

Similarly, transferred `vote_post` and `ans_vote_post` functions to AJAX section as both these views are based on AJAX.

## 2.38 Displaying Answer and AnswerComment form errors as messages

### Problem:

Previously, same error messages were being displayed for all Form Validation Errors.

### Solution:

Modified the Form Validation Errors for Answer and AnswerComment Forms making them appropriate for displaying as error messages displayed on the Question Page every time a Form Validation Error occurs while posting an Answer or a Comment.

## 2.39 Notifications gets removed from Notification Page after clicking on cross button twice

### Problem:

On clicking on the cross button in the Notification, the page gets reloaded before AJAX could fetch and display its results due to which the Notification is deleted but still shows on the Notifications Page and thus need another page refresh to get removed.

### Solution:

Clicking on cross button no longer reloads the Notifications Page by adding `javascript:void(0);` to the href attribute of cross button and hence AJAX is fetched and displayed correctly removing the Notification from the page in one go.

## 2.40 Few other fixes on Notifications Page

- Clicking on “New Comment” notification now takes the user to that comment on the Question Page.
- Clicking on the “New Comment” notification wasn’t removing the notification from the Notifications Page previously. It has been fixed now.
- When an Answer or a Comment is deleted, all its related Notifications are also removed now for all users.

# Chapter 3

## Feature Updates

### 3.1 Added Spam Classification Feature in Comments

- Added `is_spam` field in Comment Model also.
- Implemented features for predicting if the Comment Body is Spam or not after a new Comment is posted or an older Comment is edited.
- Added “Mark Spam/Mark Not-Spam” buttons on the top-right corner of the Comment available to Moderators only.
- Mark Spam button is available only if a Comment is Not Classified as Spam.
- Similarly, Mark Not-Spam button is available only if a Comment is marked as Spam.
- Comments marked as Spam are blurred on the Question Page for Non-Author and Non-Moderator users.
- Spammed Comment is visible to the Author with a note “Oops! Looks like spam! Waiting for moderator approval” and ability to edit or delete it.

### 3.2 Created entirely separate functions in views for sending all types of Notifications

- Added a new field named `notif_flag` in Question, Answer and AnswerComment models to keep record of all the New as well as Pending Notifications and always send correct notifications to correct recipients.
- Created entirely separate functions for sending all types of Notifications at the very bottom of the website views.
- The default value of `notif_flag` remains 0 which means that no Notification is pending from being sent.

- When a Question/Answer/Comment is added recently, the value of `notif_flag` is set as 1, value is set as 2 if a Question/Answer/Comment is edited recently and 3 if a Question/Answer/Comment is deleted recently to keep track of which Notification is to be sent to the respective recipients.
- If a Question/Answer/Comment is classified as Spam, an Email Notification is sent to the respective Moderators and other Notifications (of New or Edited Question/Answer/Comment) is kept on hold using the `notif_flag` field.
- If a Moderator approves the Question/Answer/Comment with or without editing it, then the pending Notifications are released to the respective recipients by the name of the Question Author. Along with this, a Notification is sent to the Author also regarding the approval of his/her content.
- If a Spam Question/Answer/Comment is deleted by the Moderator, a notification is sent to its Author only and `notif_flag` is reset to 0.
- If a Spam Question/Answer/Comment is deleted by its author, no Notification is sent to anyone and `notif_flag` is reset to 0.
- If a Question/Answer/Comment is marked as Spam by a Moderator, a notification is sent the Author regarding Spam Classification of his/her content.

### 3.3 Updated the Test Cases for the whole site

- Updated the older test cases of the whole site.
- Created new test cases as per the recent changes in code and current workflow of the application.

### 3.4 Bumped Django to latest version

- Bumped Django from version 2.2 to version 3.0.
- Bumped CKEditor to the latest version.
- Fixed some deprecation warnings by replacing a deprecated function `ugettext_lazy()` to `gettext_lazy()` in Forums forms.py and test\_forms.py files.

### 3.5 Reconfigured website's Forgot Password feature

- Previously, Django default mail was being sent to the users for resetting password with default subject.
- Added a new template containing the customized email to be sent to the user to reset password.

- Added a text file containing the subject of the email.
- Linked the template and subject file to the Reset Password view in Forums urls.

### **3.6 Sending a copy of every mail to BCC\_EMAIL\_ID**

- A copy of every email sent from the site is now being sent to BCC\_EMAIL\_ID only once.
- The feature has been implemented in the two functions used for sending emails in website views.
- When sending an email to an individual, a copy of that email is sent to BCC\_EMAIL\_ID as 'bcc'.
- When sending an email to multiple email ids, BCC\_EMAIL\_ID is also appended to the recipients list.

### **3.7 Categories hidden and disabled feature**

- Two new fields namely, hidden and disabled are added to FossCategory model.
- The value of both fields remains False by default.
- Hidden Category means that any post on that category won't be accessible to anyone on the whole site, not even the Moderators. Only admin can access those posts using Admin Panel.
- Disabled Category means that the posts of that Category would be accessible to everyone but no one can make any changes to the posts or post anything new in that category except the Admin.
- To hide a Category, Admin needs to change the value to hidden field to True.
- Similarly, in order to disable a Category, the Admin needs to change the value of disabled field to True.
- If any user tries to access any post of hidden Category in any way, a Http404 Exception will be raised.
- Similarly, if a user tries to post anything on a disabled Category by any means, a Http404 Exception will be raised.
- The test cases have also been updated to include the changes in code and workflow.

### 3.8 All Code has been rearranged and cleaned according to PEP8 Standards and Django Coding Style

- Reorganized the code in website views in five different groups namely, Non-Views functions, Views functions, Moderator Section, AJAX Section and Notifications sections and refactored the whole code according to PEP8 Standards and Django Coding Style.
- Similarly, reorganized and refactored the code in forums views also.
- Linted forums views code by installing and using `pylint-django`.
- Regrouped the URL patterns in forums and website urls.
- Converted all the `re_path` urls in forums views to `path` urls.
- Matched the sequence of URL patterns and their corresponding views in both forums and website urls and views.
- Cleaned the code for template tags.

# Reference

- <https://forums.fossee.in>
- <https://github.com/prashantsinalkar/FOSSEE-Forum>
- <https://docs.djangoproject.com/en/3.0/>
- <https://stackoverflow.com>
- <https://youtube.com>
- Other various resources available on Internet.