67-262 Databases Project
Phase II

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Users:

1. Viewer: Viewers on TikTok are avid consumers of short-form videos, seeking entertainment, inspiration, and information. They use TikTok to explore a wide range of content, from comedy sketches and dance routines to educational snippets and lifestyle vlogs. Viewers enjoy staying up-to-date with trends and following creators and content they like.
2. Creator: Creators on TikTok are individuals or entities who use the platform to express their creativity, share talent, and connect with a global audience. They leverage TikTok's interface and editing tools to produce engaging short videos. Many creators use TikTok as a platform to showcase their skills, gain recognition, and build a fanbase. Some creators also monetize their content through various means, such as brand partnerships, turning their passion into a source of income.
3. Advertiser: Advertisers on TikTok are business, brands, or individuals looking to promote their products, services, or messages to a vast and diverse audience. Advertisers leverage TikTok's advertising tools and formats to create engaging campaigns tailored to their target demographics. They aim to boost brand visibility, drive sales, and increase brand awareness.

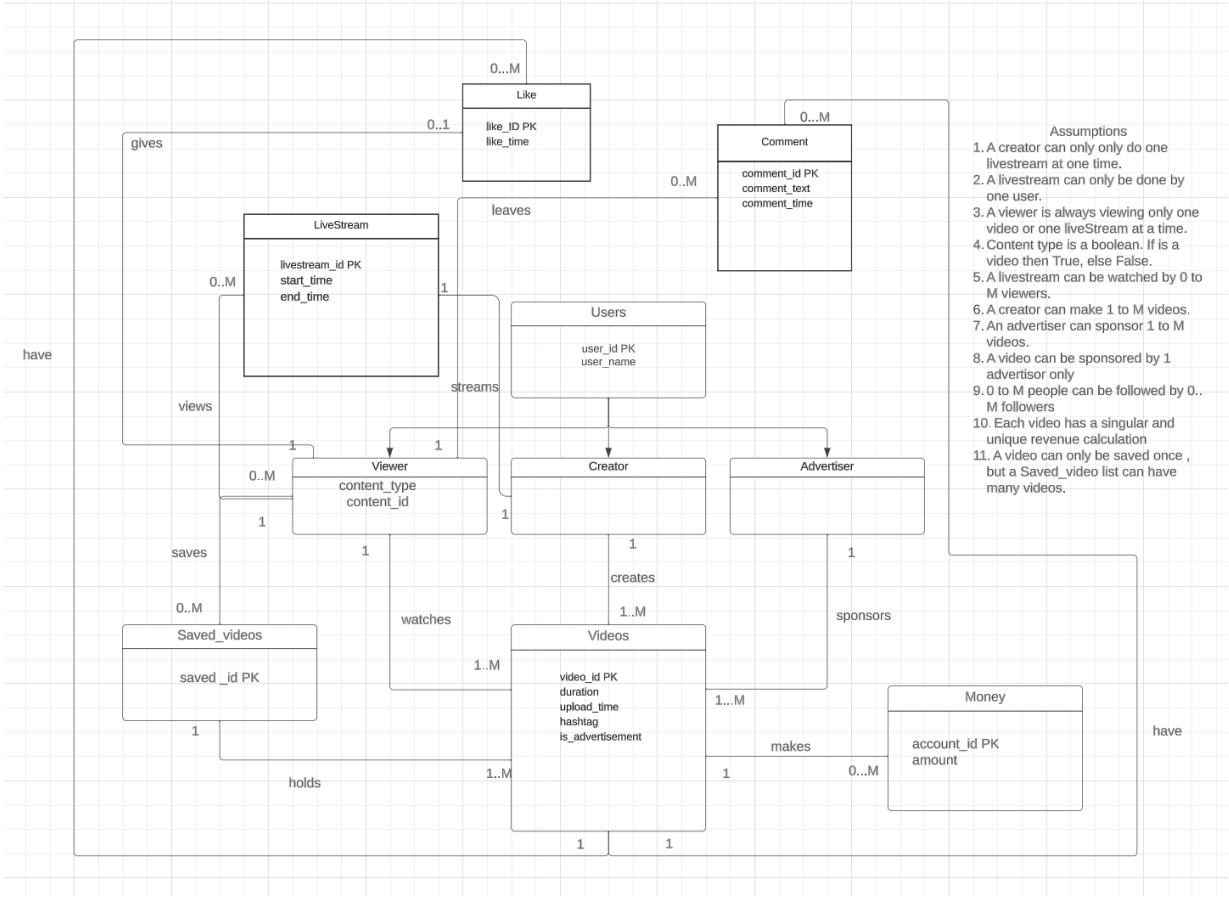
User Stories:

ID	Simple/Complex /Analytical	As a <role>	I want <goal>	So that <reason>
US1	Complex & Analytical	As a creator	I want to list the engagement of each video through the number of likes.	So that I can know which content attracts more people
US2	Complex & Analytical	As a creator	I want to see the total money that my video made	So that I can understand which content is more profitable
US3	Complex & Analytical	As an advertiser	I want to see which video is the most popular based on the number of likes	So that I can make similar videos.
US4	Complex & Analytical	As a viewer	I want to the system to recommend me videos based on my like	So that i can discover more contents that tailors to my interest
US5	Simple	As an viewer	I want to see whether the video	So that I can be more careful to see whether I

			is an advertisement	want to purchase the product
US6	Complex	As a viewer	I want to check whether the video is in my Saved_videos	So that I can easily revisit content that resonates with me
US7	Complex	As a creator	I want to view comments on videos I made	So that I can see the opinion of viewers on the videos I made
US8	Complex & Analytical	As a creator	I want to see my likes on a specific video	So that I can evaluate my performance and see which video is popular.
US9	Simple	As a viewer	I want to see when my videos are being liked	So that I know when my fans are checking my videos.
US10	Complex (new)	As a advertiser	I want to easily track the number of likes my ads receive per hashtag	So that I can quickly identify which hashtags are most effective in engaging my audience

Conceptual Model

Link to Conceptual Model: https://tinyurl.com/ycupcjuh



Relational Model

Users (**user_id**, user_name)
Viewer (**viewer_id,** livestream_id**,** content_type, content_id)
Creator (**creator_id**)
Advertiser (**advertiser_id**)
Livestream (**livestream_id**, creator_id, start_time, end_time)
Videos (**video_id**, creator_id, viewer_id, advertiser_id, duration, upload_time, hashtag, is_advertisement)
Like (**like_id**, video_id, viewer_id, like_time)
Comment (**comment_id**, video_id, viewer_id, comment_text, comment_time)
Money (**acount_id**, amount, video_id)
Saved_videos (**saved_id**, viewer_id, video_id)

Functional Dependencies

Relation: Users (user_id, user_name)
Functional Dependencies: user_id → user_name
Form: BCNF

Relation: Viewer (viewer_id, livestream_id, content_type, content_id)
Functional Dependencies: viewer_id → livestream_id, content_type, content_id
Form: BCNF

Relation: Creator (creator_id)
No functional dependencies, all attributes are PKs

Relation: Advertiser (advertiser_id)
No functional dependencies, all attributes are PKs

Relation: Livestream (livestream_id, start_time, end_time)
Functional Dependencies: livestream_id → creator_id, start_time, end_time, creator_id
Form: BCNF

Relation: Videos (video_id, creator_id, viewer_id, advertiser_id, duration, upload_time, hashtag, is_advertisement)
Functional Dependencies: video_id → creator_id, viewer_id, advertiser_id, duration, upload_time, hashtag, is_advertisement)
Form: BCNF

Relation: Like (like_id, video_id, viewer_id, like_time)
Function Dependencies: like_id → video_id, viewer_id, like_time
Form: BCNF

Relation: Comment (comment_id, video_id, viewer_id, comment_text, comment_time)
Function Dependencies: comment_id → video_id, viewer_id, comment_text, comment_time
Form: BCNF

Relation: Money (acount_id, amount)
Function Dependencies: account_id → video_id, amount
Form: BCNF

Relation: Saved_videos (saved_id, video_id, user_id)
Function Dependencies: saved_id → viewer_id
Form: BCNF

Normalization

Our functional dependencies (FDs) are already in Boyce-Codd Normal Form (BCNF) because all the attributes in each relation are encompassed within their closures. For the relations that

lack functional dependencies, all attributes serve as primary keys which are also considered to be in BCNF form.

Users Table
Functional Dependencies: user_id → user_name
Closure {user_id}+
This relationship is a BCNF relationship because the functional dependency depends on the primary key user_id and because all attributes of the FD are contained in the closure.

Viewer Table
Functional Dependencies: viewer_id → livestream_id, content_type, content_id
Closure {viewer_id}+
This relationship is a BCNF relationship because the functional dependency depends on the primary key viewer_id and because all attributes of the FD are contained in the closure.

Videos Table
Functional Dependencies: video_id → creator_id, viewer_id, advertiser_id, duration, upload_time, hashtag, is_advertisement)
Closure {video_id}+
This relationship is a BCNF relationship because the functional dependency depends on the primary key video_id and because all attributes of the FD are contained in the closure.

Like Table
Functional Dependencies: like_id → video_id, viewer_id, like_time
Closure {like_id}+
This relationship is a BCNF relationship because the functional dependency depends on the primary key like_id and because all attributes of the FD are contained in the closure.

Comment Table
Functional Dependencies: comment_id → video_id, viewer_id, comment_text, comment_time
Closure {comment_id}+
This relationship is a BCNF relationship because the functional dependency depends on the primary key comment_id and because all attributes of the FD are contained in the closure.

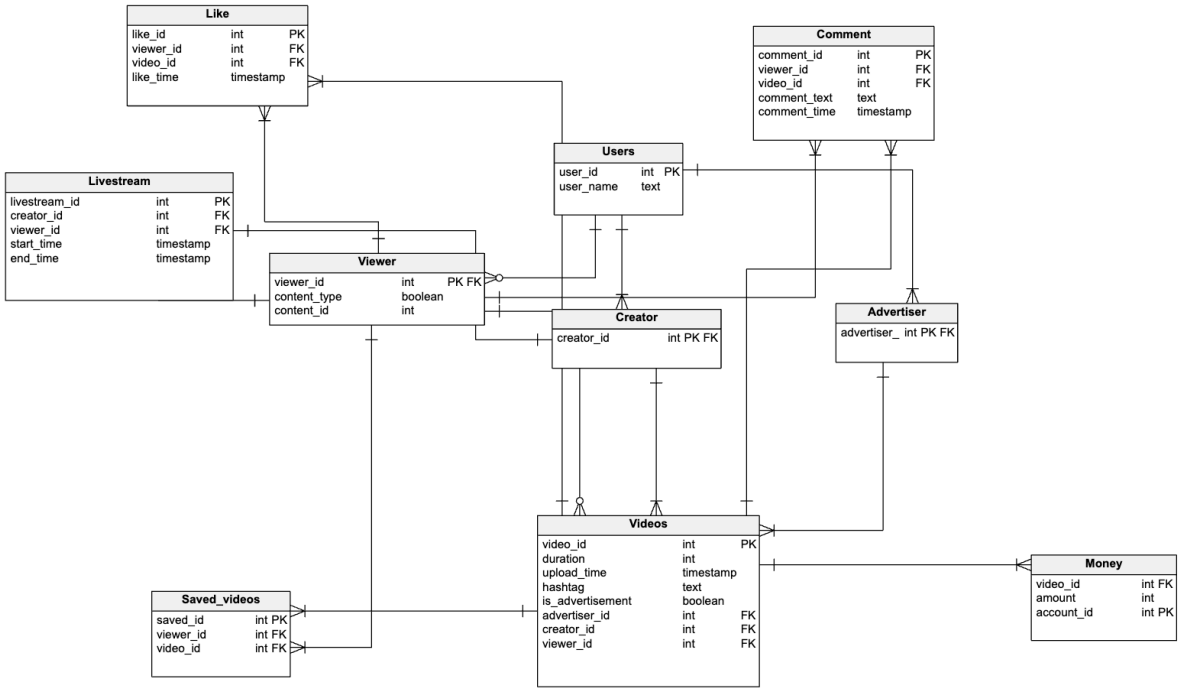
Money Table
Functional Dependencies: account_id → video_id, amount
Closure {account_id}+
This relationship is a BCNF relationship because the functional dependency depends on the primary key video_id and because all attributes of the FD are contained in the closure.

Saved Videos Table
Functional Dependencies: saved_id → viewer_id, video_id
Closure {saved_id}+

This relationship is a BCNF relationship because the functional dependency depends on the primary key saved_id and because all attributes of the FD are contained in the closure.

Physical Model

https://my.vertabelo.com/public-model-view/wVPcumD84PhO4fZFv15J5CieO5zFlNawQUah4lsYHn53487NqG0R3ZV0p5eP0X9p?x=2820&y=3190&zoom=0.4906



Queries

see separate files