

Data Management and Database Design – DAMG6210

P2

Virtual Idol Management Database

Database Specification: Purpose, Business Problems, Addressed and Business Rules

Database Purpose: The database is designed to manage the information, content, audience interactions, and business data of visual virtual idols (VTubers). Our solution provides a unified platform that simplifies the management of VTubers, tracking information, video downloads, social media interactions, revenues, and partnerships, optimizing content strategy, and supporting growth.

Business Problems Addressed:

- Allows Administrators descriptive reporting on VTuber's live streaming activity, viewer engagement, and financial performance.
- Provide information to enhance or improve content scheduling (e.g., consider peak engagement periods and competitive events when planning live streams and video uploads).
- Provide insights to drive targeted marketing campaigns (e.g., catering to specific segments, such as geographic areas, age- or gender-based populations, or other demographic-based campaigns).
- Allow salespeople to anticipate advertising sponsorship demand and effectively manage sponsorship deals.
- Allow managers to analyze and refine quarterly goals for viewer engagement, content performance, and revenue generation.

Business Rules:

- Each virtual idol have only one live stream.
- Each virtual idol have only one YouTube channels.
- Each virtual idol may have zero or many advertisements.
- Each virtual idol may use one or many platforms.
- Each virtual idol may use zero or many vocal changers.
- Each virtual idol work with one painter and one motion capture specialists.
- Each viewer may follow multiple VTuber's channels.
- Each viewer may write zero or many reviews.
- Each viewer may participate in zero or many donations.
- Each live stream may discuss one or many topics.



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P2

Design Decisions:

Entity Name	Why Entity Included	How Entity is Related to Other Entities
Virtual Idol(Virtual Image + Real Person)	The database collects information about virtual idols to manage and analyze their activities and performance. Important data includes social media platforms, YouTube channels, live streams, videos, viewer interactions, sponsors, merchandise, and some details about their virtual images. A virtual idol is made up of an virtual image and a real person, so we separate them into two entities	The virtual idol entity is directly related to viewer, platform/media, live stream, YouTube channel, vocal changer, review, donation, painter, sponsor, advertisement, motion capture specialist, and motion capture equipment. These relationships provide insights into the virtual idol's interactions, performance, and overall impact.
viewer	Viewers play an important role in contributing to engagement and support for virtual idols. Crucial data includes viewer interactions, reviews, gifts and donations.	viewer entities are directly related to virtual idol, comments donation. These relationships help track viewers' engagement and contributions to virtual idol popularity.
Platform/Media	Platforms and media are critical to virtual idol data management. Platforms and media are directly related to viewers, and with this data, virtual idols can know the amount of data that different platforms are diverting to youtube, so that they can better organize the amount of videos to be placed on each platform. Besides, Platform entity can exist separately, so Platform and virtual idol are non-identifying relationship	The platform/media entity is related to virtual idol. This relationship help in understanding the distribution and reach of virtual idol content.
Live Stream	Live streams are a significant part of virtual idol activities. Important data includes the details of live streaming sessions, topics discussed, and viewer interactions during streams.	The live stream entity is directly related to virtual idols, platforms/media, topics, reviews, donation. These relationships help in analyzing the content and impact of live streams.
Youtube Channel	YouTube channels are a primary platform for virtual idols to share their content. Important data includes stream details, channels, and viewer interactions. Besides, Youtube Channel entity can exist separately, so Youtube Channel and Virtual Idol are non-identifying relationship	The YouTube channel entity is directly related to virtual idols, platforms/media, live streams, reviews, donation. These relationships help in tracking the performance and engagement on YouTube.
Vocal Changer	Some virtual idols choose to use a voice changer to alter their voice, while others use their native voice. Important data includes details of the voice modulation software used. Besides, Vocal Changer entity can exist separately, so Vocal Changer and Virtual Image are non-identifying relationship	The vocal changer entity is directly related to virtual idols. This relationship helps in understanding the tools used by virtual idols to change their voice.
Topic	The group will have to categorize the content of the virtual idol discussions, with important data including the topics discussed at different live streaming times.	The topic entity is directly related to live streams. This relationship help in analyzing the content themes and audience engagement.

Data Management and Database Design – DAMG6210

P2

Review	Comments are basically viewer feedback on virtual idol's content. Focus is on the data that includes viewer's opinions during the live broadcast, and the panel will categorize the comments into three attitudes: positive, average, negative, and other. This data will help the virtual idol to grasp the overall attitude of the viewers during each live broadcast and make adjustments to the live streaming content and viewer management based on it. Besides, Review entity can exist separately, so Review and YoutubeLiveStream are non-identifying relationship	The review entity is directly related to virtual idols, viewers, live streams, and topics. These relationships help in understanding viewer feedback and content reception.
Donation	Donation events are significant for virtual idol funding. Important data includes the details of donation events and contributions. Besides, Donation entity can exist separately, so Donation and YoutubeLiveStream are non-identifying relationship	These relationships help track viewer contributions and support, as well as a portion of the virtual idols' income. Important data include the gift ID of the donation, the time and amount of the donation, and the donor viewers.
Painter	The painter creates a plane virtual image based on the settings of the VTubers. Key data includes information about the painter. Besides, Painter entity can exist separately, so Painter and VirtualImage are non-identifying relationship	Painters directly linked to virtual idols, motion capture personnel
Motion Capture Specialist	Motion Capture Specialists work with painter on the creation of virtual images, they are responsible for the breakdown of flat images created by painters and the creation of motion formation and motion capture. Important data includes details of the Motion Capture Specialist. Besides, Motion Capture Specialist entity can exist separately, so Motion Capture Specialist and VirtualImage are non-identifying relationship	Motion Capture Specialist directly related to virtual Idol and painter
Motion Capture Equipment	Motion capture equipment is what virtual idols use to capture their face and body movements during live streams. Important data includes details of motion capture devices.	Motion Capture Devices directly related to live Stream, virtual Idol
Sponsor	Sponsors provide financial support for virtual idols. Important data includes the details of sponsors and sponsorshipAmount. Sponsors can sponsor live streams as well as advertised merchandise.	Sponsor is linked to the merchandise and live stream.
Advertisement	Virtual idols are very important for advertisement placements, and if the virtual idol advertises in the live stream, the advertisement-related merchandise will get more purchases. Besides, Advertisement entity can exist separately, so Advertisement and YoutubeLiveStream are non-identifying relationship	Advertising is related to live stream and merchandise
Merchandise	Merchandise in this case refers to advertising related goods. Important data includes the details related to virtual idols and brand.	The merchandise entity is directly related to virtual idols. This relationship helps in analyzing merchandise sales and revenue.