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COS301: Mini project
Buzz

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1   Introduction

The Computer Science Education Didactic and Applications Research (CSEDAR) team of the Computer Science Department of the University of Pretoria have registered a research project called "The use of Online Discussions in Teaching (TODT)". The aims of this research is to find ways to enhance teaching and improve the learning of students through the use of online discussions.

The formation of collaborative communities within student groups has become essential to enhance education. The existence of a forum in which students can express their views and explore what they are learning results in creating a collaborative community in which students can excel.

We are faced with the problem of engaging an extremely large number of first year students. Engaging first year students is a difficult and well-recognised problem, since students tend to feel *part of an anonymous mass.*

As part of the TODT project as a whole, the aim of this COS 301 project is to create an online space where students, teaching assistants and lecturers can engage in activities related to learning the content of our module while applying game concepts to motivate students to increase the quality of their participation and consequently experience deeper learning of the course content.

2   Problem Statement

In our experience in using currently available tools for discussion forums, the following problems are hampering positive engagement of both teaching staff and students.

2.1   Inexperienced users

Many of our students are inexperienced in online communication. They are clumsy in their actions and consequently create content that their peers are anable to apply in their learning.

2.2 Unorganised content

It is difficult to keep the content of the forum organised. Owing to the large size of our classes the tempo of content creation can easily get out of hand of the managers.

2.3 Low level of excitement

It is unlikely that students will experience the reward of the benefits of participation. With the current tools the immediate rewards is only marks and the long term reward of deeper understanding of the course content is often not realised.

3 Solution Space

For the mini project of COS301 in 2015 all students in the the class are expected to participate in the design and implementation of an online discussion forum that will ideally be integrated in the CS website. This forum is called Buzz. The following outlines a number of aspects that are needed for the system in order to address the identified problems:

3.1 Basic functionality

To be usefull it should at least contain the basic functionalities that are common on all online forums. The adminsitrative staff should be able to manage the registration of users to the forum and uers has to be able to particiapte in discussions.

3.2 Automated feedback on common mistakes

To support the students to learn appropriate online behaviour sooner, much of the initial corrective actions that are currently conducted manually can be partially automated. This will not only reduce the workload of managers but will also have the benefit that students can get feedback faster allowing them to take corrective action sooner. Consequently more students may reach a constructive learning stage sooner.

3.3 Game-like presentation

The participation of the students can be rewarded in a game-like fashion where all participants have visibly recognised different status levels. The status of a participant can grow as the quality of their participation increases. The quality of their participation can be measured using criteria such as marks assigned by lecturers, teaching assistants and peers as well as actions that the user has implemented. Actions that may be implemented include posting and tagging (see next section). Apart from having a visual cue of a user's status, higher status should be awarded with more power in the form of access to more functions or relaxing restrictions.

3.4 Automated structuring

The organisation of the content is a laborious task. It requires understanding both the content and the needs of the users. The structure of the content can, however, be automated to organise itself. Automated organisation in terms of content understanding can

be based on rules specified by trusted users while automated organisation in terms of user needs may be based on how most users organise the content according to their own needs. This way of organising content is called *social tagging*.

4 Functional Requirements

Your first task for the mini-project entails the formal specification of the functional requirements for this system. The functionality of the system is generated by the needs of the users of the system and may also be influenced by the interest and expertise of the development team (that's you).

The following may get you started on some ideas:

- Users must be able to create, read, update and delete (CRUD) posts, although not all users should the power to use all the functions while certain priviladged users may even be granted power to CRUD other user's posts in 'n highly controlled fashion.

- Keep track of who has read what and highlight unread messages for each user.

- Restrict the length of messages and the type of content allowed in massages based on the level where it is posted as well as on the status of the user posting the message.

- Restrict users to post on specified levels based on their status of the user posting the message.

- Allow staff to manage content i.e. summarise, close or hide threads and move things around.

- Provide functionality to support semi-automatic creation of thread summaries.

- Create automated template based messages to individual users or specified groups.

- Automatically change the status of a user based on participation.

- Integrate seamlessly with any specified host site.

- Provide functions such as searching and filtering.

- Provide functionality to evaluate posts and vote for posts.

- Use evaluation to create statistical information such as average mark of each student within a given time range. Visual reporting of a participants evaluation in relation to the average of the evaluation of all the users or certain groups of users is required for the gameification concept.

- Enhancement of the post editor for example text formatting and automatic pretty-printing of code in posts.

- Provide functions to apply social tagging. Allow users to view the content based on personal structure according own tags or according to the admin dictated structure and share their tags.

- Apply self-organisation based on social tagging and allow the user to view according to the base structure, owns structure or public structure.

- Detect if a post is plagiarised.

- Detect violation of netiquette rules.

5   Technologies

You will be required to participate in the implementation of the system where you will apply the technical skills related to Linux, git, JavaEE, JPA and JPQL, JSF, HTML, AJAX and others.