 X (Twitter)

**Product Dissection for X(Twitter).**

### **Company Overview:**

Twitter,officially known as **X** since 2023,was created in March 2006 by [Jack Dorsey](https://en.wikipedia.org/wiki/Jack_Dorsey), [Noah Glass](https://en.wikipedia.org/wiki/Noah_Glass), [Biz Stone](https://en.wikipedia.org/wiki/Biz_Stone), and [Evan Williams](https://en.wikipedia.org/wiki/Evan_Williams_(Internet_entrepreneur)), and was launched in July of that year.Twitter, Inc., was based in San Francisco, California, and had more than 25 offices around the world.A signature characteristic of the service initially was that posts were required to be brief. Posts were initially limited to 140 characters, which was changed to 280 characters in 2017. The limitation was removed for subscribed accounts in 2023.

### **Product Dissection and Real-World Problems Solved by X(Twitter).**

X(Twitter) is a popular platform for social networking due to its fast-paced and informal communication style. Users of the platform can send out short snippets of texts called tweets which can include text, pictures, videos, and hashtags. The main features of the platform are a feed that is displayed in the chronological order of tweets posted by the users, the ability to like, retweet, and reply to the tweets, and trending keywords and phrases that are popular globally. Users can create their own lists and send direct messages, and also join audio-only conversations via Twitter Spaces.

Simply put, Twitter focuses and optimizes for instantaneous interaction. The social media platform uses machine learning and algorithmic capabilities to provide customized feeds, showcase topics that are on trend, and identify harmful materials such as false information. The backend of the platform is designed to manage tremendous data loads with the use of scalable databases and a microservice architecture.

Twitter presents solutions to different real-life challenges. It acts as a source of breaking news and updates, assisting people to remain aware during important situations such as natural calamities or civil unrest. During emergencies, it is a crucial tool for communication and helps in sharing vital information with the general public and government. Twitter encourages participation in civic activities by allowing leaders to speak to the citizens directly, encouraging civil rights movements, and allowing public opinion debates.

Apart from political and civic discussions,Twitter has changed customer service, where brands can directly communicate to the customers in real-time. Businesses also use Twitter for marketing and brand awareness, reaching a wider audience base with more focus on specific content.Also, Twitter combats the spread of misinformation by flagging and removing false information through fact-checking initiatives such as community posts.

In summary, Twitter is a dynamic platform that enables real-time communication, social engagement, and information sharing, making it a key tool for news, business, activism, and customer interaction.

### **Case Study: Real-World Problems and X's(Twitter’s) Innovative Solutions**

X(Twitter), a leading social media platform, has become one of the most popular tools for direct communication, news sharing, and public interactions. Since its formation, Twitter has continuously identified real-world challenges in the social media space and implemented innovative solutions that improved user engagement, smoothened the flow of information, and promoted meaningful interaction. Here are some main examples of problems Twitter has addressed and how it solved them.

**Problem 1: Information Overload and Content Discovery**

**Real-World Challenge:**With millions of tweets being sent every minute, users often struggled to sift through the noise and discover relevant, timely content leading to missing important updates, trends, or breaking news, making it difficult for users to stay informed.

**X(Twitter’s) Solution:**Twitter introduced the **"Trending Topics"** feature, which helps users discover the most talked-about subjects in real-time. By using an algorithm that curates these topics based on the user's location and interests, Twitter provides an individually distinctive yet complete view of what's happening globally. This feature helps mitigate information overload by highlighting important discussions and ensuring that users can easily access relevant, high-value content. Additionally, Twitter implemented **hashtags**, allowing users to easily follow and engage with content about specific topics, further trimming content discovery. Later on X also introduced the ability to follow topics and trends, making it easier for users to stay informed about specific subjects without wading through irrelevant content.

**Problem 2: Limiting Public Dialogue to Short Form**

**Real-World Challenge:**X(Twitter's) character limit promoted concise and quick thoughts but also challenged users trying to engage in more nuanced, detailed conversations. For important issues or discussions, the briefness of tweets sometimes prevented deeper engagement or full context from being conveyed.

**X(Twitter’s) Solution:**To tackle this challenge, X(Twitter) rolled out **"Tweet Threads"**, allowing users to create a series of connected tweets to express longer, more detailed thoughts while maintaining the platform's iconic short-form style. This innovation enabled users to engage in complex discussions, share stories, or explain on important topics, without losing the immediacy and summary of Twitter’s core design. Also, X(Twitter) introduced the **"Quote Tweet"** feature, which allowed users to reply to tweets directly with additional context, expanding on the conversation in a more meaningful way. Later X tweet lengths were increased from 140 to 280 characters for better expression of thoughts eliminating the need to make a small thread.

**Problem 3: Lack of User Control Over Content Interaction**

**Real-World Challenge:**For many users, the social media environment can be unkind, with bullying, trolling, and negativity being common occurrences. This can disappoint users from participating in conversations or using the platform altogether.

**X(Twitter’s) Solution:**Twitter responded to this challenge by introducing a list of **privacy and safety features** designed to give users more control over their interactions. The platform added **muting**, **blocking**, and **reporting** tools, allowing users to take action against harmful content. In addition, Twitter introduced the **"Mute Keywords"** feature, enabling users to block specific terms or phrases from appearing in their feeds, which is especially useful in avoiding abusive language or unwanted trends. More recently, Twitter introduced the **"Hide Replies"** feature, allowing users to control the visibility of replies to their tweets, helping to maintain a more respectful and controlled conversation space.

**Problem 4: Ensuring Credibility and Trustworthy Information**

**Real-World Challenge:**With the rapid spread of information on Twitter, users have often encountered challenges in distinguishing credible sources from misinformation. This is especially important when it comes to news, political discourse, and health-related topics, where false information can have widespread consequences.

**X(Twitter’s) Solution:**Twitter tackled this issue by introducing **"Verified Accounts"**, denoted by a blue checkmark, which helps users identify credible and authentic sources, particularly for public figures, media organizations, and experts. Furthermore, Twitter launched **"Fact-Check Labels"**, which flag misleading or false claims, and links to more reliable sources or corrections. To combat misinformation, the platform also rolled out **"Community Notes"** (formerly known as Birdwatch), a feature that allows users to collaboratively assess and provide context for tweets that may be misleading. These measures promote transparency and empower users to make more informed decisions about the content they encounter.

**Conclusion:**

Twitter has evolved over the years to address numerous real-world challenges that emerged as the platform grew in popularity and complexity. Through innovations such as tweet threads, monetization tools for creators, advanced safety features, and initiatives to combat misinformation, Twitter has continued to empower users to engage meaningfully, safely, and productively. By identifying user needs and responding with thoughtful, tech-driven solutions, Twitter remains at the forefront of real-time digital communication, shaping the way we interact with news, people, and ideas online.

### **Top Features of X(Twitter):**

1. **User Profiles:** Twitter allows users to create personal profiles, offering insights into their lives through features such as usernames, full names, bios, and profile pictures. This creates a personalised online presence that reflects each user's identity.
2. **Tweets/Posts:** A core feature of Twitter is the ability to share photos and videos as posts. Users can add captions, tag locations, and enhance their content using filters, stickers, and other creative tools.
3. **Likes**:Users can express appreciation by liking posts and sharing their thoughts through comments. The "Bookmark" feature enables users to bookmark content for later viewing.
4. **Followers and Following:** The platform fosters connections through the "Follow" functionality. Users can follow other accounts to see their posts in their feed, creating a network of connections. Users can also view who is following them, enhancing transparency.
5. **Explore:** The "Explore" feature propels discovery by suggesting content based on user preferences and interactions. Users can explore posts, videos, and stories from accounts they don't follow, fostering a diverse online experience.
6. **Hashtags:** Twitter categorises posts and enhances discoverability. Users can add relevant hashtags to their posts, making them reachable to a wider audience.
7. **Retweet/Repost:** A Retweet is a re-posting of a Tweet. Twitter's Retweet feature helps you and others quickly share that Tweet with all of your followers. You can Retweet your own Tweets or Tweets from someone else. Sometimes people type RT at the beginning of a Tweet to indicate that they are reposting someone else's content.

### **Schema Description:**

The schema for Twitter involves multiple entities that represent different aspects of the platform. These entities include Users, Posts, Comments, Likes, Followers, Hashtags, and more. Each entity has specific attributes that describe its properties and relationships with other entities.

**User Entity:**

Users are at the core of Twitter. The user entity contains information about each user:

* **UserID (Primary Key)**: A unique identifier for each user.
* **Username**: The chosen username for the user's account. Limited to 16 letters.
* **Email**: The user's email address for account-related communication.
* **Full\_Name**: The user's full name as displayed on their profile.
* **Bio**: A brief description that users can use to express themselves.
* **Registration\_Date**: The date when the user joined Twitter.

**Tweet Entity:**

Tweets capture the visual/written content shared on the platform:

* **TweetID (Primary Key):** A unique identifier for each post.
* **UserID (Foreign Key referencing User Entity**): The user who created the post.
* **Caption**: Text accompanying the post, providing context.
* **Image\_URL**: The URL of the image or video content.
* **Location**: The tagged location associated with the post.
* **Tweet\_Date**: The date when the post was created.

**Comment Entity:**

Comments enable users to engage in conversations around posts:

* **CommentID (Primary Key)**: A unique identifier for each comment.
* **TweetID (Foreign Key referencing Post Entity):** The post being commented on.
* **UserID (Foreign Key referencing User Entity)**: The user who posted the comment.
* **Text**: The text of the comment.
* **Comment\_Date**: The date when the comment was posted.

**Like Entity:**

Likes represent user appreciation for posts:

* **LikeID (Primary Key):** A unique identifier for each like.
* **TweetID (Foreign Key referencing Post Entity):** The post being liked.
* **UserID (Foreign Key referencing User Entity):** The user who liked the post.
* **Like\_Date:** The date when the like was registered.

**Follower Entity:**

Followers establish connections between users:

* **FollowerID (Primary Key)**: A unique identifier for each follower relationship.
* **FollowingUserID (Foreign Key referencing User Entity)**: The user who is being followed.
* **FollowerUserID (Foreign Key referencing User Entity)**: The user who is following.
* **Follow\_Date**: The date when the following relationship was initiated.

**Hashtag Entity:**

Hashtags categorise and group content:

* **HashtagID (Primary Key):** A unique identifier for each hashtag.
* **Tag**: The explanation of the hashtag.

**TweetHashtag Entity:**

Associates posts with hashtags:

* **TweetHashtagID (Primary Key)**: A unique identifier for each association.
* **TweetID (Foreign Key referencing Post Entity)**: The post associated with the hashtag.
* **HashtagID (Foreign Key referencing Hashtag Entity)**: The hashtag associated with the post.

**Retweet Entity:**

Associates posts with hashtags:

* **userID (Primary Key)**: A unique identifier for each association.
* **tweetID (Foreign Key referencing Post Entity)**: The post associated with the hashtag.
* **Retweet\_date** : The date when the post was retweeted.
* **Quote** : The text along with the retweeted content.
* **Retweet\_pic** : The media (pictures, videos) along with the retweeted content.

**Relationships are:**

* **Users Tweets –** Each user can post multiple posts.
* **Users comment on Tweets –** Users can comment on multiple posts, and each post can have multiple comments.
* **Users like Tweets –** Users can like multiple posts, and each post can have multiple likes.
* **Users follow other Users –** Users can follow multiple users and be followed by multiple users.
* **Users Retweet other Tweets –** Users can retweet other tweets so as to give credits to the original user and also add further clarification / explanation / context to the original tweet.
* **Tweets have Hashtags –** Posts can have multiple hashtags, and each hashtag can be associated with multiple posts.

**ER Diagram:**

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### **Conclusion**

In conclusion, this case study examined the design of Twitter's schema and Entity-Relationship diagram, highlighting how the platform’s data model supports its unique approach to microblogging. With key entities like users, tweets, followers, hashtags, and retweets, Twitter's data structure enables real-time communication, engagement, and content sharing. Understanding this schema provides valuable insight into how Twitter manages vast amounts of user-generated content and interactions, ensuring a seamless and scalable user experience. As Twitter continues to evolve, its well-architected data model will remain crucial to maintaining its position as a leading platform for global communication and social engagement.

Presentation Video link: [Capstone\_Project\_3.mp4](https://drive.google.com/file/d/1Bfug6KjIy2mdqpcSCpMy_DAxGSLDBXz8/view?usp=sharing)