3.3.2. Physical Model

The model presented as a diagram of the database that constitutes the implementation of the conceptual model in the selected database management system.

It is required to include an elaboration on the transformation of the conceptual model to the physical model. Description of transformation should include how elements like, e.g. inheritance and associations or other sophisticated modelling concepts have been handled.

TRANSFORMATIONS		
transformation	**Description**	**examples**
Restricted words	PostgreSQL restricts usage of certain reserved words, therefore they needed to be adjusted in the physical model	User table changed to Client
Many-to-many relationships	Physical model doesn't allow for many-to-many relationships to exist so they need to be converted to one-to-many relationships	Audiobook-Genre relation from conceptual model was changed into one-to-many relationship
Multivalued attributes	Conceptual model includes attributes with multiple values, which need to be converted into additional table in physical database model	Representative(s') names attribute of Publisher from conceptual model was changed into additional table in physical model. Narrator(s) attribute of Audiobook from conceptual model was changed into additional table in physical model.
Keys and types	The conceptual model doesn't include key or types of attributes, which need to be added in physical model	Each table has specified keys and attribute types.

PHYSICAL DATABASE MODEL:

UserSettings

PK, FK	account_id	Integer
NOT NULL	theme	Varchar(40)
	profile_picture	Varchar(2048)
NOT NULL	language	Varcahr(40)
NOT NULL	wifi_only	Boolean
NOT NULL	autoplay	Boolean
NOT NULL	notifications	Boolean
NOT NULL	adult_content	Boolean
NOT NULL	explicit_phrases	Boolean

authentication service IN ('INHOUSE', 'GOOGLE', 'APPLEID')

LoginMethods

PK, FK	account_id	Integer
PK	authentication_service	Varchar(40)
NOT NULL	login_email	Varchar(80)
NOT NULL	login_password	Varchar(80)

Accounts

PK	account_id	Integer
NOT NULL	is_valid	Boolean
NOT NULL	creation_time	Timestamp
	last_login	Timestamp
NOT NULL, UNIQUE	name	Varchar(40)

Account.account_id=Manager.manager_id

Managers

PK, FK	manager_id	Integer
	level	Varchar(40)

Account.account_id=Publisher.publisher_id

Publishers

PK, FK	publisher_id	Integer

Account.account_id=Client.client_id

Clients

PK, FK	client_id	Integer
NOT NULL	is_active	Boolean

Reviews

PK, FK	client_id	Integer
PK, FK	audiobook_id	Integer
NOT NULL	rating_value	Integer
NOT NULL	rating_date	Timestamp
	review_content	Varchar(2000)

rating value IN (1, 2, 3, 4, 5)

Represantatives

PK, FK	publisher_id	Integer
PK	representative_name	Varchar(40)

Audiobooks

PK	audiobook_id	Integer
FK	publisher_id	Integer
NOT NULL	title	Varchar(120)
	author	Varchar(100)
	description	Varchar(1000)
NOT NULL	duration	Interval
	cover_image	Varchar(2048)
NOT NULL	number_listened	Integer
	rating	Double Precision

Genres

PK, FK	audiobook_id	Integer
PK	genre_name	Varchar(40)

Narrators

PK, FK	audiobook_id	Integer
PK	narrator	Varchar(40)

Listening

PK, FK	client_id	Integer
PK, FK	audiobook_id	Integer
FK	current_chapter_id	Integer
NOT NULL	start_time	Timestamp
NOT NULL	last_access_time	Timestamp
	finish_time	Timestamp
NOT NULL	is_favorite	Boolean

ExploredChapters

PK, FK	client_id	Integer
PK, FK	chapter_id	Integer
NOT NULL	time_spent	Timestamp
NOT NULL	times_visited	Integer

Listening.current_chapter_id=Chapter.chapter_id

Chapters

PK	chapter_id	Integer
FK	audiobook_id	Integer
NOT NULL	duration	Interval
NOT NULL	audio_file_url	Varchar(2048)
NOT NULL	text_file_url	Varchar(2048)

InteractiveOption.next_chapter_id=Chapter.chapter_id

InteractiveOption.previous_chapter_id=Chapter.chapter_id

InteractiveOptions

PK	option_id	Integer
FK	previous_chapter_id	Integer
FK	next_chapter_id	Integer
NOT NULL	option_text	Varchar(250)