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Databases Foundations I Season 2024-I
Workshop No. 1- Entity-Relationship Model
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workshop questions

1.Write the user stories you think could support your design

2.Write down the 10 steps methodology to get the Data Structure Entity-RelationshipModel.

3. Write any technical decisions/considerations you made in the design process

4. Write any concerns or challenges you have completed the test.

1.Write the user stories you think could support your design

When we talk about user stories we are basically referring to the user requirements in the project, so we must define these in order to create a well-structured design and pass our technical test in ALPHABET.

Requirement or User Stories for the Design of the YouTube Database:

1. As a user, I want to be able to like or dislike videos.
2. As a user, I want to be able to search for videos by title, description, or tags.
3. As a user, I want to be able to subscribe to channels to receive notifications about new videos.
4. As a user, I want to be able to comment on videos and see other users' comments.
5. As a user, I want to be able to report inappropriate content to maintain a safe and respectful environment in my opinion.
6. As a user, I want to be able to save videos to watch later.
7. As a user, I want to be able to watch live streams to participate in events in real time.
8. As a user, I want to have the option to activate subtitles in different languages so I can watch videos in other languages.
9. As a user, I want to be able to share direct links to videos on different media such as my social networks.
10. As a user, I want to be able to create playlists to save videos that interest me.

2.Write down the 10 steps methodology to get the Data Structure Entity-RelationshipModel.

Metodología de 10 pasos para obtener el Modelo Entidad-Relación:

1. Step identify the main entities:

- User
- Video
- Channel
- Comment
- Tag
- Live stream
- Report of inappropriate content
- Playlist
- Notification
- Subtitles

2. Step identify the attributes of each entity:

- **User:** Username, password, email.
- **Video:** Title, description, duration, URL.
- **Channel:** Channel name, description, creation date.
- **Comment:** Comment content, publication date.
- **Tag:** Tag name, description.
- **Live stream:** Title, description, start date, end date.
- **Report of inappropriate content:** Reason for the report, date of the report.
- **Playlist:** Playlist name, description, creation date.
- **Notification:** Notification type, sending date, status.
- **Subtitles:** Language, subtitle content.

3 Step identify the relationships between the entities:

- Subscription (User <-> Channel)
- Like/Dislike (User <-> Video)
- Comment (User <-> Video)
- Report inappropriate content (User <-> Video)
- Saved to watch later (User <-> Video)
- Participation in live broadcast (User <-> Live broadcast)
- Subtitle activation (User <-> Video)
- Share Links (User <-> Video)
- Creating playlists (User <-> Playlist)
- Sending notifications (Channel <-> User)

4 Step convert relations into cardinalities:

- One to many, many to many, etc. according to the needs of each relationship.

5 Step identify the functional dependencies and primary keys of each entity:

- Definir qué atributos determinan los demás en cada entidad y establecer llaves primarias.

6 Step refine the design to ensure standardization and eliminate redundancies:

- Apply normalization rules to avoid redundancies and ensure data integrity.

7 Step define foreign keys to maintain referential integrity:

- Establish relationships between entities using foreign keys to maintain data consistency.

8 Step review and adjust the design as necessary:

- Evaluate the design based on requirements and make adjustments as necessary.

9 Step document the final entity-relationship model:

- Create an entity-relationship diagram that represents all entities, attributes, and relationships in the database in Draw.io or another.

10 Step validate the model with stakeholders and make adjustments based on their comments:

- Obtain feedback from stakeholders and make modifications to the model based on their suggestions to ensure it meets their needs.

3. Write any technical decisions/considerations you made in the design process

1.Data normalization:

Split information into separate tables to avoid redundancy and maintain data consistency.

2.Primary and foreign keys:

Identify unique primary keys for each table and establish relationships between tables using foreign keys to maintain referential integrity.

3.Index:
Create indexes on columns commonly used in queries to improve search and query performance.

4.Data security:
Implement security measures such as password encryption and user authentication to protect sensitive information.

5.Scalability:
Design the database so that it can handle future growth of data and users, using techniques such as partitioning and data distribution.

4. Write any concerns or challenges you have completed the test.

1.Query optimization
2.Data security
3.Scalability
4.Backup and Recovery