

**Maynooth University Department of Computer  
Science  
2019-2020**

**CS335 End-Of-Year Software Engineering Assignment**

**Title: Develop a Hypothetical Software System**



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The hypothetical Software System I developed is a Blogging app (Entertainment sector). The Software System will rely on a Database to store User account information, post information, comment information and message information. The following User Stories will be the Customer's Specification for designing and developing the software system.

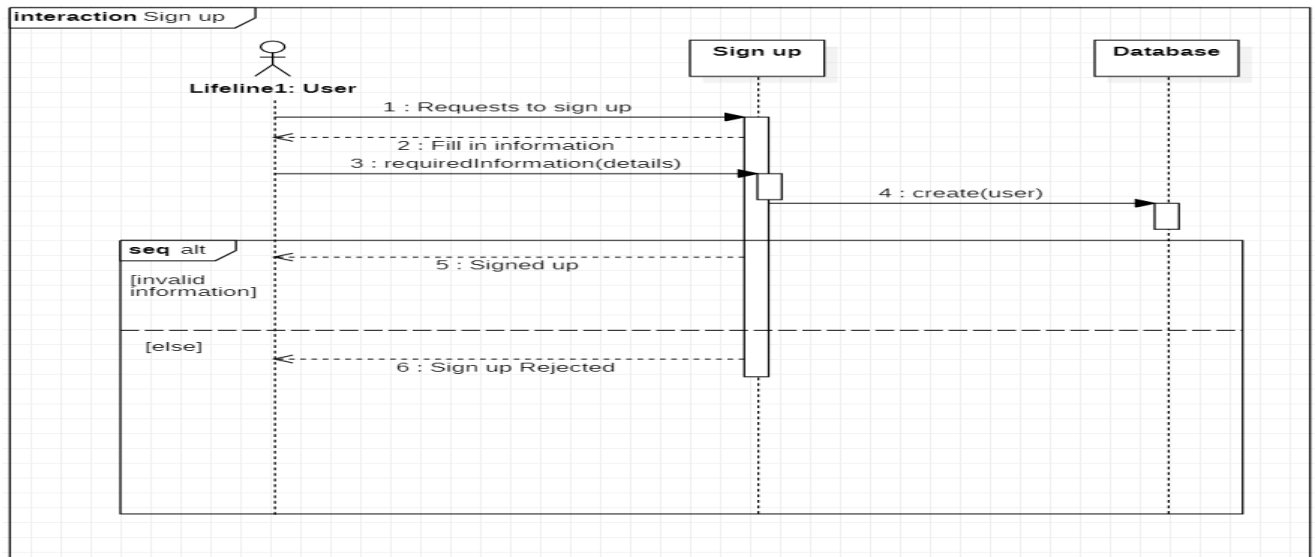
#### User Story 1:

<b>Title:</b> Opening <i>The Blog</i>
<b>User Story:</b> As a user who wants to use the app, I need to be able to open it.
<b>Conversation:</b> The app must be installed from the respected app store of the device. After installation, the app icon must be found on the user's device and pressed. The app opens to <i>The Blog's</i> homepage.
<b>Acceptance Criteria:</b> <ol style="list-style-type: none"><li>1. When the user presses the app icon, <i>The Blog</i> opens to the homepage.</li></ol>

The first user story is the most basic and essential Application need. For any application, there must be distinctive name and icon. For the user to access an app on their device, they would have to install and locate the newly installed app to open it. Also opening the app at any time will bring the user to the default homepage.

#### User Story 2:

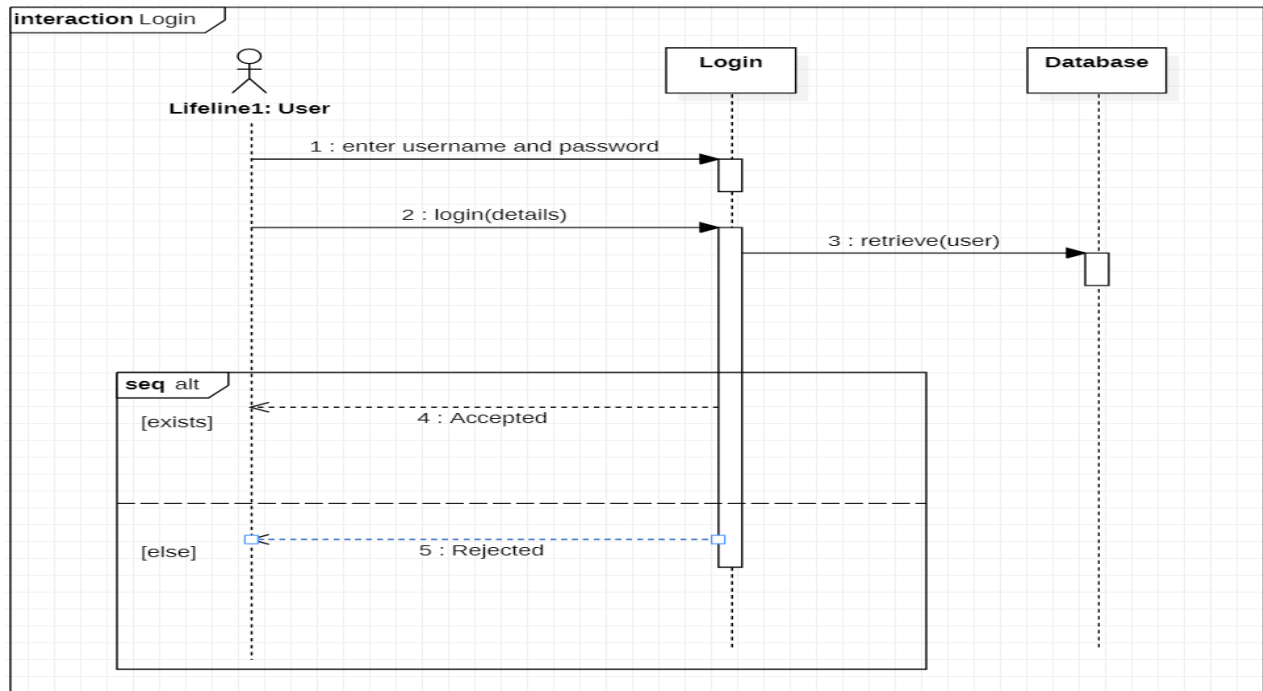
<b>Title:</b> Creating an account in <i>The Blog</i>
<b>User Story:</b> As a user, I want to be able to create a personal account to be used in the app.
<b>Conversation:</b> Once the app is activated by the user and the user is on the homepage. There will be a medium sized "Sign up" button at the bottom of the homepage. Once pressed, the Sign up window opens. In this window the user will then be prompted to input personal information needed to make their account on the app. The fields required to complete the creation of the account will be as follows: username, Full name, Gender, date of birth, email, and password. After filling in the required information the user can confirm the creation of their account by pressing a "Sign up" button at the bottom of the Sign up window, once all the fields have been filled with valid information.
<b>Acceptance Criteria:</b> <ol style="list-style-type: none"><li>1. When the user presses the Sign up button in the Sign up window, this effectively creates their new account to be used on the app.</li></ol>



This user Story depicts the need for account registration for the app. As a user of a social platform or an app with interactions between people, we need a way to uniquely identify ourselves from other users and having a once off way of doing it. When the user has opened the app, the sign-up option will be easily accessible to the user, making it clear that accounts are the norm of the app. The Sequence Diagram above illustrates the Sign-up process.

### User Story 3:

<b>Title:</b> Logging into my account in <i>The Blog</i>
<b>User Story:</b> As a user, I want to be able to log in to my personal account to be used in the app.
<b>Conversation:</b> Once the app is activated by the user and the user is on the homepage. There will be bold text under the “Sign up” and “Guest” buttons reading ,“Already have an account?” which is a link. Once this link is pressed by the user, the Log in window opens. In this window the user will then be prompted to input their username and password information needed to login into their account. After filling in the required information the user can confirm their log in by pressing a “Log in” button at the bottom of the Log in window. Once the username and password have been filled with valid information, they will be logged in.
<b>Acceptance Criteria:</b> <ol style="list-style-type: none"> <li>1. When the user presses the Log in button in the Log in window, and the username and password are correct for their account. They log into their account.</li> </ol>



This User Story describes the need for a way to log in to an already registered account within the app. The log in option will also be easily accessible, located on the homepage for users to use to access the log in window to enter their account details. The sequence diagram above illustrates the Log in process of the system. The user enters their information then confirms login, the database is then checked for the account. If it exists log in is accepted, else log in is rejected.

#### User Story 4:

##### Title:

Logging into *The Blog* without an account

##### User Story:

As a user who wants to use the app, I want to be able to access the app without having an account.

##### Conversation:

Once the app is activated by the user and the user is on the homepage. There will be a medium sized "Guest" button at the bottom of the homepage. Once pressed, the user will have access to *The Blog* but will not have a personal account. All guest users will have a generic and randomly generated name of the format, temp followed by 6 digits e.g temp123456.

##### Acceptance Criteria:

1. When the user presses the "Guest" button, they receive access to the app.

This User Story is associated with making it an option to log into the app as a Guest and not having to make an account. Not all users using a platform want to have a personal account and be identified, some would like to remain anonymous and have the same privileges as Registered users (post, comment, message).The app will support this methodology.

#### User Story 5:

<b>Title:</b> Logging into my account in <i>The Blog</i> through other social media platforms
<b>User Story:</b> As a user, I want to be able to Log into my account through my already created personal accounts from other platforms.
<b>Conversation:</b> Once the app is activated by the user and the user is on the homepage. There will be bold text under the “Sign up” and “Guest” buttons reading “Already have an account?”, which is a link. Once this link is pressed by the user, the Log in window opens. In this window the user will have the choice between entering their username and password to log in OR they will be able to log in with their already created accounts on other well-known platforms. This will be represented as three separate buttons at the bottom of the Log in window. The first button closest to the top of the window will be “log in with Facebook”, when pressed it will bring the user to Facebook and require them to log into their account to be able to login into <i>The Blog</i> . <i>The next button will have the same functionality but the user will be able to log in with twitter, when the “log in with twitter” button is pressed by the user it will bring them to twitter to sign into their respective account. The last option button at the bottom of the log in window “log in with google”, when pressed it will bring the user to google to log in to their google account.</i>
<b>Acceptance Criteria:</b> <ol style="list-style-type: none"><li>1. When the user presses one of the three available buttons in the Log in window, this will bring the user to the respective platform of choice and prompt log in on that platform. Valid log in on the chosen platform will result in the user logging into <i>The Blog</i>.</li></ol>

The user story describes the need for the app to have a way of logging in with other platform accounts, rather than having to create a new account. This supports the idea of people being identified to their friends and other users as they would be on the associated platform. This option will lead to more growth in the app as friends will be able to locate each other easier on the app.

#### User Story 6:

<b>Title:</b> Check /update personal account information and settings
<b>User Story:</b> As a user whose owns an account for the app, I want to be able to check and update my account information and settings
<b>Conversation:</b> Once the user has logged into their account. There will be an image in the top right corner of their home window. Once pressed, a dropdown will be activated with a number of options as follows: Profile, Messages, Settings, Contact us, Log out. If the user wants to check or update their account information, they will press on Profile which will bring them to another window and display their account information and allow changes. If the user wants to check or change their settings, they will press on Settings. This will bring the user to another window and which displays the user's settings and allows changes.
<b>Acceptance Criteria:</b> <ol style="list-style-type: none"><li>1. When the user presses on "Profile", they will be able to check and/or change their account information.</li><li>2. When the user presses on "Settings", they will be able to check and/or change their settings.</li></ol>

This user story depicts the need for a way to access and update account information and settings. As a platform with accounts, the user needs to be able to access this information when needed as it represents their identity (account information) and their experience in the app(both).

### User Story 7:

**Title:**

Creating a post in *The Blog*

**User Story:**

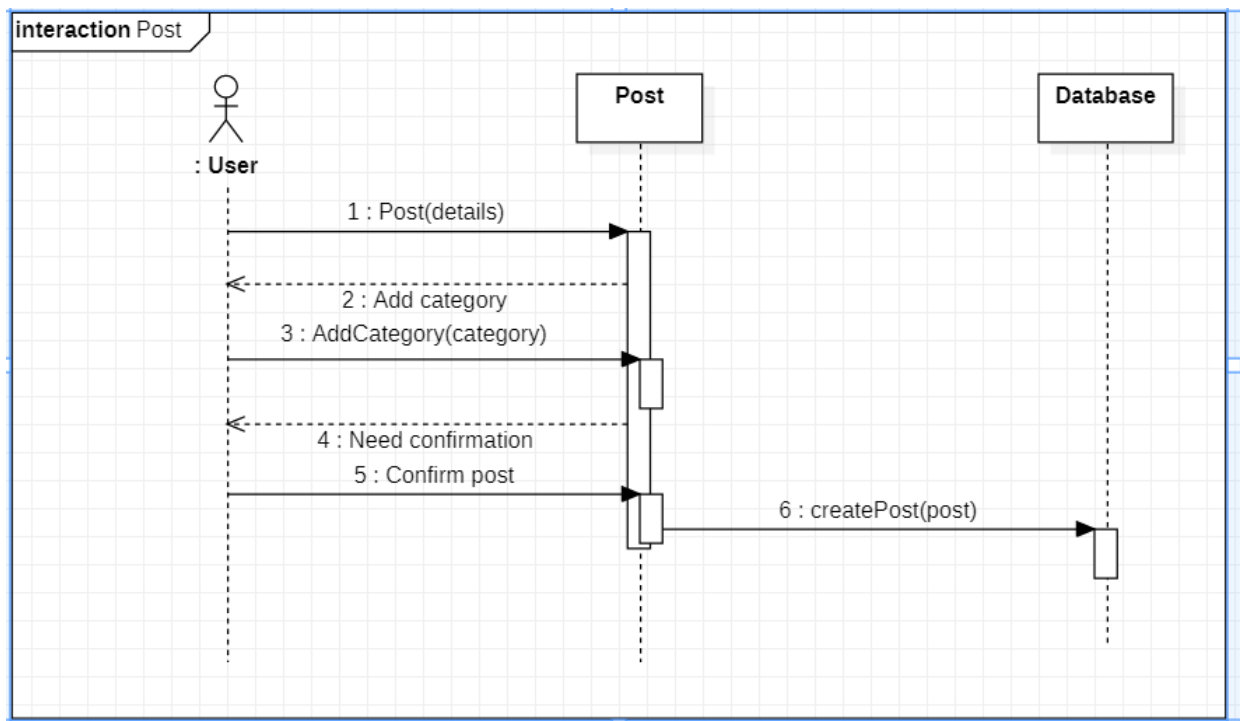
As a user, I want to be able to post on *The Blog*.

**Conversation:**

When the user is logged in or a guest in *The Blog*, they will be in the home window. They can click on one of the many posts in the home window which will bring them to the Posts window. Once the user is in the Posts window, they will have a prompt at the bottom of the screen to create a new post. Once the user has completed their post, they can press on the “Create a new post” button at the bottom of the Posts window. This will effectively post their new post to *The Blog*

**Acceptance Criteria:**

1. When the user presses the “Create a new post” button, they will post to *The Blog*.



The user story explains the main functionality of the app, the ability for users to post whatever and whenever they want. The posting functionality will be real time and support attachments such as images, documents etc. Posts can also be edited and deleted. The sequence diagram above shows how a post is created. Once the post is confirmed it will be saved to the database.

### User Story 8:

<b>Title:</b> Commenting on a post in <i>The Blog</i>
<b>User Story:</b> As a user, I want to be able to comment on other user's posts on <i>The Blog</i> .
<b>Conversation:</b> When the user is logged in or a guest in <i>The Blog</i> , they will be in the home window. They can click on one of the many posts on the home window which will bring them to the Posts window. Once the user is in the Posts window, they will have a prompt below the post they are currently viewing "Write a comment..." and they will also see any other user's comments on the post. The comment can be confirmed by pressing enter/return on the keyboard.
<b>Acceptance Criteria:</b> <ol style="list-style-type: none"><li>1. When the user confirms their comment, they will comment on the post in <i>The Blog</i>.</li></ol>

The user story describes the need for a way of feedback and communication between users on a post. The user will be able to write a comment on their own posts or on any post they want. Comments can also be edited and deleted.

### User Story 9:

<b>Title:</b> Categorizing posts in <i>The Blog</i>
<b>User Story:</b> As a user with an account, I want to be able to categorise my posts.
<b>Conversation:</b> Once the user is logged in and in the Posts window, above the textbox for the post's content there will be a dropdown called categories. Once pressed by the user it will then drop down giving various category to choose from.
<b>Acceptance Criteria:</b> <ol style="list-style-type: none"><li>1. When the user presses on "Categories" in the Posts window. This will activate a dropdown showing categories to choose from.</li></ol>

This user story describes the need for the users to have the ability to categorize their posts. This is due to the fact the app is set up to display posts sometimes by their categories. So, it is recommended but is



only just an option for user's posts and not a requirement. There is a wide range of options, farming, gaming, sports etc. Also, users can add multiple categories to a single post.

#### User Story 9:

**Title:**

Finding posts on *The Blog*

**User Story:**

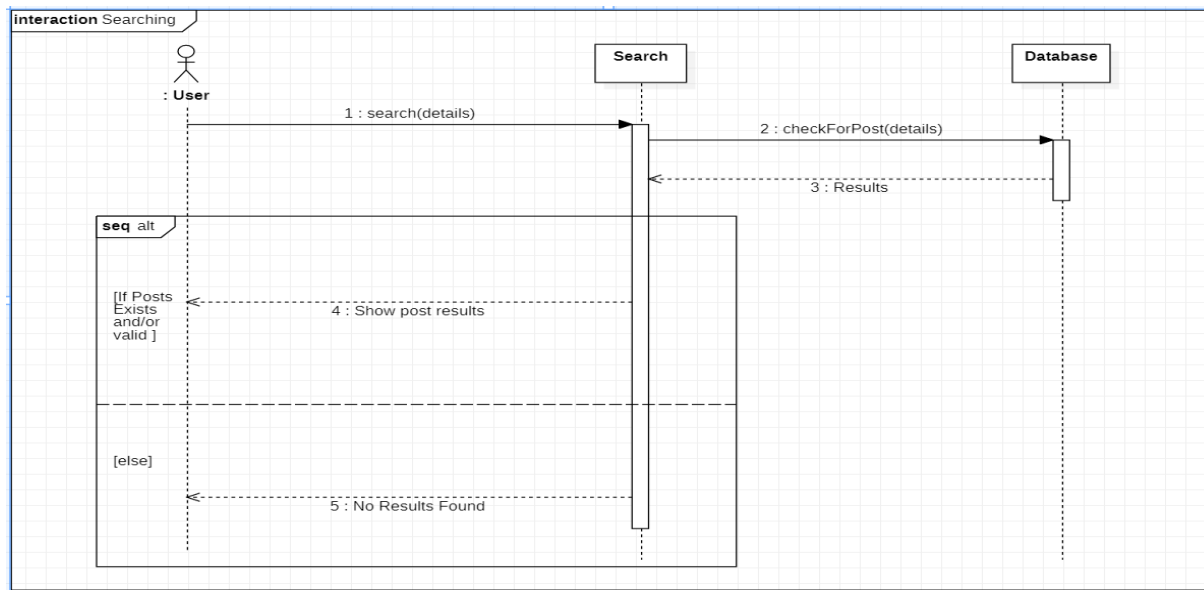
As a user, I want to be able to find posts I want to see.

**Conversation:**

When the user is logged in or a guest in *The Blog*, they will be in the home window. The home window will contain two sections. The upper section "Trending now", this section will contain the most popular posts on The Blog. The posts will be represented by the accompanying pictures on a picture reel. Once pressed on the desired post's picture. It will bring the user to desired post window, where they can view and comment on the post. The second section nearer to the bottom of the home window "Featured". This section contains five featured posts which are recommend per your profile. These will also be represented by the post's picture. When the user presses the desired post's picture, it will bring the user to the desired post window where they can view and comment on the post. There is also a search bar feature in which users can search *The Blog* to find any post they want. They can do this by searching for their desired post by its title. Once searched it will show the results where the user can pick the correct one and this will bring the user to desired post window, where they can view and comment on the post.

**Acceptance Criteria:**

1. When the user enters the post's title into the search bar, results will be shown which represents the search.
2. If a user presses on any post's picture in the home window, it will bring them to the desired post's window.



This user story shows the need for another one of the main functionalities of the app, finding the posts you want to see. The app offers many ways of finding new posts and even has a Trending and featured section, but if you want to find a specific post you can search for its title in the search bar. The sequence diagram above shows the search process within the system. The user searches for a post in the search bar which then searches the database. The results from the database are returned and if there are results they are shown to the user, else “No Results Found”.

#### User Story 10:

##### Title:

Messaging other users in *The Blog*

##### User Story:

As a user with an account, I want to be able to private message other users.

##### Conversation:

Once the user has logged into their account. There will be an image in the top right corner of their home window. Once pressed, a dropdown will be activated with a number of options as follows: Profile, Messages, Settings, Contact us, Log out. If the user wants to message other users, the user will press on Messages and this will bring the user to the Messages window. They will be able to see previous conversations with other users and be able to start a new conversation with a new user. The user can create a new message by pressing the “Create a New Message” button at the bottom of the Messages window

##### Acceptance Criteria:

1. When the user presses on “Messages” in the dropdown in the home window, they will be brought to the Messages window.
2. When the user presses on the “Create a New Message” button in the Messages window. The user will create a new message with a new specified user.

This user story is another functionality necessary for the app, this is communication privately between two users. This will offer a social aspect to the app and make it more versatile for new users with new intents, like talking with their friend rather than posting or viewing posts.

**User Story 11:**

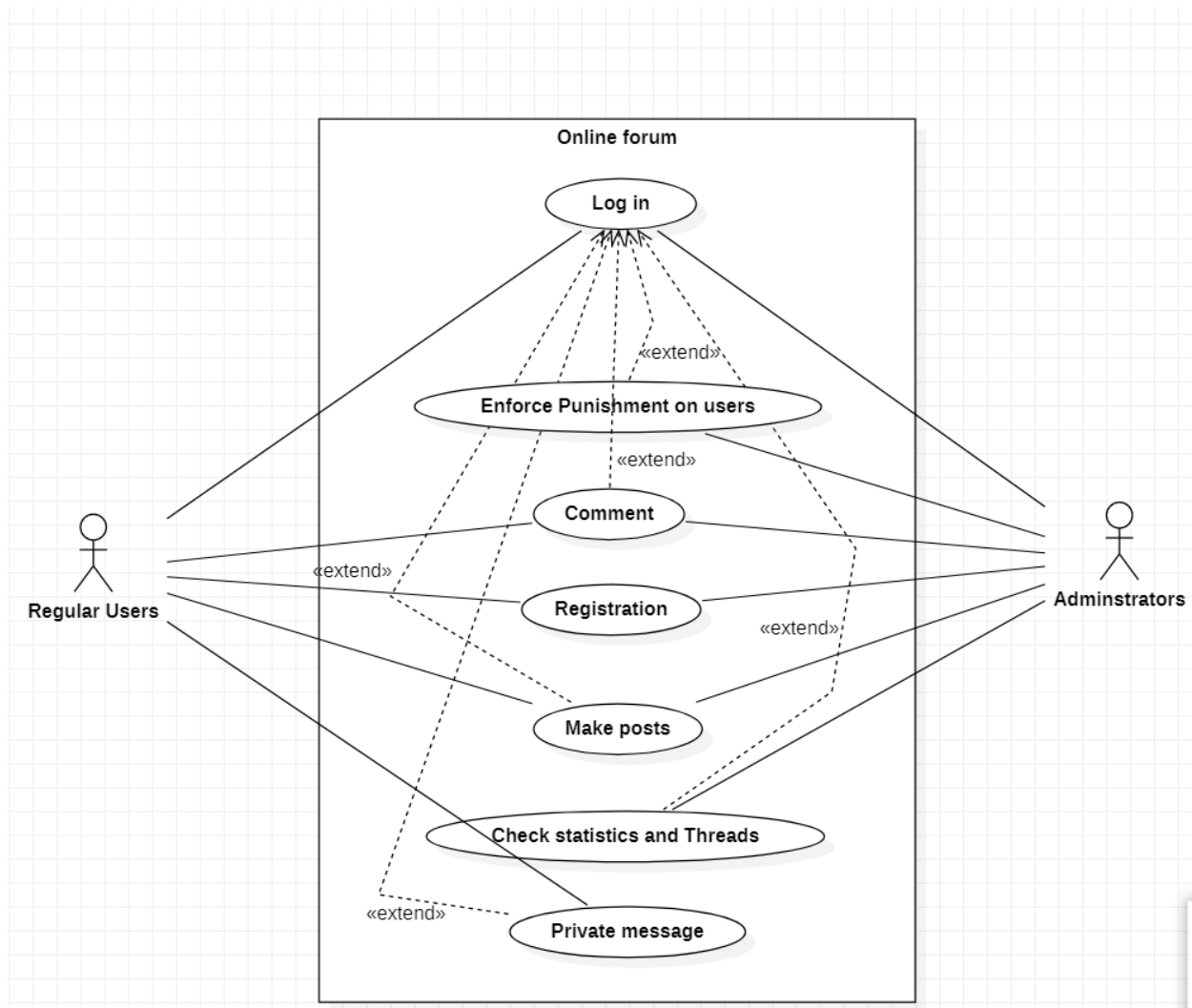
<b>Title:</b> User support in <i>The Blog</i>
<b>User Story:</b> As a user with an account, I want to be able to get support on how to use the app or any other queries I may have
<b>Conversation:</b> Once the user has logged into their account. There will be an image in the top right corner of their home window. Once pressed, a dropdown will be activated with a number of options as follows: Profile, Messages, Settings, Contact us, Log out. If the user wants to ask a query or is having any trouble with the app, they can press on "Contact us". This will bring the user to the Contact us window. The user will then be supplied with an email address and phone number to receive support. Also, there will be an online forum where they can receive real time response from several <i>The Blog</i> workers.
<b>Acceptance Criteria:</b> <ol style="list-style-type: none"><li>1. When the user presses on "Contact us" in the dropdown of the home window, they will be brought to the Contact us window.</li></ol>

This user story describes a necessary functionality for most apps, that is to support their client's queries and problems, so they have a better experience while using the app. Multiple options are provided to users, understanding they might not have a certain form of communication.

### User Story 12:

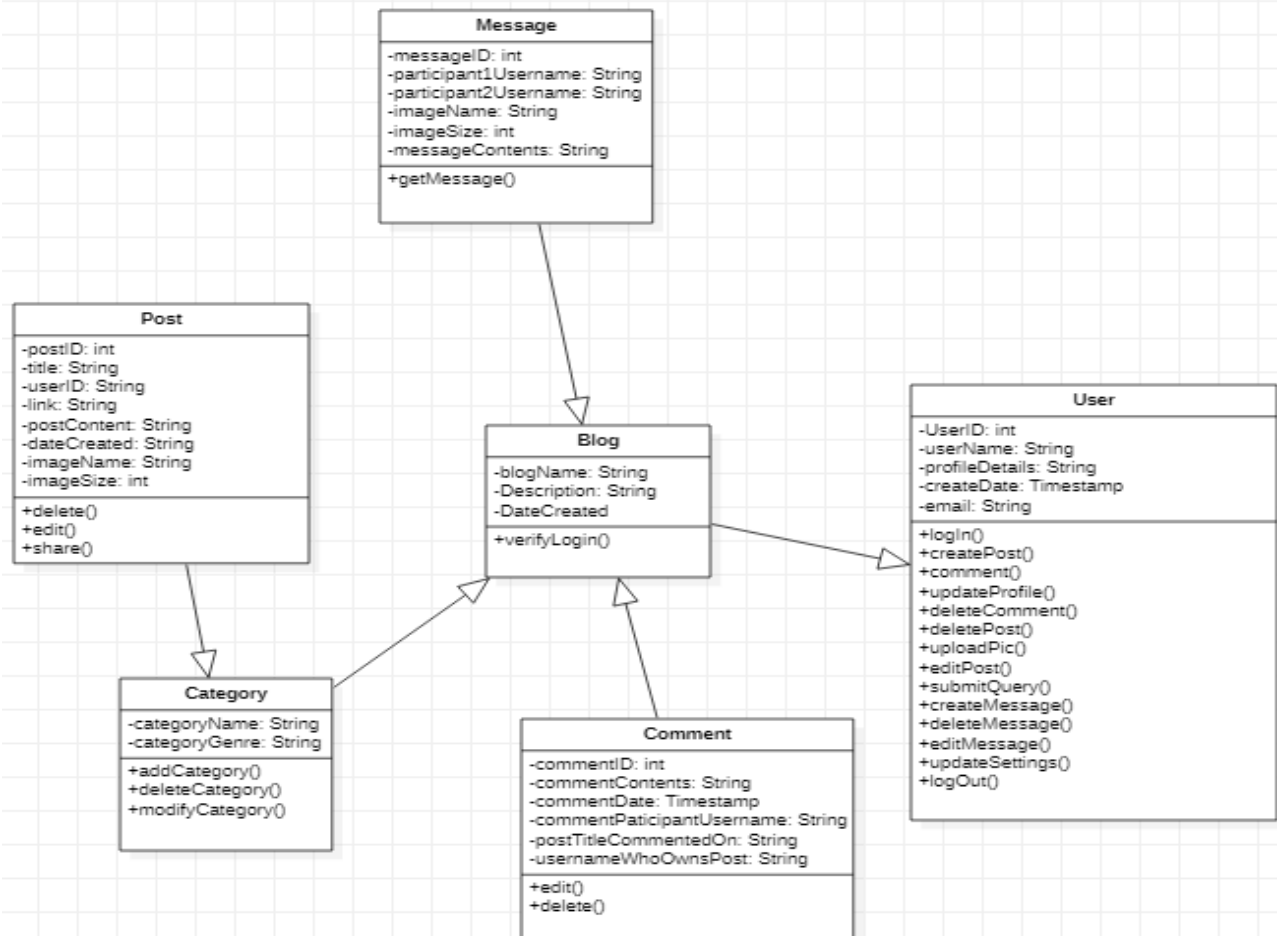
<b>Title:</b> Logging out of <i>The Blog</i>
<b>User Story:</b> As a user with an account, I want to be able to log out of my account
<b>Conversation:</b> Once the user has logged into their account. There will be an image in the top right corner of their home window. Once pressed, a dropdown will be activated with a number of options as follows: Profile, Messages, Settings, Contact us, Log out. If the user wants to log out, the user will press on Log out and confirm their log out. If the user wants to access their account, they will have to log in again.
<b>Acceptance Criteria:</b> <ol style="list-style-type: none"><li>1. When the user presses on “Log out”, they will be logged out of their account.</li></ol>

This user story is for the need for a user log out system. Which is an essential feature to disconnect from the service, as other users will believe they are still on when they are not online.



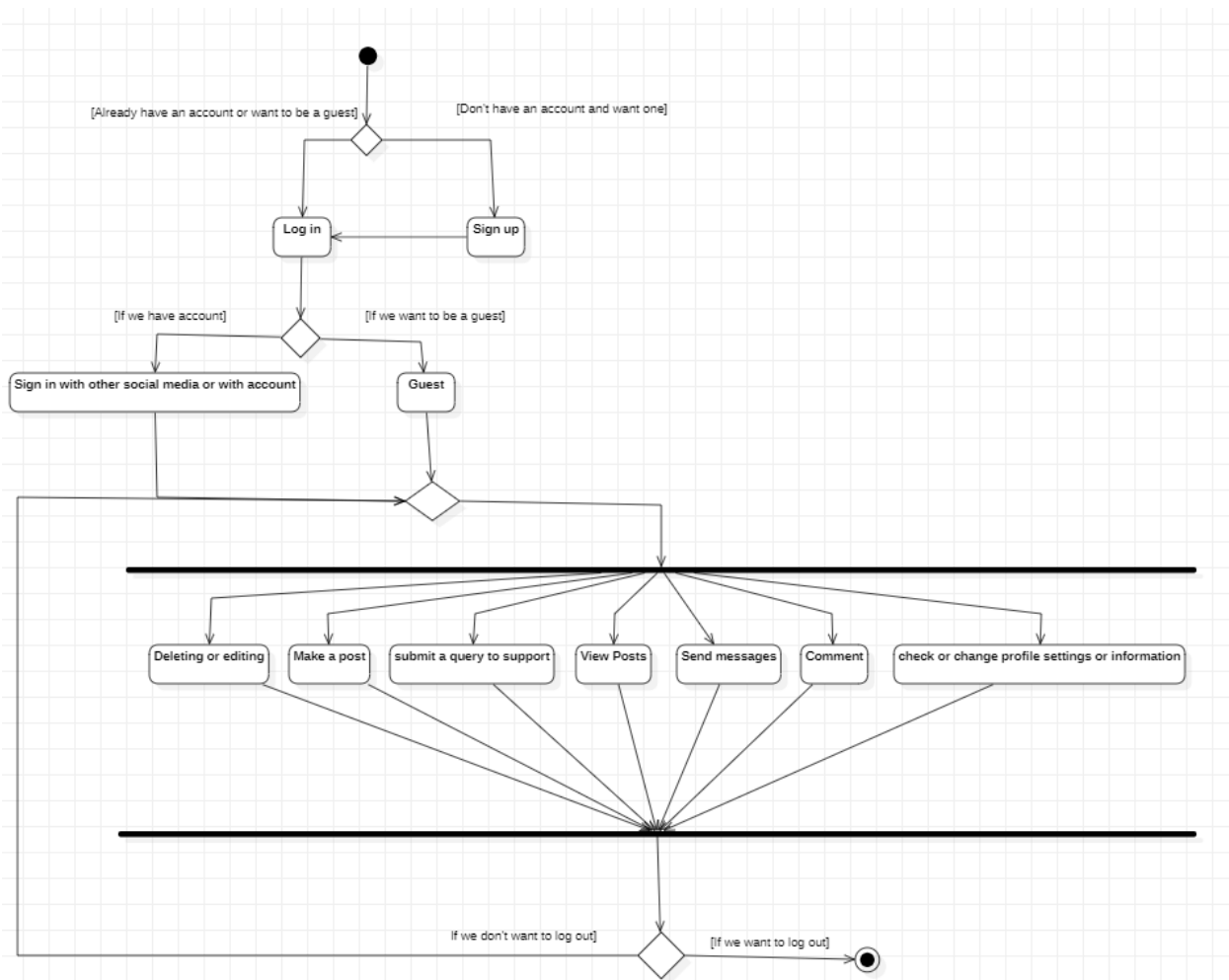
The figure above shows the use case diagram of the system as a whole from the end user's perspective. The app has two actors the user and admins. The User can access it's privileges by logging in aswell as the admins. The log in use case includes the guest option.

User's can comment, post , message, log in and register. Admins however can additionally be able to check stats and threads and enforce punishments onto other users when they are wrong doing, but they can't private message users. The use cases that extend log in can only be accessed by logging in.



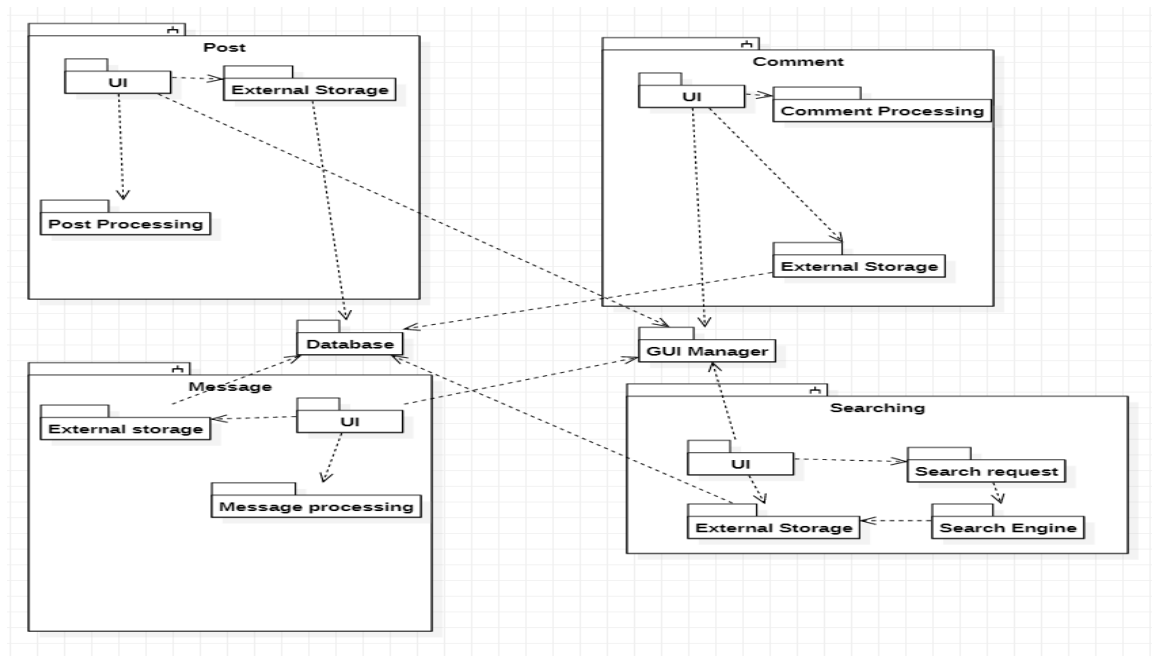
The figure above shows the Class diagram of the System, which models the static structure of the system. This diagram shows the attributes of each object or class of the system as well as their operations. The diagram incorporates the most important objects within the app, User, Blog, Comment, Category, and Post.

User has its attributes which is generally all the information provided by the user to create their account and the operations associated with the user are all the actions the User can do within the app. Comment, post, and message have much of the same operations they can edit or delete. The attributes associated with them are information about the contents of each. Post generalizes Category which generalizes blog, as every post has an attached category. The attributes are private and operations public for All.



The figure above shows an Activity diagram of the system which shows it modelling a large activity's sequential workflow by focusing on action sequences and respective action initiating conditions. The diagram starts at the initial state, the same as the user opening the app to the homepage. From the initial state the control flow goes to a decision, this is where there is a choice for our user (which log in method to use). If they do not have an account and want to register/sign up, the control flow goes to the right to the sign-up action. Else if you already have an account or want to be a guest the control flow goes to the log in action. After the user has completed the sign-up action they can then move on to the log in action.

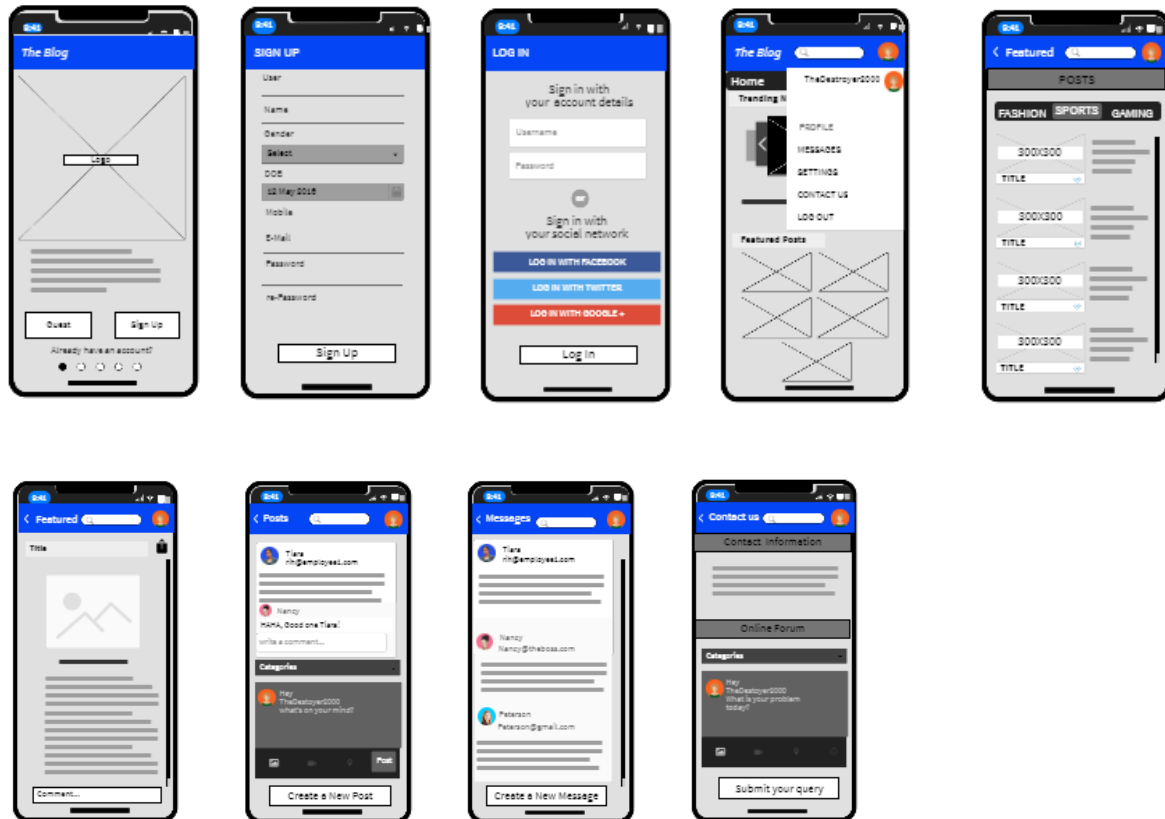
After that, the control flow goes into another decision as there is two options now, to log in or to be a guest. Once that is done the two control flows merge and that single control flow goes into a fork which gives the user the option to do any of the actions leading from it concurrently (View posts, Comment etc.). Then the many control flows join into one on the other side of the fork which goes into another decision. The user can then decide if they want to log out. If they do not, they return to the fork to avail of any or all actions. If they do, we reach the final state of the activity diagram.



The figure above gives some insight into the architectural design of the app. It shows a package diagram with the subsystems and packages of the system. Post, Message, Comment and Searching are the main subsystems. Each contain a dedicated UI/window. Each message, post and comment in the app needs to be processed and stored to our database. To do that each UI is dependent on the database package. It needs the database for creating, retrieving, updating, and deleting posts, comments, and messages (CRUD). The exception in the architecture design is searching as the UI is dependent on each search request which in turn is dependent on the search engine which is dependent on the database. Each UI of the main subsystems are each dependent on the GUI manager to manage their respective view.

**Outline of system tests:** There isn't much system testing you can do with this app apart from the log in and sign up process, the system tests would be made up of invalid and valid data to check that these two processes work as expected. The Log in process on valid data would let the user log in, on invalid data do not let user log in. The Sign up process on valid data creates an account, on invalid data do not create an account and ask for valid data. The only tests for Post, Message and comment would be to test the word maximum is working as comment would have less than a post and message. Have some text for each of the 3 interactions that is bigger than the maximum word count per upload to test that.





This is the mock UI design which showcases a prototype of what the GUI for the app at different stages would look like. The first UI displays the homepage after opening the app, it shows the app's logo, some description text, and guidelines. It also shows the three options Guest, Sign up and if the user has an account. The second UI shows the Sign up window after the user has opened the app and chosen to register/sign-up. It shows the necessary data fields required to create an account and a sign-up confirmation button at the bottom of the window. The third UI shows the Log In process which shows the option to enter your account username and password or the option to sign in with one of three existing platforms, with a login confirmation button at the bottom of the window. There is not a dedicated UI for the guest process as after user presses guest they enter the fourth UI with a randomly generated name, instead of a personal username connected to an account.

The fourth UI of the app shows the home of what a logged in user or guest would look like. It shows many things, a Featured section which contains posts generated per user, a Trending now section which shows the most popular posts, a search bar for searching for specific posts and an account image. When the account image is pressed a dropdown appears with other user functionality (profile, messages, settings, Contact us, log out). The fifth UI displays what the featured window would look like, it would display various posts where the user can view them according to their category at the top of the window. The Sixth UI displays even further the featured posts window when a user enters one of the posts, this shows the user's view, how a post would look in the app and shows how the user would comment on a post. The seventh UI shows how the general Posts window would look, as it shows another user's post, another user's comment on the post, an option for the current user to comment on the post and a prompt for the current user to make a post with a "Create a New Post" confirmation

button at the bottom of the window. The eighth UI shows how the Messages window would look after a user enters the window through the dropdown on the Home window. This window would show the user's reel of existing messages with other users in the app and would also have a button at the bottom of the window to create a new message with a new user.

The ninth and final UI would show the Contact us window after the user enters it from the Home window dropdown. The contact us window would have a variety of contact information to get in touch with someone from the app and also have a text box for user queries to be submitted to the online forum with the submit your query button at the bottom of the window. Each UI after login will have the search bar so users are able to find the posts they want to see.

**Problem Scenarios this software system would solve for customers:** For this software system being in the entertainment sector does not solve a lot of problems, the main problem it would solve for users is communication. If a user wants to talk to another person, the app is a way to do it. But inadvertently, this can solve the problem that is money. One benefit from blogging is that if the user is popular, it can bring a source of income. Not taking into consideration, it can be a form of expression and help user loneliness, more personal problems a user may have.