Dokumentacja Bazy Danych Kina

Projekt na zajęcia Relacyjne Bazy Danych

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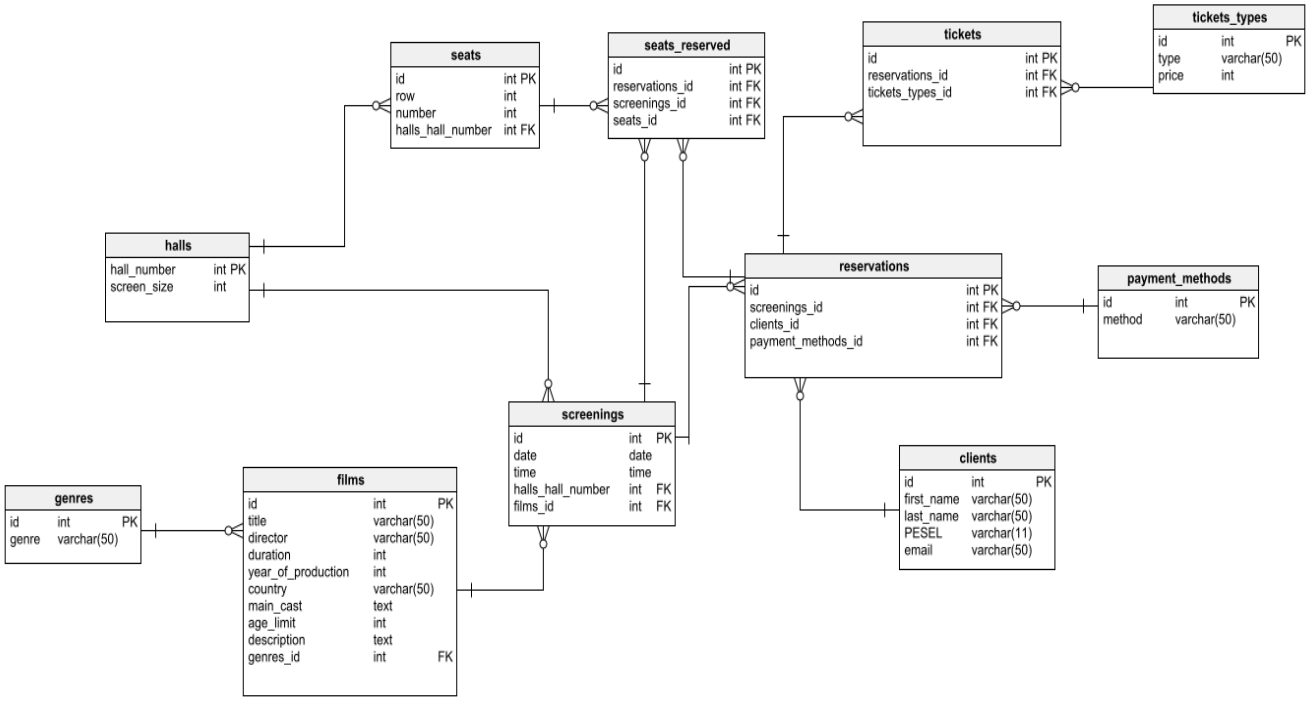
1. Temat projektu

Relacyjna Baza Danych Kina mająca na celu wspomaganie działania tego rodzaju placówki. Ma za zadanie dostarczać szereg wspierających pracę w kinie funkcji, takich jak system rezerwacji seansów, czy też przechowywanie informacji o filmach, seansach i klientach. Projekt stworzony został wykorzystując strukturalny język zapytań SQL oraz oprogramowanie DataGrip.

2. Diagram (wizualna prezentacja bazy danych)



Vertabelo

3. Zapytanie tworzące strukturę bazy danych

```sql
CREATE TABLE clients (
    id int NOT NULL,
    first_name varchar(50) NOT NULL,
    last_name varchar(50) NOT NULL,
    PESEL varchar(11) NOT NULL,
    email varchar(50) NOT NULL,
    CONSTRAINT clients_pk PRIMARY KEY (id)
);

-- Table: films
CREATE TABLE films (
    id int NOT NULL,
    title varchar(50) NOT NULL,
    director varchar(50) NOT NULL,
    duration int NOT NULL,
    year_of_production int NOT NULL,
    country varchar(50) NOT NULL,
    main_cast text NOT NULL,
    age_limit int NOT NULL,
    description text NOT NULL,
    genres_id int NOT NULL,
    CONSTRAINT films_pk PRIMARY KEY (id)
);

-- Table: genres
CREATE TABLE genres (
    id int NOT NULL,
    genre varchar(50) NOT NULL,
    CONSTRAINT genres_pk PRIMARY KEY (id)
);

-- Table: halls
CREATE TABLE halls (
    hall_number int NOT NULL,
    screen_size int NOT NULL,
    CONSTRAINT halls_pk PRIMARY KEY (hall_number)
);

-- Table: payment_methods
CREATE TABLE payment_methods (
    id int NOT NULL,
    method varchar(50) NOT NULL,
    CONSTRAINT payment_methods_pk PRIMARY KEY (id)
);

-- Table: reservations
CREATE TABLE reservations (
    id int NOT NULL,
    screenings_id int NOT NULL,
    clients_id int NOT NULL,
    payment_methods_id int NOT NULL,
    CONSTRAINT reservations_pk PRIMARY KEY (id)
);

-- Table: screenings
CREATE TABLE screenings (
```

```
    id int NOT NULL,
    date date NOT NULL,
    time time NOT NULL,
    halls_hall_number int NOT NULL,
    films_id int NOT NULL,
    CONSTRAINT screenings_pk PRIMARY KEY (id)
);

-- Table: seats
CREATE TABLE seats (
    id int NOT NULL,
    row int NOT NULL,
    number int NOT NULL,
    halls_hall_number int NOT NULL,
    CONSTRAINT seats_pk PRIMARY KEY (id)
);

-- Table: seats_reserved
CREATE TABLE seats_reserved (
    id int NOT NULL,
    reservations_id int NOT NULL,
    screenings_id int NOT NULL,
    seats_id int NOT NULL,
    CONSTRAINT seats_reserved_pk PRIMARY KEY (id)
);

-- Table: tickets
CREATE TABLE tickets (
    id int NOT NULL,
    reservations_id int NOT NULL,
    tickets_types_id int NOT NULL,
    CONSTRAINT tickets_pk PRIMARY KEY (id)
);

-- Table: tickets_types
CREATE TABLE tickets_types (
    id int NOT NULL,
    type varchar(50) NOT NULL,
    price int NOT NULL,
    CONSTRAINT tickets_types_pk PRIMARY KEY (id)
);

-- foreign keys
-- Reference: films_genres (table: films)
ALTER TABLE films ADD CONSTRAINT films_genres FOREIGN KEY films_genres
(genres_id)
    REFERENCES genres (id);

-- Reference: reservations_clients (table: reservations)
ALTER TABLE reservations ADD CONSTRAINT reservations_clients FOREIGN KEY
reservations_clients (clients_id)
    REFERENCES clients (id);

-- Reference: reservations_payment_methods (table: reservations)
ALTER TABLE reservations ADD CONSTRAINT reservations_payment_methods
FOREIGN KEY reservations_payment_methods (payment_methods_id)
    REFERENCES payment_methods (id);

-- Reference: reservations_screenings (table: reservations)
ALTER TABLE reservations ADD CONSTRAINT reservations_screenings FOREIGN KEY
reservations_screenings (screenings_id)
```

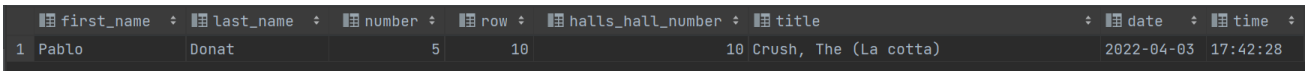
```
    REFERENCES screenings (id);

-- Reference: screenings_films (table: screenings)
ALTER TABLE screenings ADD CONSTRAINT screenings_films FOREIGN KEY
screenings_films (films_id)
    REFERENCES films (id);

-- Reference: screenings_halls (table: screenings)
ALTER TABLE screenings ADD CONSTRAINT screenings_halls FOREIGN KEY
screenings_halls (halls_hall_number)
    REFERENCES halls (hall_number);

-- Reference: seats_halls (table: seats)
ALTER TABLE seats ADD CONSTRAINT seats_halls FOREIGN KEY seats_halls
(halls_hall_number)
    REFERENCES halls (hall_number);

-- Reference: seats_reseved_reservations (table: seats_reserved)
ALTER TABLE seats_reserved ADD CONSTRAINT seats_reseved_reservations
FOREIGN KEY seats_reseved_reservations (reservations_id)
    REFERENCES reservations (id);

-- Reference: seats_reseved_screenings (table: seats_reserved)
ALTER TABLE seats_reserved ADD CONSTRAINT seats_reseved_screenings FOREIGN
KEY seats_reseved_screenings (screenings_id)
    REFERENCES screenings (id);

-- Reference: seats_reseved_seats (table: seats_reserved)
ALTER TABLE seats_reserved ADD CONSTRAINT seats_reseved_seats FOREIGN KEY
seats_reseved_seats (seats_id)
    REFERENCES seats (id);

-- Reference: tickets_reservations (table: tickets)
ALTER TABLE tickets ADD CONSTRAINT tickets_reservations FOREIGN KEY
tickets_reservations (reservations_id)
    REFERENCES reservations (id);

-- Reference: tickets_tickets_types (table: tickets)
ALTER TABLE tickets ADD CONSTRAINT tickets_tickets_types FOREIGN KEY
tickets_tickets_types (tickets_types_id)
    REFERENCES tickets_types (id);

-- End of file.
```

4. Najczęściej wykorzystywane zapytania

1) Zapytanie zwracające najpotrzebniejsze informacje o seansie, na który dany klient się wybiera (w tym wypadku klient o id = 1). Zwraca imię i nazwisko klienta, a także numer sali, w której będzie odbywał się seans, rząd i numer miejsca, datę i godzinę seansu oraz tytuł filmu:

```
SELECT clients.first_name, clients.last_name, seats.number,
seats.row, seats.halls_hall_number, films.title,
screenings.date, screenings.time FROM clients
JOIN reservations on clients.id = reservations.clients_id
JOIN seats_reserved on reservations.id =
seats_reserved.reservations_id
JOIN seats on seats.id = seats_reserved.seats_id
JOIN screenings on screenings.id = reservations.screenings_id
JOIN films on films.id = screenings.films_id
WHERE clients.id = 1;
```

Wynik zapytania:

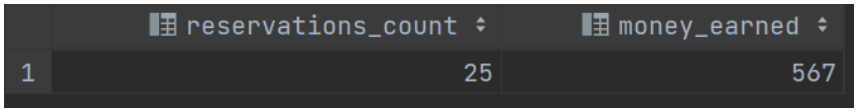


	first_name	last_name	number	row	halls_hall_number	title	date	time
1	Pablo	Donat	5	10	10	Crush, The (La cotta)	2022-04-03	17:42:28

2) Zapytanie zwracające ilość rezerwacji dokonanych w danym okresie czasu oraz ilość zarobionych na biletach pieniędzy:

```
SELECT COUNT(reservations.id) AS reservations_count,
SUM(tt.price) AS money_earned FROM reservations
JOIN screenings s on s.id = reservations.screenings_id
JOIN tickets t on reservations.id = t.reservations_id
JOIN tickets_types tt on tt.id = t.tickets_types_id
WHERE s.date >= '2022-06-01' && s.date < '2022-07-01';
```

Wynik zapytania:



	reservations_count	money_earned
1	25	567

3) Zapytanie zwracające wszystkie seanse, które odbywają się danego dnia:

```
SELECT title, time, hall_number FROM films
JOIN screenings s ON films.id = s.films_id
JOIN halls h ON h.hall_number = s.halls_hall_number
WHERE date='2022-05-04';
```

Wynik zapytania:

	title	time	hall_number
1	Roll Bounce	21:00:48	3
2	Manhattan Project, The	06:26:33	5
3	Enduring Love	06:32:55	5
4	Loves of Carmen, The	16:05:22	5
5	Phantasm	11:10:10	7
6	Trailer Park Boys: Countdown to Liquor Day	11:07:38	7
7	Thrilla in Manila	19:20:30	8
8	Rock 'n' Roll Nightmare	00:35:01	8
9	Errors of the Human Body	23:16:37	10

4) Zapytanie zwracające wszystkie najważniejsze informacje o danym filmie:

```
SELECT films.title, films.director, films.duration,
films.year_of_production, films.country, films.main_cast,
films.age_limit, films.description, genre FROM films
JOIN genres g on g.id = films.genres_id
WHERE films.id = 1;
```

Wynik zapytania:

	title	director	duration	year_of_production	country	main_cast	age_limit	descrip...	genre
1	U.S. Seals	Dulci Mushett	593	2006	Peru	Mannie Bland	5	nullam sit ame…	Sci-Fi