

Nomor Kelompok : *<isi dengan nomor kelompok>*

Kelas : *<contoh: K0>*

NIM : *19622037*

Nama : *Aththariq Lisan Q. D. S.*

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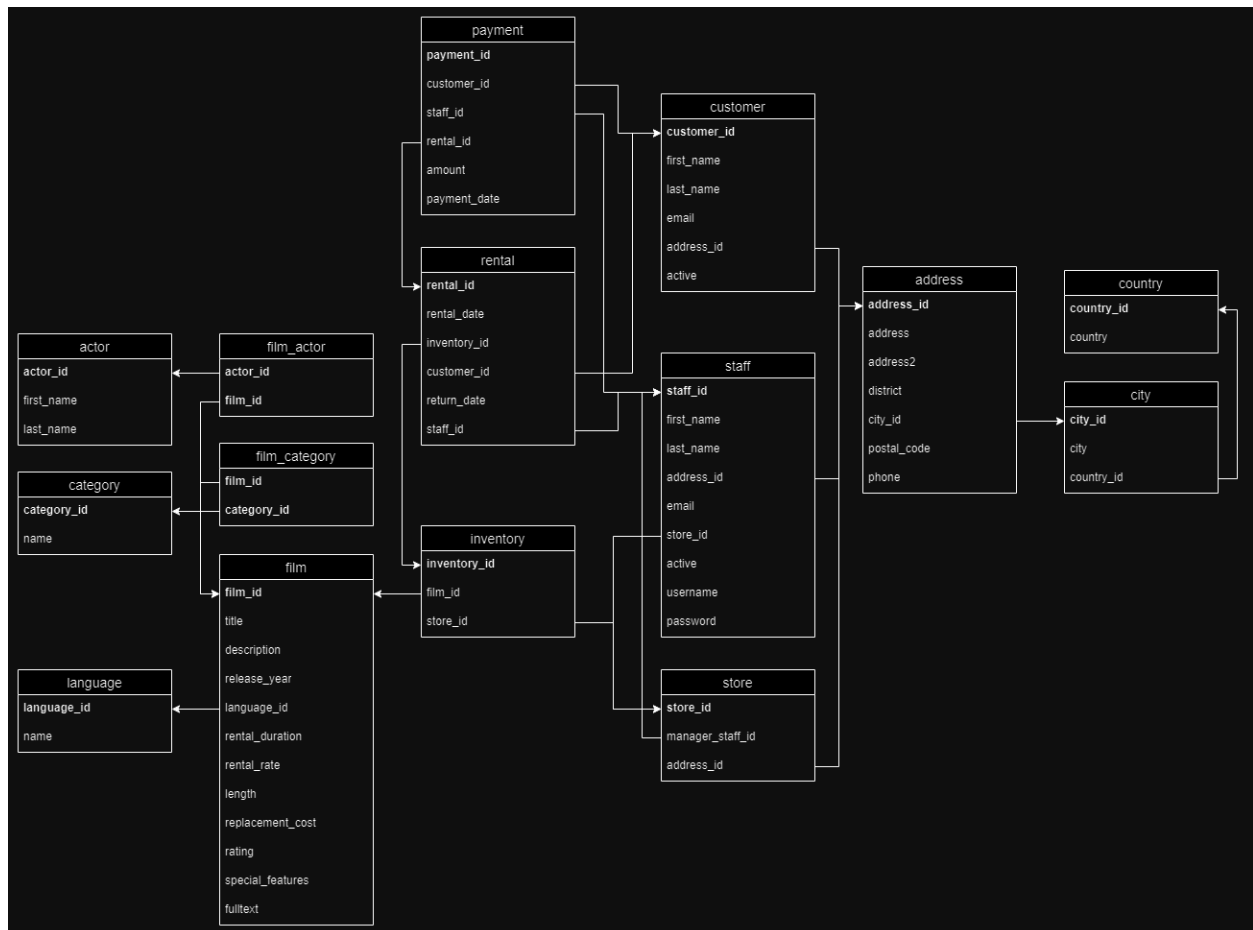
Nama : *<isi dengan nama lengkap>*

Lembar Kerja Praktikum 0 II2250 Manajemen Basis Data STI

Materi: *Schema Tuning*

I. Skema Basis Data

Diberikan skema basis data sebagai berikut yang tersimpan dalam database pagila.



II. Soal

(**Note:** Pastikan telah terdapat database bernama pagila di dalam komputer yang digunakan. Jika belum, buatlah sebuah database bernama pagila dan import pagila.sql ke dalam database tersebut!)

1. Ketika melakukan pengaksesan terhadap relasi film, biasanya juga disertai dengan pengambilan informasi nama category dari film tersebut.
 - a. Buatlah query untuk menampilkan data **nama film** dan **nama category** dari film tersebut. Kemudian, hanya tampilkan 10 film **paling terbaru** rilis.
 - b. Lalu, lakukan tuning terhadap skema basis data agar kinerja pemrosesan query tersebut menjadi lebih baik dan tunjukkan waktu perbandingan query-nya.

Hint: Gunakan \timing untuk menunjukkan waktu eksekusi sebuah query.

Jawaban:

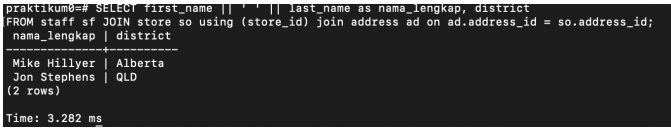
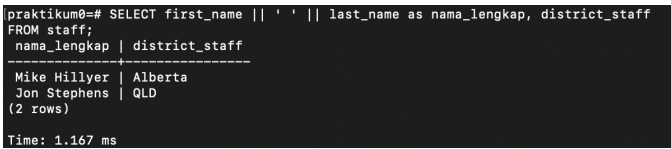
Query Awal	<pre>select title, name from film natural join film_category natural join category order by release_year desc limit 10;</pre>
Query Tuning	<pre>alter table film add column category_film varchar(25); UPDATE film SET category_film = category.name FROM film_category JOIN category ON film_category.category_id = category.category_id WHERE film.film_id = film_category.film_id;</pre>
Query Akhir	<pre>select title, category_film from film order by release_year desc, title asc limit 10;</pre> <p>ket: order title asc karena release_year datanya 2006 semua, jadi untuk menjaga konsistensi data perlu order by title juga.</p>
SS Perbandingan Waktu	Before:

	<pre>praktikum0=# select title, name from film natural join film_category natural join category order by release_year desc limit 10;</pre> <table> <thead> <tr> <th>title</th><th>name</th></tr> </thead> <tbody> <tr><td>Ace Goldfinger</td><td>Horror</td></tr> <tr><td>Adaptation Holes</td><td>Documentary</td></tr> <tr><td>Affair Prejudice</td><td>Horror</td></tr> <tr><td>African Egg</td><td>Family</td></tr> <tr><td>Agent Truman</td><td>Foreign</td></tr> <tr><td>Airplane Sierra</td><td>Comedy</td></tr> <tr><td>Airport Pollock</td><td>Horror</td></tr> <tr><td>Alabama Devil</td><td>Horror</td></tr> <tr><td>Aladdin Calendar</td><td>Sports</td></tr> <tr><td>Academy Dinosaur</td><td>Documentary</td></tr> </tbody> </table> <p>(10 rows) Time: 5.888 ms</p> <p>After:</p> <pre>praktikum0=# select title, category_film from film order by release_year desc, title asc limit 10;</pre> <table> <thead> <tr> <th>title</th><th>category_film</th></tr> </thead> <tbody> <tr><td>Academy Dinosaur</td><td>Documentary</td></tr> <tr><td>Ace Goldfinger</td><td>Horror</td></tr> <tr><td>Adaptation Holes</td><td>Documentary</td></tr> <tr><td>Affair Prejudice</td><td>Horror</td></tr> <tr><td>African Egg</td><td>Family</td></tr> <tr><td>Agent Truman</td><td>Foreign</td></tr> <tr><td>Airplane Sierra</td><td>Comedy</td></tr> <tr><td>Airport Pollock</td><td>Horror</td></tr> <tr><td>Alabama Devil</td><td>Horror</td></tr> <tr><td>Aladdin Calendar</td><td>Sports</td></tr> </tbody> </table> <p>(10 rows) Time: 1.677 ms</p> <p>waktu query turun dari 5.808ms > 1.677ms</p>	title	name	Ace Goldfinger	Horror	Adaptation Holes	Documentary	Affair Prejudice	Horror	African Egg	Family	Agent Truman	Foreign	Airplane Sierra	Comedy	Airport Pollock	Horror	Alabama Devil	Horror	Aladdin Calendar	Sports	Academy Dinosaur	Documentary	title	category_film	Academy Dinosaur	Documentary	Ace Goldfinger	Horror	Adaptation Holes	Documentary	Affair Prejudice	Horror	African Egg	Family	Agent Truman	Foreign	Airplane Sierra	Comedy	Airport Pollock	Horror	Alabama Devil	Horror	Aladdin Calendar	Sports
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2. Pihak manajemen toko Pagila ingin mengakses data staff untuk mengetahui informasi tentang staff yang bekerja di toko Pagila.
 - a. Buatlah query untuk menampilkan nama lengkap staff beserta *district* dari tempatnya bekerja.
 - b. Lakukan tuning terhadap skema basis data agar kinerja pemrosesan query tersebut menjadi lebih baik dan tunjukkan perbandingan waktu query-nya.

Jawaban:

Query Awal	<pre>SELECT first_name ' ' last_name as nama_lengkap, district FROM staff sf JOIN store so using (store_id) join address ad on ad.address_id = so.address_id;</pre>
Query Tuning	<pre>alter table staff add column district_staff varchar(20); update staff set district_staff = district from store natural join address where staff.store_id = store.store_id;</pre> <p>Nb: sebenarnya klo mau buat derivative table bisa juga sih buat full_namenya. Tapi ga pake pun udah lebih cepet querynya dan soal cuma minta lebih cepet aja hehe.</p>

Query Akhir	<pre>SELECT first_name ' ' last_name as nama_lengkap, district_staff FROM staff;</pre>
SS Perbandingan Waktu	<p>Before:</p>  <p>After:</p>  <p>waktu query turun dari 3.282ms > 1.167ms</p>

3. Pihak manajemen toko Pagila ingin mencari tahu durasi dari rental yang dilakukan pelanggannya terhadap film yang disewakannya.
 - a. Buatlah query untuk menampilkan kategori, judul, dan durasi rental dari 10 film yang paling lama dirental (tidak termasuk data film yang masih dirental/ belum dikembalikan).
 - b. Setelah itu lakukan tuning dengan memanfaatkan materialized view terhadap query tersebut. Analisis dan jelaskan hasil perbandingan waktu eksekusi query **dengan dan tanpa materialized view!**
Tampilkan screenshot perbandingan eksekusi query
 - c. Apakah data yang ada pada *materialized view* selalu paling mutakhir? Jika tidak, bagaimana cara untuk menangannya?

Jawaban:

Query Tampilkan Data	<pre>SELECT distinct category_film, title, rental_duration FROM film JOIN inventory USING (film_id) WHERE inventory_id NOT IN (SELECT inventory_id FROM rental WHERE return_date IS NULL) ORDER BY rental_duration DESC, title asc LIMIT 10;</pre>
Query Materialized View	<pre>create materialized view mv_custduration as (SELECT category_film, title, rental_duration</pre>

	<p>FROM film JOIN inventory USING (film_id) WHERE inventory_id NOT IN (SELECT inventory_id FROM rental WHERE return_date IS NULL));</p> <p>select * from mv_custduration order by rental_duration desc, title asc limit 10;</p>																																																																		
SS Query	<p>Before:</p> <pre>praktikum0=# \timing Timing is on. praktikum0=# SELECT distinct category_film, title, rental_duration FROM film JOIN inventory USING (film_id) WHERE inventory_id NOT IN (SELECT inventory_id FROM rental WHERE return_date IS N ULL) ORDER BY rental_duration DESC, title asc LIMIT 10;</pre> <table><thead><tr><th>category_film</th><th>title</th><th>rental_duration</th></tr></thead><tbody><tr><td>Documentary</td><td>Adaptation Holes</td><td>7</td></tr><tr><td>Sports</td><td>Anonymous Human</td><td>7</td></tr><tr><td>Animation</td><td>Bikini Borrowers</td><td>7</td></tr><tr><td>Animation</td><td>Blackout Private</td><td>7</td></tr><tr><td>Family</td><td>Blanket Beverly</td><td>7</td></tr><tr><td>Travel</td><td>Boiled Dares</td><td>7</td></tr><tr><td>Travel</td><td>Born Spinal</td><td>7</td></tr><tr><td>Animation</td><td>Borrowers Bedazzled</td><td>7</td></tr><tr><td>Horror</td><td>Bowfinger Gables</td><td>7</td></tr><tr><td>Family</td><td>Braveheart Human</td><td>7</td></tr></tbody></table> <p>(10 rows) Time: 9.660 ms</p> <p>After:</p> <pre>praktikum0=# select * from mv_custduration order by rental_duration desc, title al sc limit 10;</pre> <table><thead><tr><th>category_film</th><th>title</th><th>rental_duration</th></tr></thead><tbody><tr><td>Documentary</td><td>Adaptation Holes</td><td>7</td></tr><tr><td>Sports</td><td>Anonymous Human</td><td>7</td></tr><tr><td>Animation</td><td>Bikini Borrowers</td><td>7</td></tr><tr><td>Animation</td><td>Blackout Private</td><td>7</td></tr><tr><td>Family</td><td>Blanket Beverly</td><td>7</td></tr><tr><td>Travel</td><td>Boiled Dares</td><td>7</td></tr><tr><td>Travel</td><td>Born Spinal</td><td>7</td></tr><tr><td>Animation</td><td>Borrowers Bedazzled</td><td>7</td></tr><tr><td>Horror</td><td>Bowfinger Gables</td><td>7</td></tr><tr><td>Family</td><td>Braveheart Human</td><td>7</td></tr></tbody></table> <p>(10 rows) Time: 0.978 ms</p> <p>waktu query turun dari 9.660ms > 0.978ms</p> <p>3. Data di dalam materialized view tidak selalu paling mutakhir secara otomatis, karena materialized view perlu diperbarui secara eksplisit. Cara untuk menangannya:</p> <ol style="list-style-type: none">1. Refresh data secara manual command: 'REFRESH MATERIALIZED VIEW mv_custduration;'2. Menggunakan trigger	category_film	title	rental_duration	Documentary	Adaptation Holes	7	Sports	Anonymous Human	7	Animation	Bikini Borrowers	7	Animation	Blackout Private	7	Family	Blanket Beverly	7	Travel	Boiled Dares	7	Travel	Born Spinal	7	Animation	Borrowers Bedazzled	7	Horror	Bowfinger Gables	7	Family	Braveheart Human	7	category_film	title	rental_duration	Documentary	Adaptation Holes	7	Sports	Anonymous Human	7	Animation	Bikini Borrowers	7	Animation	Blackout Private	7	Family	Blanket Beverly	7	Travel	Boiled Dares	7	Travel	Born Spinal	7	Animation	Borrowers Bedazzled	7	Horror	Bowfinger Gables	7	Family	Braveheart Human	7
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III. Pembagian Tugas

NIM	Nama	Tugas