UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Denkleiers • Leading Minds • Dikgopolo tša Dihlalefi

FUNCTIONAL REQUIREMENTS
COS 301 GROUP 2 B

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Github Repository

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Contents

1 Introduction

This document outlines the functional requirements of "The Computer Science Education Didactic and Applications Research"(CSEDAR) registered research project called "The use of Online Discussion in Teaching"(TODT). This document describes the "Buzz" system to be developed and gives insight to how to achieve this implementation for those implementing it.

2 Vision

The research projects aim is to find ways to enhance and improve the learning of students with the use of online discussion. This online forum "Buzz" will become part of the Computer Science websites modules, creating an online space for discussion for each or where relevant. Where students, teaching assistants and lecturers can engage in activities related to learning the content of the specific module while applying game concepts to motivate students to increase the quality of their participation and consequently experience deeper learning of the course content.

3 Background

The reason for this research project is the problem of engaging an extremely large number of first year students within The University of Pretoria, specifically the Computer Science Department students. Currently available tools for discussion forums lead to the problems that are hampering positive engagement of teaching staff and students. These problems consist of inexperienced users, unorganized content and low levels of excitement. To combat these problems the "Buzz" system intends to have the basic functionality of online forums, have automated feedback on common mistakes, have a Game-like presentation and have automated structuring.

The University of Pretoria have the opportunity to teach the COS301 "Software Engineering" students while being able to improve current systems of online discussion which can be extended to benefit all students in the future.

The research project gives the students of COS301 "Software Engineering" an opportunity to learn form the experiences of designing, creating and

developing this system, which include learning to work with colleagues, creating documentation, simplifying and improving the communication of lectures and students through a structured forum, using online systems for group work and the basic process of how software is designed, created and developed in business to name but a few.

4 Functional Requirements and application design

4.1 Purpose

1. CRUD: To create posts on the buzz system so that users in the system can share relevant information with one another and communicate. To allow registered users and non registered users such as guests to view posts created by users of the buzz system. To allow users to update posts of which they control. To allow users to delete their own posts or to allow users with sufficient status level to delete other posts based on certain factors about that specific post.

2. Post Restriction based on Level: Restrict users to only post on the levels they have permission to post.

3. Staff Content Management System: Allow the staff members of each module to move, hide, close and/or summarise the content of any thread under their control, subject to restrictions configurable by the administrator.

4. Message Restrictions: To restrict users to length, content and positioning of posts based on the users status level.

5. Statistical gathering: To advance users to their next level for gamification concept.

6. Integrate System with Any Host Site: To allow the Buzz system to be hosted on any site without any difficulties.

7. Message Read Tracker: To mark posts for each registered user so that they can keep track of which posts they have read and which users have read certain posts.

8. Social Tagging Functions: The system will provide functions which through employing tags can provide flexible ways of using information that supports users with: Finding, Collecting, Storing, Organizing and Sharing Information. It should also allow users to share their tags as well as allowing users different views of the content. Either a personally structured view according to the user's tags or the default admin structure.

9. Thread Summariser: To summarise threads, that are over a certain number of posts long, into a new thread for viewing. This replaces the original thread.

10. Template Messenger: To give standard and custom layouts of automated messages that can be broadcast to groups or sent to individuals.

11. Automatically Change User Status: To change/affect user's reputation and abilities based on status.

12. Check Post For Plagiarism: To use a service provider to check if a post has been plagiarised.

13. Report Post For Plagiarism: To enable users to be able to report posts that they suspect is plagiarised (with a link to the original), because the system couldn't detect it.

14. Netiquette: To ensure that every post submitted conforms with the netiquette rules.

15. Text Decorating Functions: To allow privileged users to use advanced functions when typing posts.

16. Self-Organization And View Types The system will allow the user to organize their content themselves based on their social tags. The system will also allow the user to chose from different types of views either the base, owns or public structure.

4.2 Use case prioritization

4.2.1 CRUD

Critical

4.2.2 Post Restriction based on Level

Critical

4.2.3 Staff Content Management System

Critical

4.2.4 Message Restrictions

Critical

4.2.5 Statistical gathering

Critical

4.2.6 Integrate System with Any Host Site

Important

4.2.7 Message Read Tracker

Important

4.2.8 Social Tagging Functions

Important

4.2.9 Thread Summariser

Nice-to-have

4.2.10 Template Messenger

Nice-to-have

4.2.11 Automatically Change User Status

Nice-to-have

4.2.12 Check Post For Plagiarism

Nice To Have

4.2.13 Report Post For Plagiarism

Nice To Have

4.2.14 Netiquette

Nice To Have

4.2.15 Text Decorating

Nice To Have

4.2.16 Self-Organization And View Types

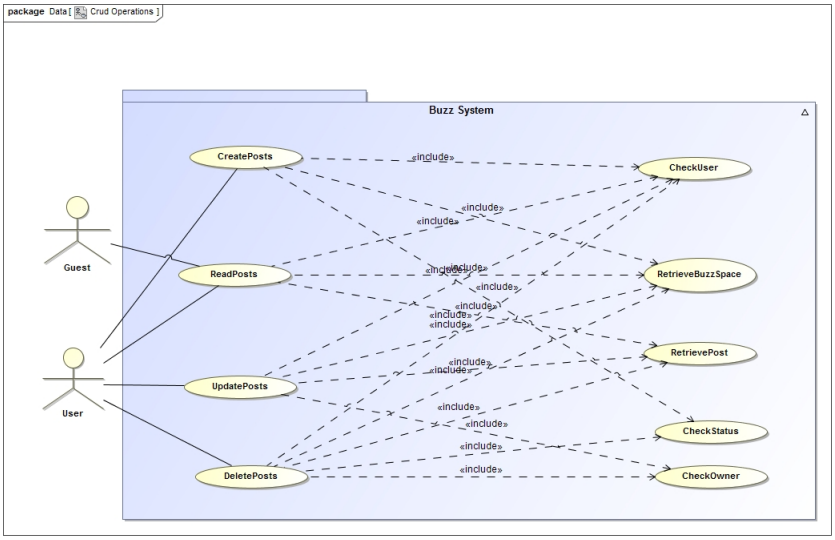
Nice To Have

4.3 Use case/Service contracts

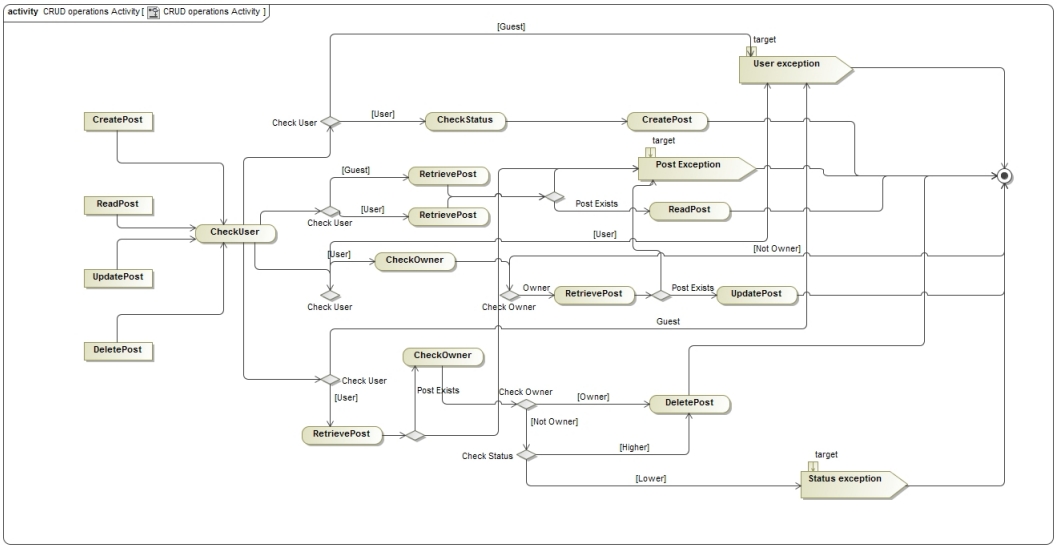
4.3.1 CRUD

1. Pre-conditions for CRUD: The buzz system needs to be available and a connection to the buzz system possible.

2. Use case diagram:



3. Process specification:



4.3.2 CRUD-Create

1. Pre-conditions: For a user to create posts they need to be registered of the buzz system. The user must be logged in to the buzz system.

2. Post-conditions: Posts will succeed to be created and will appear in the buzz system where posted.

4.3.3 CRUD-Read

1. Pre-conditions: Posts must be present to be read.

2. Post-conditions: Once a post has been viewed by a logged in registered user, the post should be marked as read for that specific user.

4.3.4 CRUD-Update

1. Pre-conditions: For a user to update posts they need to be registered of the buzz system. The user must be logged in to the buzz system. The user must be the owner of the post.

2. Post-conditions: Post will be updated and shown on the buzz system to be updated.

4.3.5 CRUD-Delete

1. Pre-conditions: For a user to delete posts they need to be registered of the buzz system. The user must be logged in to the buzz system. The user must be the owner of the post unless a user with status level "x" views the post to be unfit. The post needs to exist for it to be deleted.

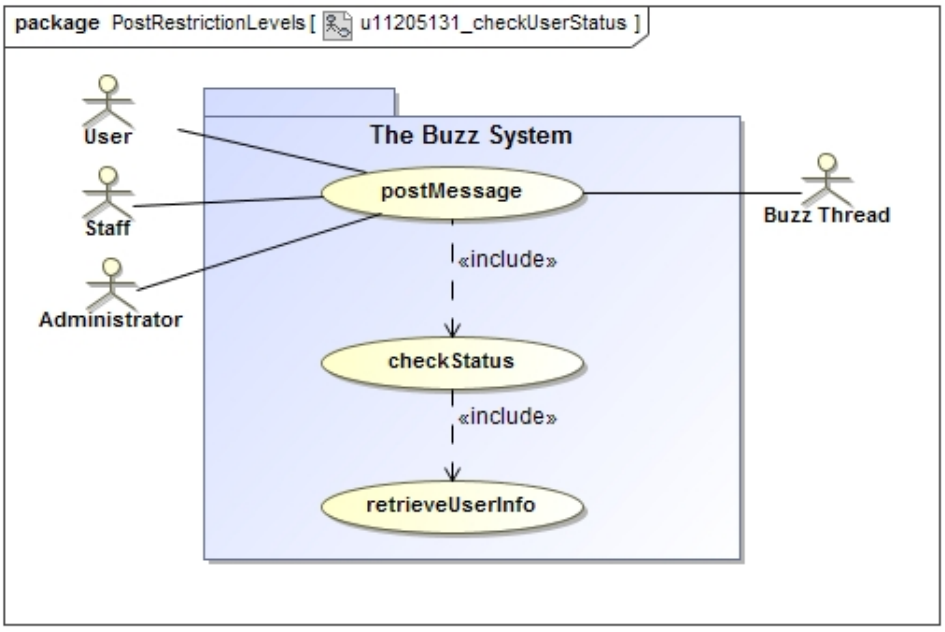
2. Post-conditions: Post successfully deleted will be hidden from the other users and buzz system and archived.Posts will never be physically deleted from the system itself.

4.3.6 Post Restriction based on Level

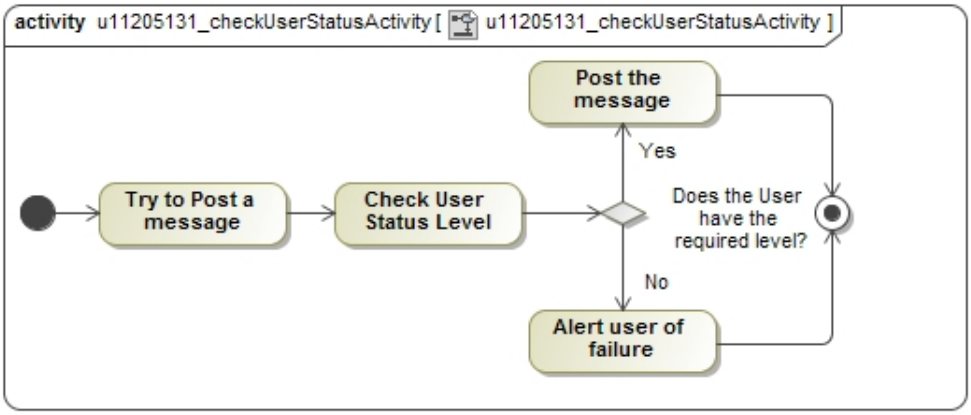
1. Pre-conditions: The User's privilege level needs to be verified with the data on record in the database. If no data is available (Guest User), the privileges for a Guest user needs to be verified.

2. Post-conditions: Administrators will be able to create many posts on any level they deem fit. Users on level X will only be able to post on the levels they are authorised to post, the same applies for guest users. The end result is that if a user has the relevant privilege level, a post will be created on the chosen level.

3. Use case diagram:



4. Process specification:



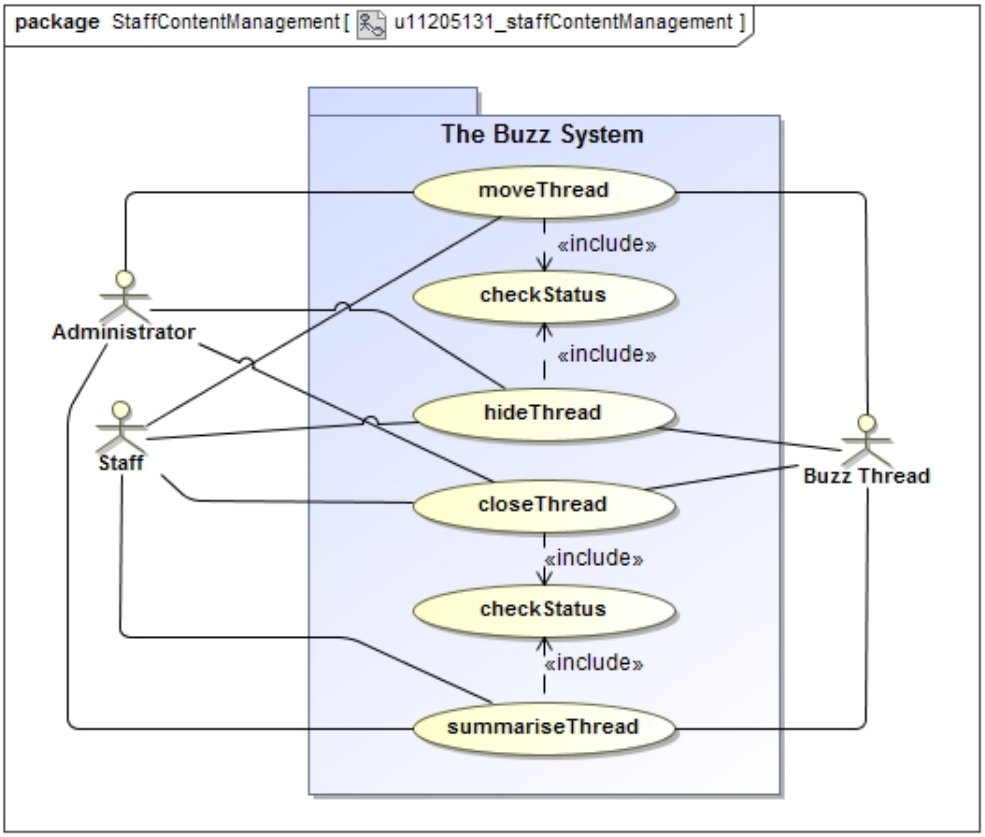
4.3.7 Staff Content Management System

1. Pre-conditions: The user needs to be verified as a staff member by querying the user's status from the database and needs the necessary

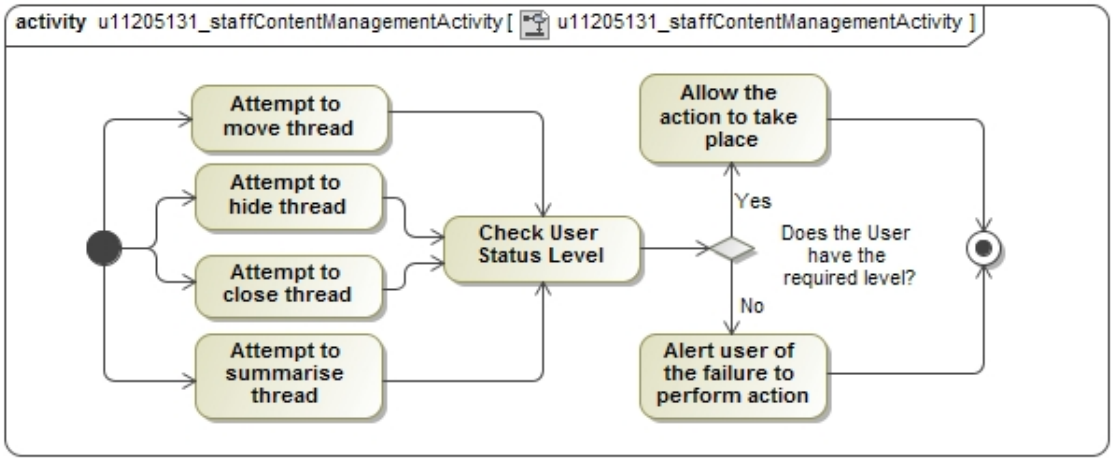
privilege levels in order to move, hide, close or summarise a thread.

2. Post-conditions: The staff member will be able to either move, hide, close or summarise the relevant thread.

3. Use case diagram:



4. Process specification:

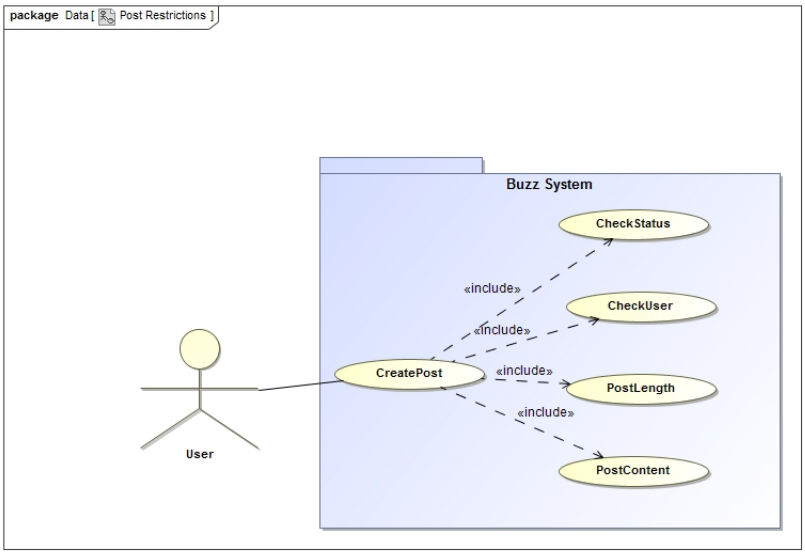


4.3.8 Message Restrictions

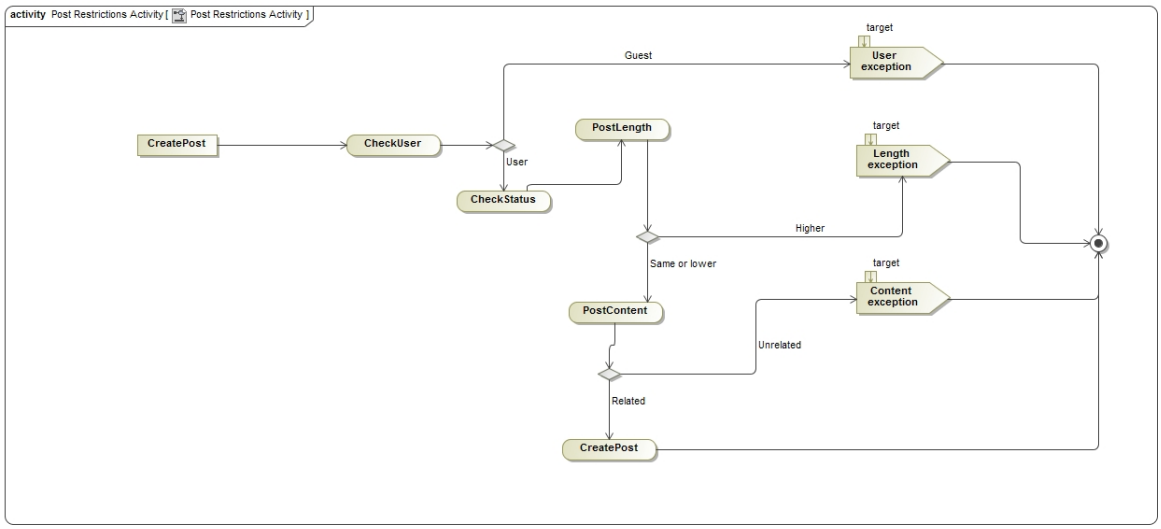
1. Pre-conditions: User must be registered on the buzz system. The buzz system needs to be available and a connection to the buzz system possible. The user must be logged in to the buzz system. User must be able to create posts. Length and content of posts must be specified by the buzz system of which the user is registered. Must have levels of posts.

2. Post-conditions: Post will be created and shown on the buzz system. Correct length and content of posts if buzz system is configured correctly.

3. Use case diagram:



4. Process specification:



4.3.9 Statistical Gathering

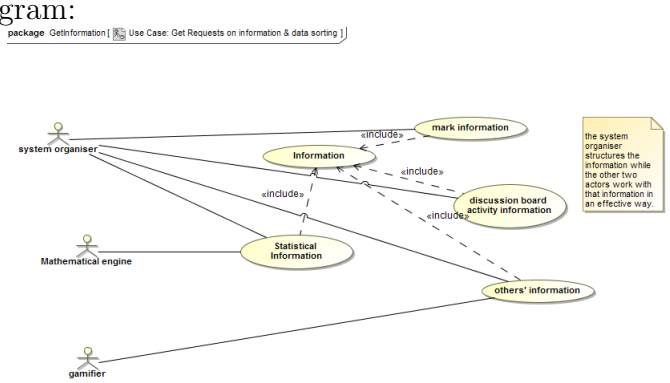
1. Pre-conditions: Database must be up and accessible.

2. Users want to level up to use privileged mechanisms.

3. Post-conditions: Users who are students marks can be used to extract statistical information and these information can then be compared.

4. users have leveled up.

5. Use case diagram:

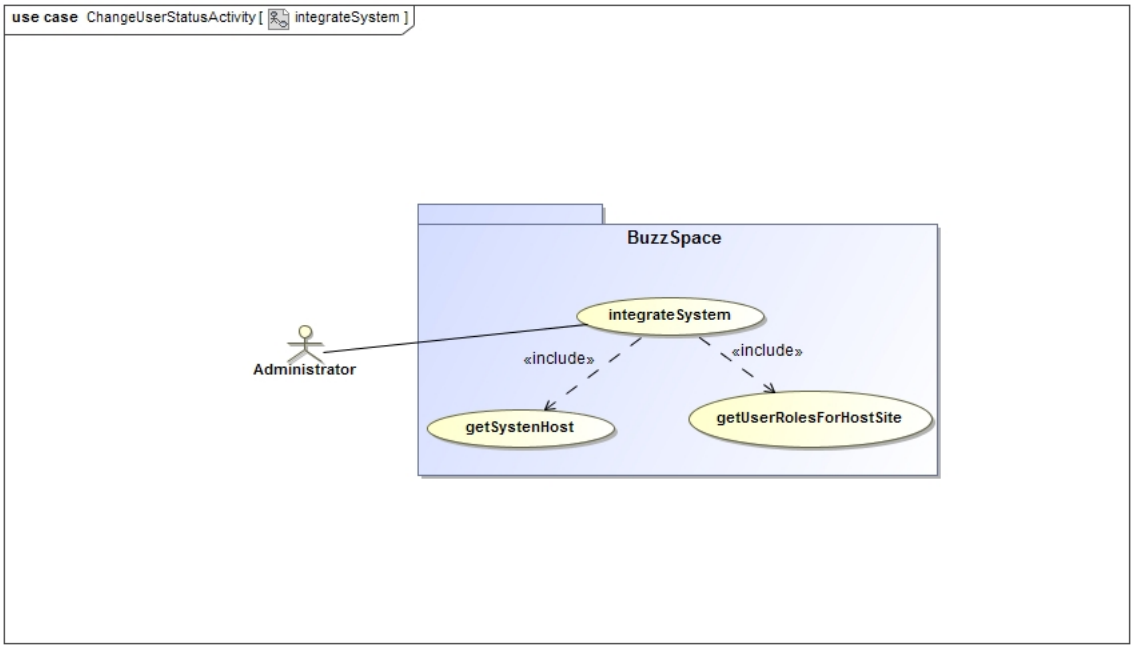


4.3.10 Integrate system with Any Specified Host

1. Preconditions: The user must be the site administrator and the host site specified must be a valid site.

2. Post Conditions: The system should be integrated on the site.

3. Use case diagram:



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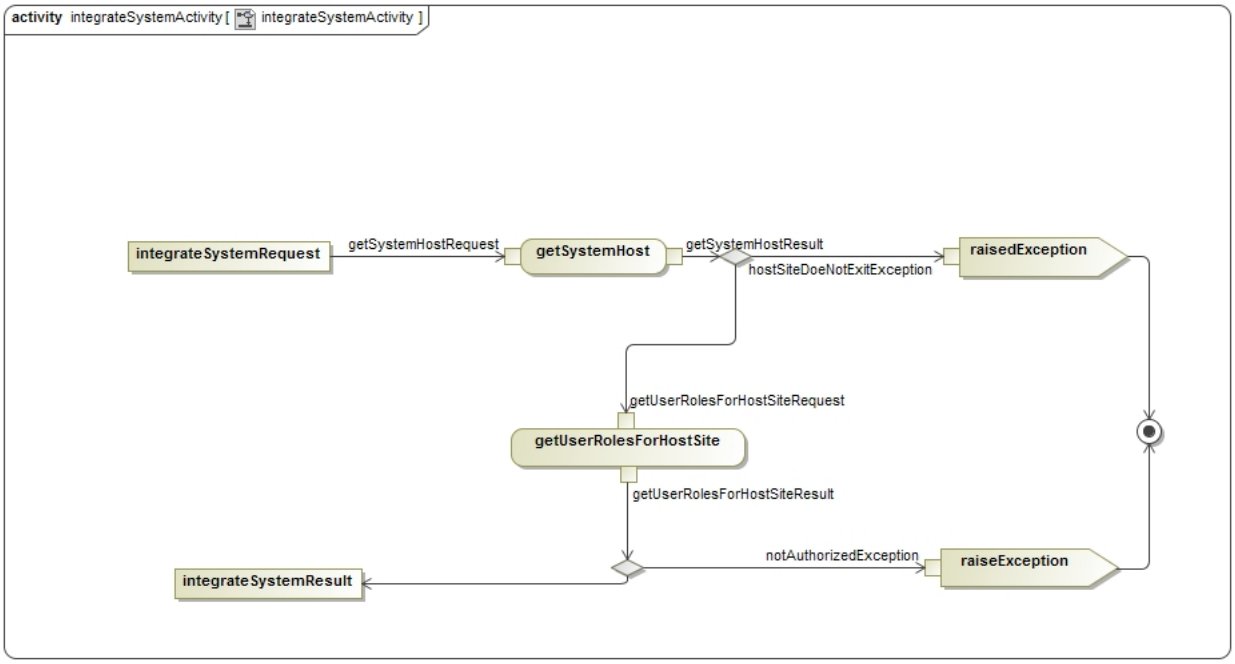
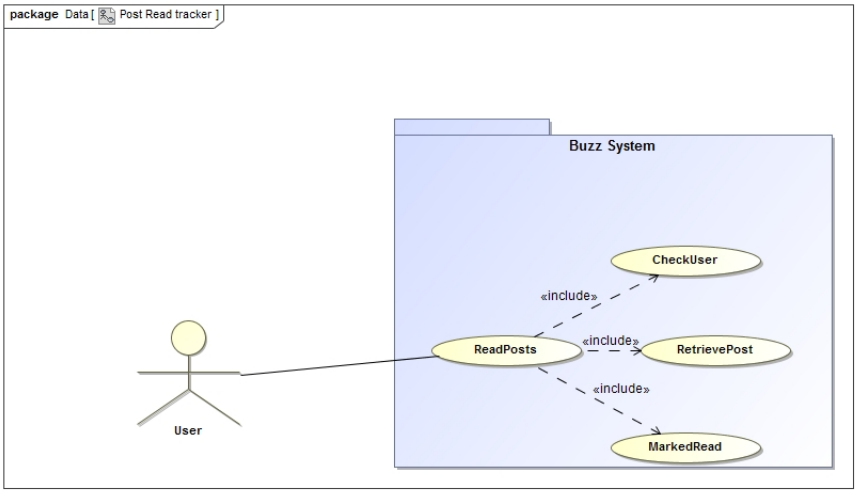


4.3.11 Message Read Tracker

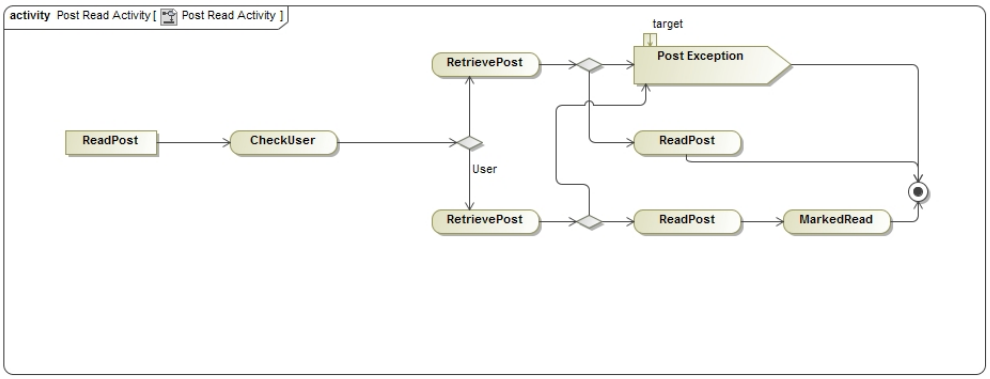
1. Pre-conditions: User must be registered on the buzz system. The user must be logged in to the buzz system. Messages must exist to be read, marked as unread and must be seen as read by other users.

2. Post-conditions: Post is marked as unread.Post is marked when read and seen to be read on the buzz system.

3. Use case diagram:



4. Process specification:



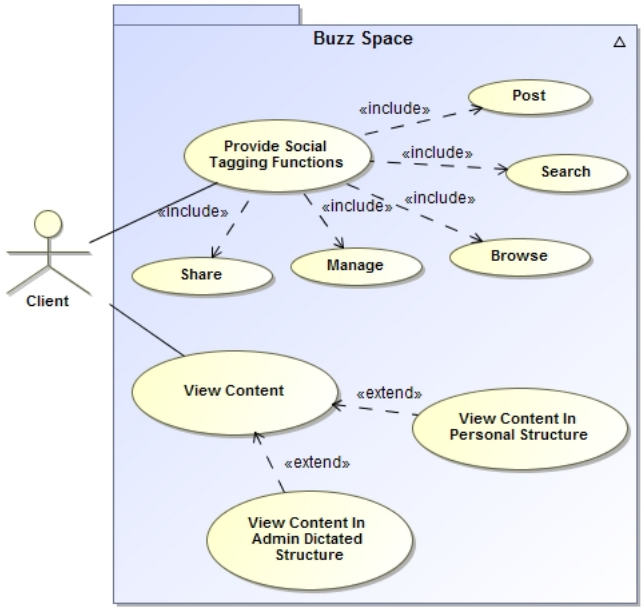
4.3.12 Social Tagging Functions

1. Pre-conditions: User is signed in and has default privileges to execute all social tagging functions functions. User has already created tags before they can share them. System allows for different views of the content.

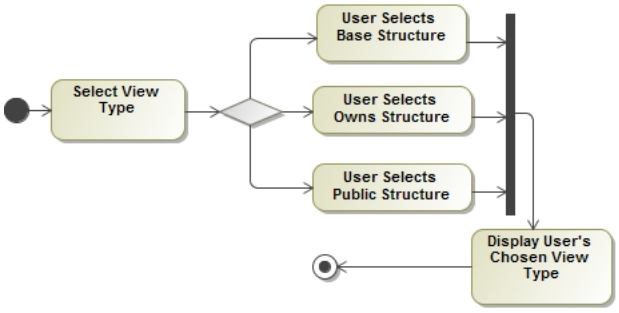
2. Post-condition: After the user has executed any of the functions the user state changes. After the user selects their view structure, other options for different structure must be available and the structure must stay consistent until the user chooses otherwise.

3. Request and Result Data Structures:

4. Use case diagram:



5. Process specification:

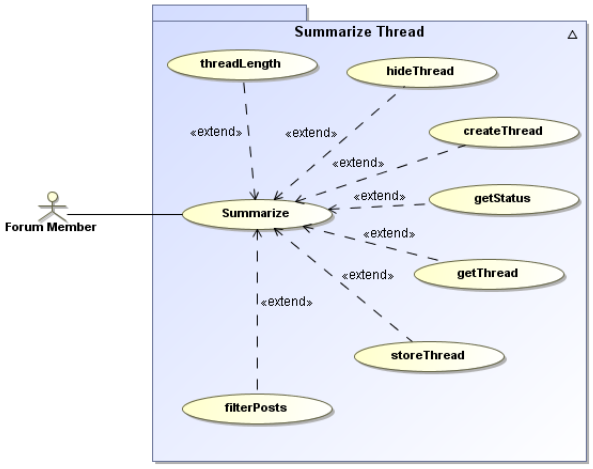


4.3.13 Thread Summariser

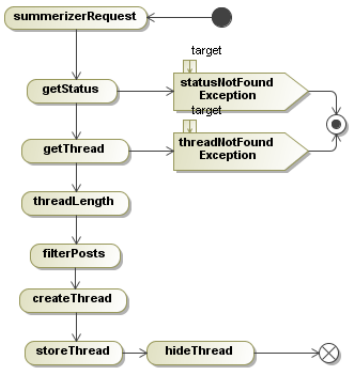
1. Pre-conditions: The user must be registered on the buzz system. The buzz system must be on-line and reachable and the user must be logged in. Only high level users can summarise threads.

2. Post-condition: The summarised thread will be viewable on the buzz system on the relevent buzz space. The original thread will be hidden from view.

3. Use case diagram:



4. Process specification:

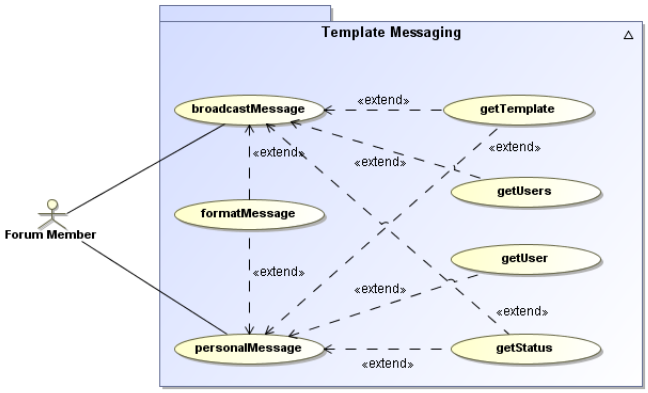


4.3.14 Template Messenger

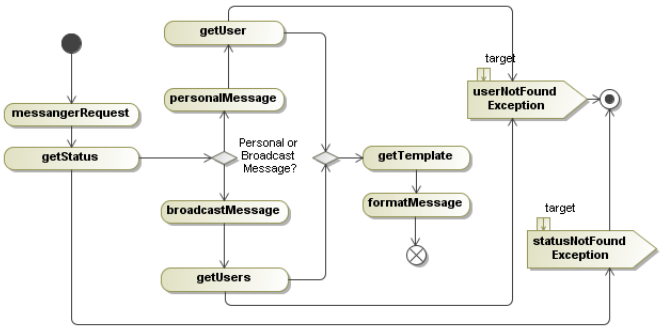
1. Pre-conditions: The buzz system must be on-line and reachable. Since this procedure is automated a user does not need to be logged in.

2. Post-conditions: The message(s) must be sent. The message(s) must be delivered to the recipient(s).

3. Use case diagram:



4. Process specification:



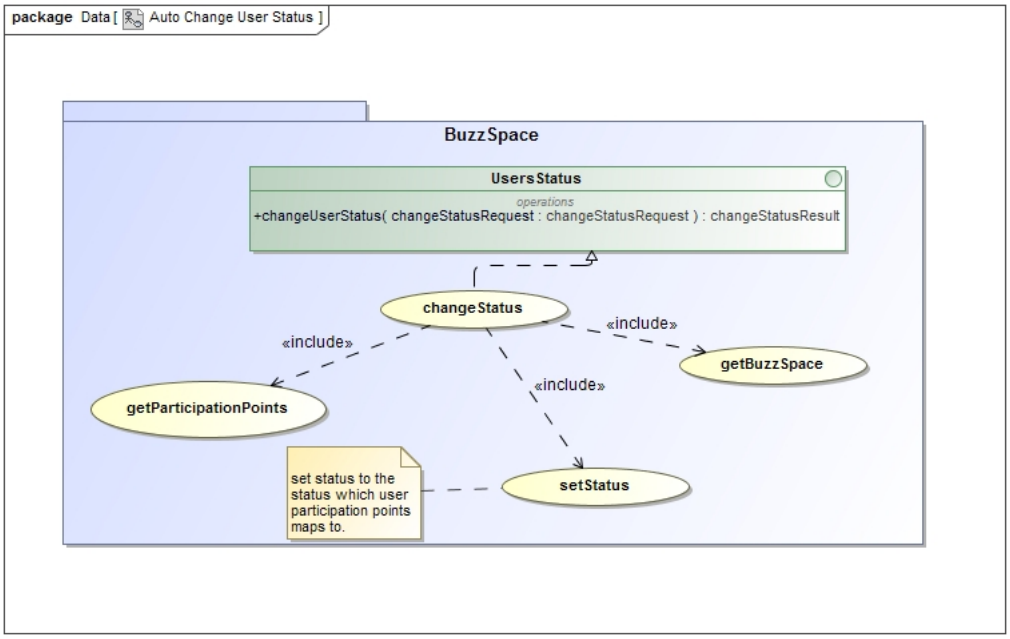
4.3.15 Changing User Status

1. Preconditions: The user needs to earn new participation points (positive or negative).

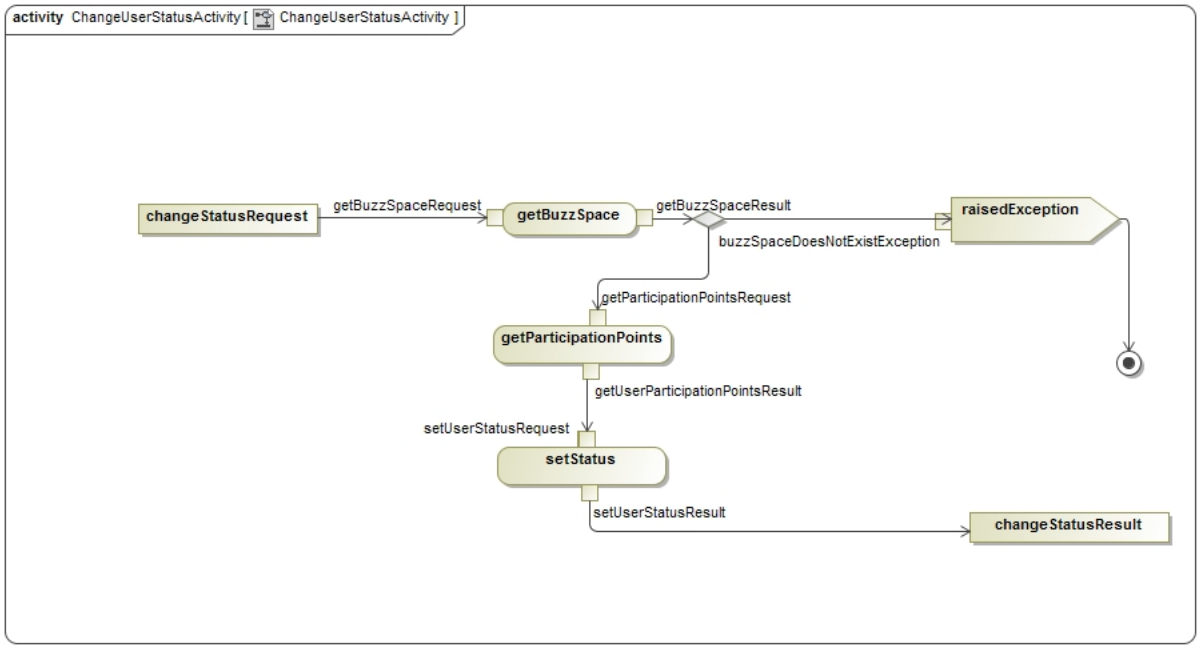
2. Post Conditions: The user's status should correspond to the status which the user's participation point maps to.

3. Request and Result Data Structure:

4. Use case diagram:



5. Process specification:

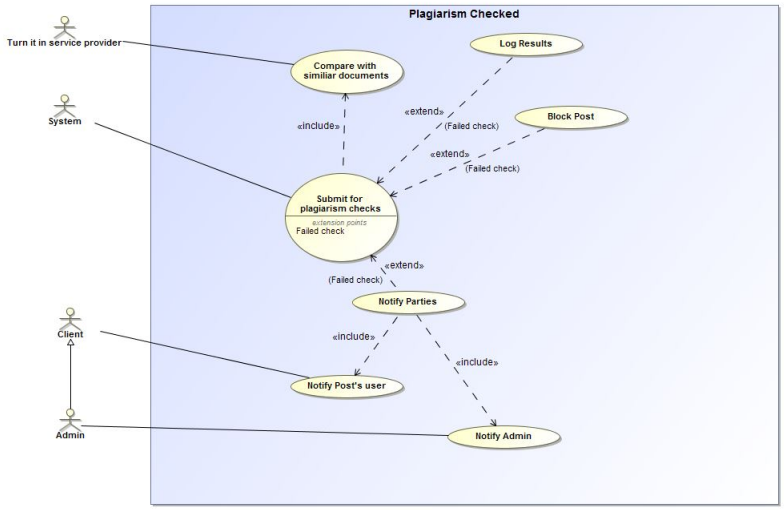


4.3.16 Check Post For Plagiarism

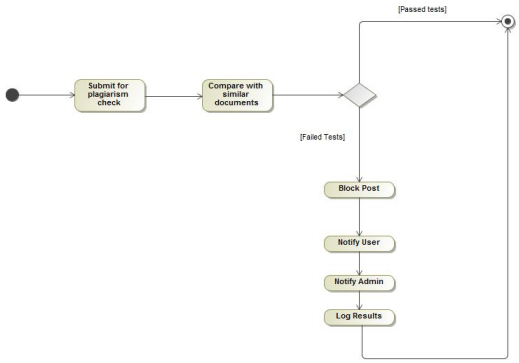
1. Pre-conditions: A post must have been submit by a registered user.

2. Post-conditions: If the post passes the plagiarism test, the new post should be registered on the system. If the post has failed the plagiarism tests the post will be blocked, then the post's user and the module's administrator will be notified. Afterwords a log will be stored.

3. Use case diagram:



4. Process specification:



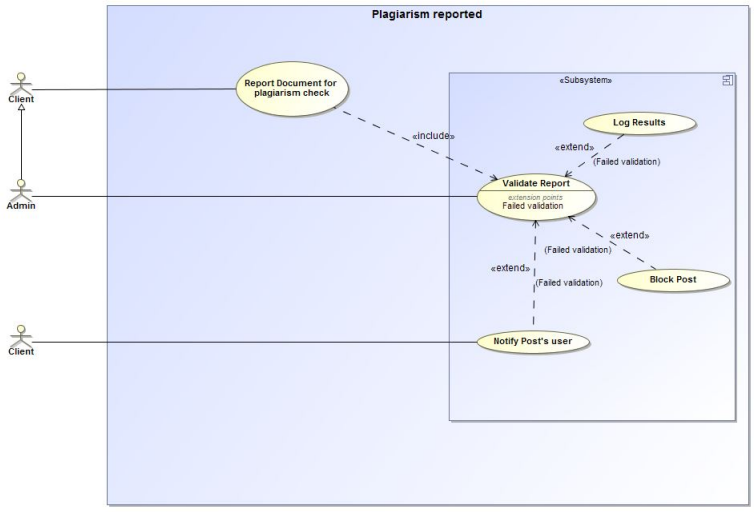
4.3.17 Report Post For Plagiarism

1. Pre-conditions: A post must have been reported by a registered user that has a level X account.

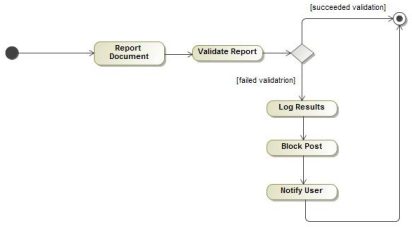
2. Post-conditions: The post is sent to an administrator to follow up on the report. If the administrator finds the post not plagiarised, the post will be registered on the system. If it is found to be plagiarised the post

will be blocked, then the post's user and the module's administrator will be notified. Afterwords a log will be stored.

3. Use case diagram:



4. Process specification:



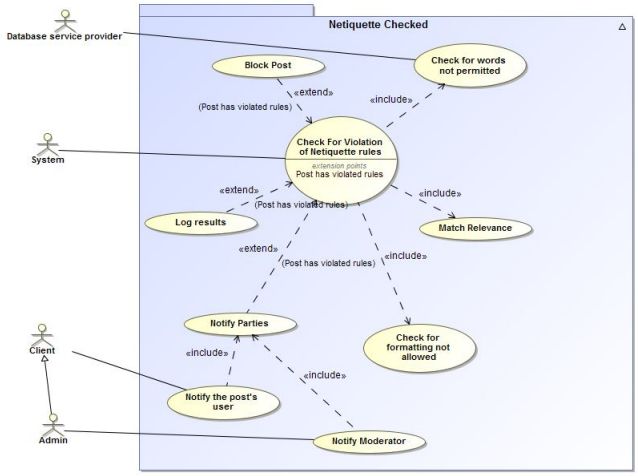
4.3.18 Netiquette

1. Pre-conditions: A post must have been submit by a registered user.

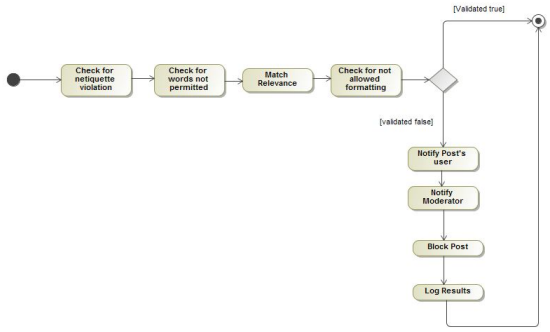
2. If the post passes the netiquette test, the new post should be registered on the system. If the post has failed the netiquette tests the post will

be blocked, then the post's user and the module's administrator will be notified. Afterwords a log will be stored.

3. Use case diagram:



4. Process specification:

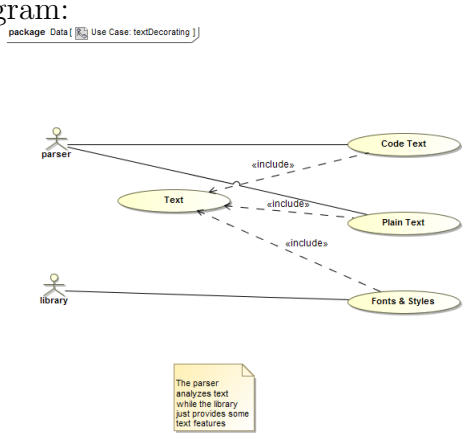


4.3.19 Text Decorating

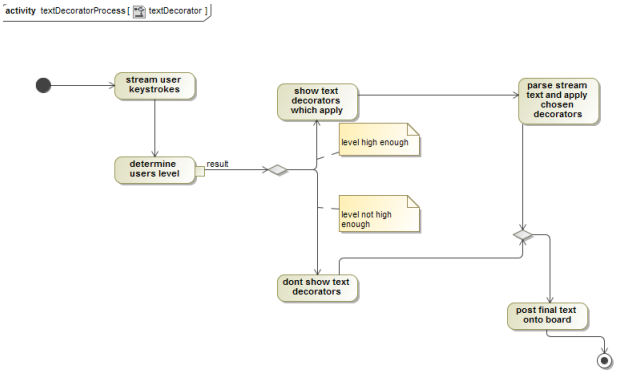
1. Pre-conditions: User must have required level.

2. Post-conditions: User can use the pretty text functionality that he/she qualifies for.

3. Use case diagram:



4. Process specification:

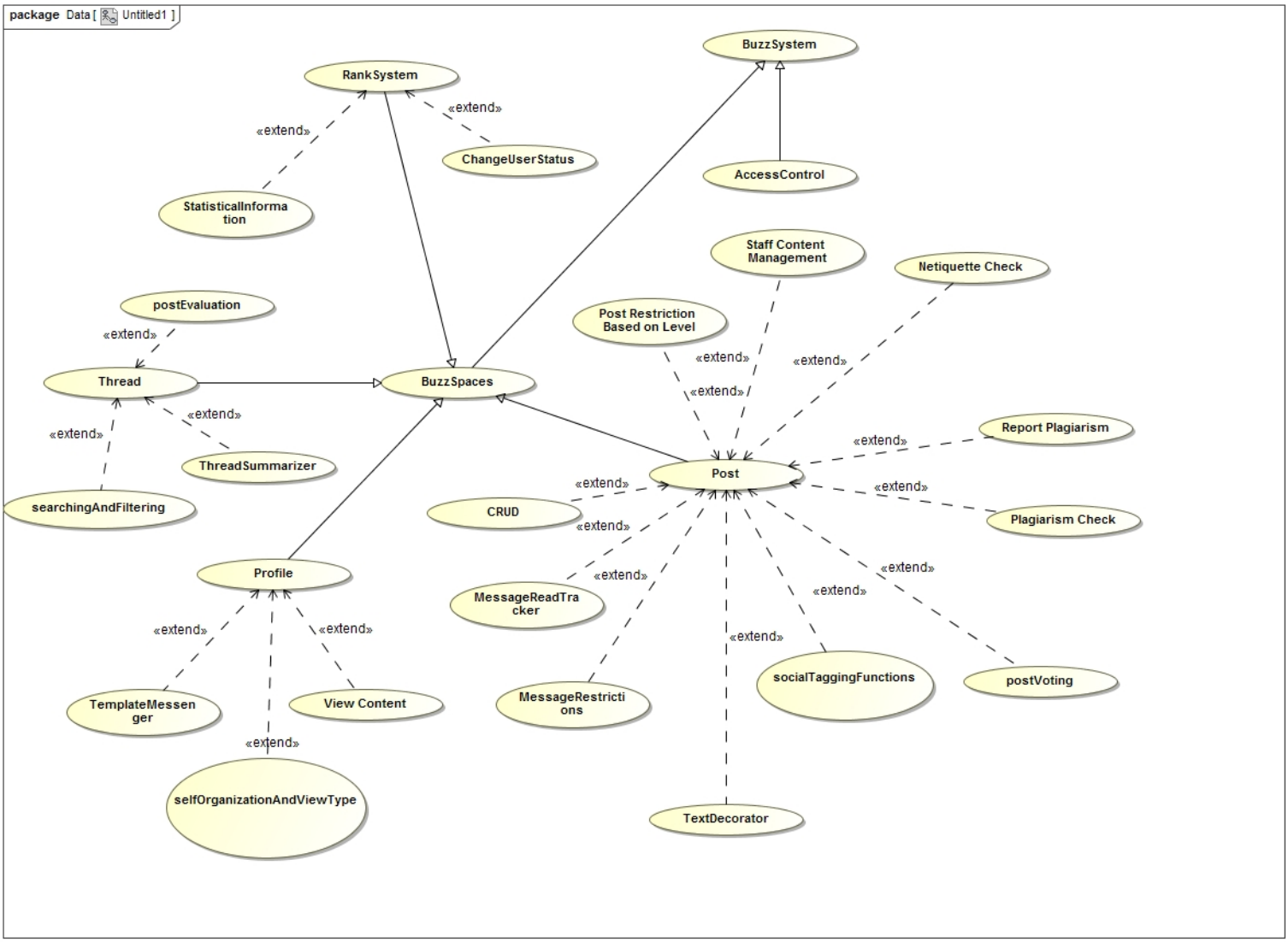


4.3.20 Self-Organization And View Types

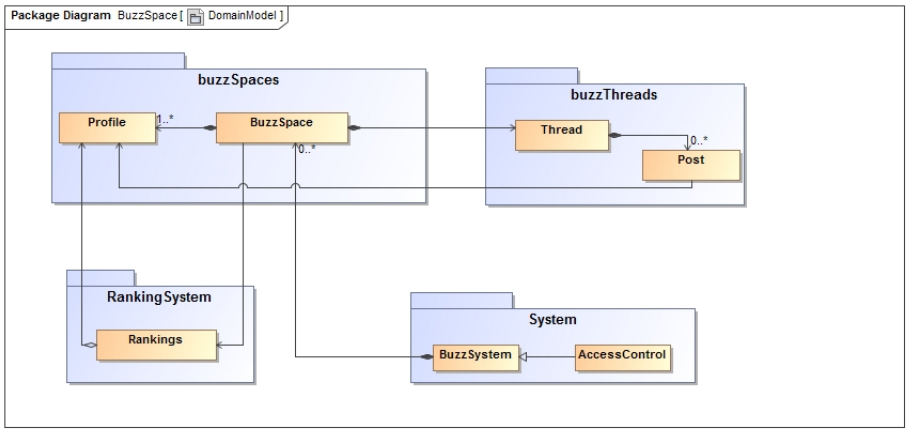
1. Pre-condition: Have three different structures users can choose from for viewing.

2. Post-condition: After the user selects their view type, provide option to still be able to switch views. The content must then be displayed according to user's desire.

4.4 Process specifications



4.5 Domain Model



5 Open Issues