UML Class diagram for social media platform.

Prepare a detailed class diagram for a social media platform, including all classes, their methods and attributes (with visibility notation), relevant relationships (dependencies, generalizations, associations) with cardinalities, enumeration, etc. as described by the case study given below.

Case Study Description

Imagine you have to build a social media platform that transforms online interactions into a seamless and visually captivating experience. How would you design the system's core components to ensure a user-friendly, engaging, and scalable platform?

Users can create an account with attributes like username, email, bio, followers and also a list of User Accounts they follow. A User can follow zero or many other accounts, and can also be followed by zero or many other accounts. This establishes a mutual following relationship between users. Each account will also include information such as Password, Email, AccountStatus (which can be ACTIVE, DEACTIVATED, or DELETED), and PrivacySettings (which can be either Public or Private). Users can create and upload content (i.e, posts and stories), engage in messaging, and manage their online presence.

In this system, Users should have the ability to communicate with other users. Each message has a message ID, sender, receiver, timestamp, reaction list. A Message may exist independently of a user, with users having the ability to react to messages.

Users should be able to create multiple pieces of content, each of which can be associated with one or more users. Each piece of content is dependent on a user account for its creation and existence. Content created by the user will have contentID, contentURL, creationTime, and creatorID. Users can also view content insights, edit content or delete content. The Content class should serve as an abstract foundation for its specialized types—Post and Story— defining shared characteristics and behaviors while leaving their unique implementations to the derived classes.

Each Post should be characterized by attributes such as caption, likes, and comments. These attributes allow for user engagement and content description. In addition to these, the Post class would also include features like addFilter() for visual enhancements, allowing users to apply different filters to improve the appearance of their post, and sharePost() for distribution. A Post can contain none or many Hashtags, allowing users to categorize or add context to their content. Similarly, a Hashtag can be used in zero or more Posts.

Users must be able share Stories to showcase glimpses of their favorite places, activities. Stories can be potentially marked as highlights to show key moments on their profile. These stories can be customized with various visual enhancements, such as stickers or tags, which are closely tied to the story and cannot exist without it. Additionally, users can engage with stories from others by liking them, and can also view which of their followers have seen or liked their story.

Lastly, how would you empower users with analytics to track their performance by monitoring key metrics like reach, engagement rate, and impressions? These insights could be generated through methods such as analyzeMetrics and trackGrowth, which would be implemented by each content type, whether it's a post, story, or reel, to provide personalized data based on its unique attributes. This would allow users to assess their progress in content creation or manage their social media usage. The insights would be tailored to each user and depend on the existence of their user account.