

Messaging System Project Description

A company wants to develop a messaging system similar to either twitter or instagram to allow users of the system to send text messages or images which other users of the system who are followers of that user can read or see. The company is willing to consider different approaches to this project so you, the developer, can decide if the system will send only text messages, only images or both. The application will be a client/server system. A client must first register with a central server and establish a screen name and a password in order to send and receive messages or images. Prior to registering a person may only access an About dialog box which describes the capabilities of the system. Once a user has been registered they are required to log in with the central server before completing any tasks. Once they are logged in the central server will need to keep track of the IP address where that user is logged in. The user is also required to log out when they are done.

User Capabilities: Once logged in, a user should be able to complete these tasks:

- Retrieve and read through messages and/or images that have been sent by user's they are following since they last logged in to the system (i.e. messages/images that are waiting for them).
- Retrieve and read messages and/or images that have been sent by someone the user is following while they have been logged in.
- Send a message/image that a user's followers will be able to read/see when they log in or while they are logged in.
- Send a private message/image to another user **who is currently logged in**. The system will need to be able to check to see if that other user is currently logged in.
- Search through all messages/images that have been sent by any user to see a list of messages/images with a certain hashtag (see message description below). This search should NOT include private messages/images, but would include messages/images posted by someone the user currently isn't following.
- Follow another user that they aren't currently following.
- Unfollow another user that they are currently following.
- A user should be able to scan and read all messages/images that they have sent while logged on. Once they have logged off they do not need to see their messages unless they come up in a search
- A user should be able to see if people following that user are logged on

Message Structure:

- **Public Text Messages:** Public text messages should consist of a body, a date sent, a time sent, the screen name of the sender, and one hashtag (only one is required, multiple may be implemented if desired). The hashtag may be incorporated in the body of the message if desired or kept separate.
- **Public Images:** Public images will have a similar format as text messages, but the body will be an image instead of text.
- **Private Messages:** Private messages will not have a hashtag.

The central server: The central server maintains a list of users of the system and knows which users are currently logged in. For each individual user, the system will need to keep a screen name and password as well as the list of users who follow that user. The central server also stores the set of public messages/images that have been sent so that they can be searched. Private messages sent between users are not saved on the server.

The administrator: The system should provide for an administrator account. This account must be allowed to change user's passwords and to delete messages posted by any user. They can also check some stats such as the number of registered users and the number of messages sent each day. The administrator is not a regular user and can only perform administrative tasks.

System Requirements.

- Public messages (tweets) are first sent to the central server and saved on that central server. The central server then sends tweets to user's who are following the person who sent the message or saves them for that user to read when they log in.
- Private messages should be sent directly between the users. They do NOT pass through the central server first.
- In order to send a private message the receiver of the message must be a follower of the sender (Both the sender and receiver have to be following each other).
- If a follower is logged in while someone they are following sends a message, they should be able to receive that message immediately (they should not have to log off and then log back on to receive the message).
- A user may only be logged in once – multiple log ons are not allowed (This is to your benefit – you may request to take on this challenge if you wish).
- Only one hashtag for a message is required. Implementing multiple hashtags would be a nice feature to add.
- While not required, it is a nice feature for the server to automatically notify logged in users when one of their followers logs in or logs out. If this feature is not implemented, the user must have a way of checking to see if a follower is logged in or not.
- While not required, another nice feature would be the saving of user's messages when the server is shut down so this information could be recovered when the server starts back up again.