实验二报告

一、 观察并回答问题

1. 观察 sakila.mwb 并回答问题

（1） 图中共有几个 View？

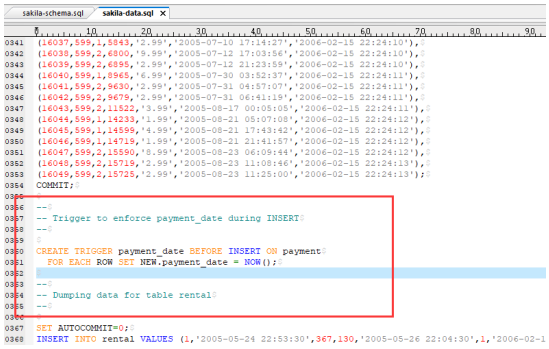
图中有 7 个 View。

（2） 分析以下 3 个视图，回答以下问题：

视图名	关联表	作用
actor_info	film,film_category,category, film_actor,actor	列出每个演员的 id，姓名，以及所有他们参演电影名和电影类型，其中电影名按照电影类型进行分类显示。
film_list	film,film_category,category, film_actor,actor	列出所有电影的 id，电影名，电影描述，电影分类，电影租赁价格，电影时长，电影分级，参演这部电影的所有演员。
sales_by_store	payment,rental,inventory, store,address,city,country, staff	列出所有商店的地址(所在国家和城市)，商店经理姓名和总销售额。

2. 观察 sakila-schema.sql 和 sakila-data.sql 并回答问题

我们可以看到 sakila-schema.sql 里的语句是用于创建数据库的结构，包括表、视图、触发器等，而 sakila-data.sql 主要是用于往表写入数据。但 sakila-data.sql 里有这样一个建立触发器的语句：



请同学们思考，这个触发器是否可以移到 sakila-schema.sql 里去执行？为什么？

不能。因为将触发器放到 sakila-schema.sql 里时，会先于 sakila-data.sql 执行，导致在 sakila-data.sql 插入原数据时触发器生效，更改了原数据的 payment_date，而这个触发器的初衷是修改后来加入的新数据的 payment_date，所以不能移到 sakila-schema.sql 里去执行。

3. 观察数据库的触发器 customer_create_date 并回答问题

（1） customer_create_date 触发器建在哪个表上？

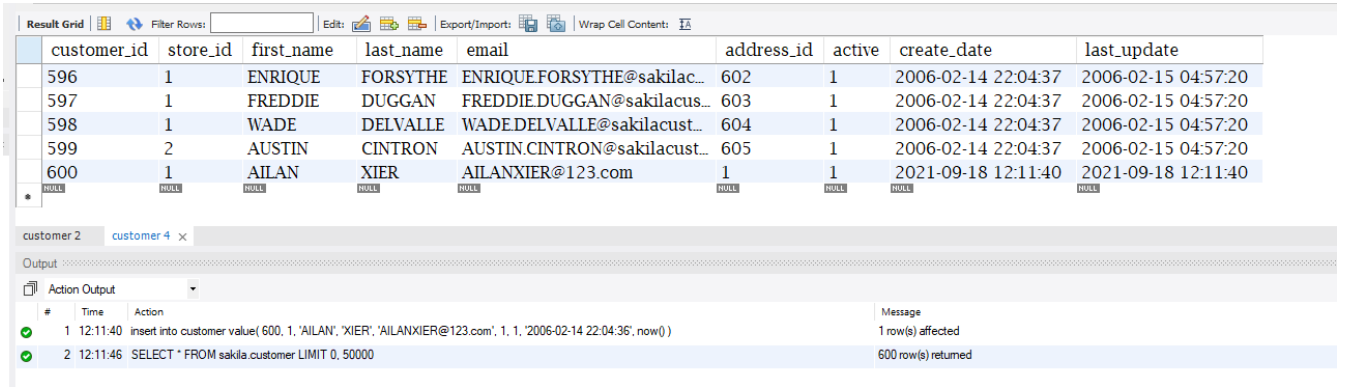
customer 表。

（2） 这个触发器实现什么功能？

在往 customer 表中插入新数据前，将新数据的 create_date 修改为当前时间。

（3） 在这个表上新增一条数据，验证一下触发器是否生效。（截图语句和执行结果）

```
insert into
    customer
value(
    600,
    1,
    'AILAN',
    'XIER',
    'AILANXIER@123.com',
    1,
    1,
    '2006-02-14 22:04:36',
    now()
)
```



插入一条 create_date 是'2006-02-14 22:04:36'的数据，经过触发器的修改，在表中新增的元组的 create_date 列已变为了'2021-09-18 12:11:40'，即运行的插入代码的时间，说明触发器生效。

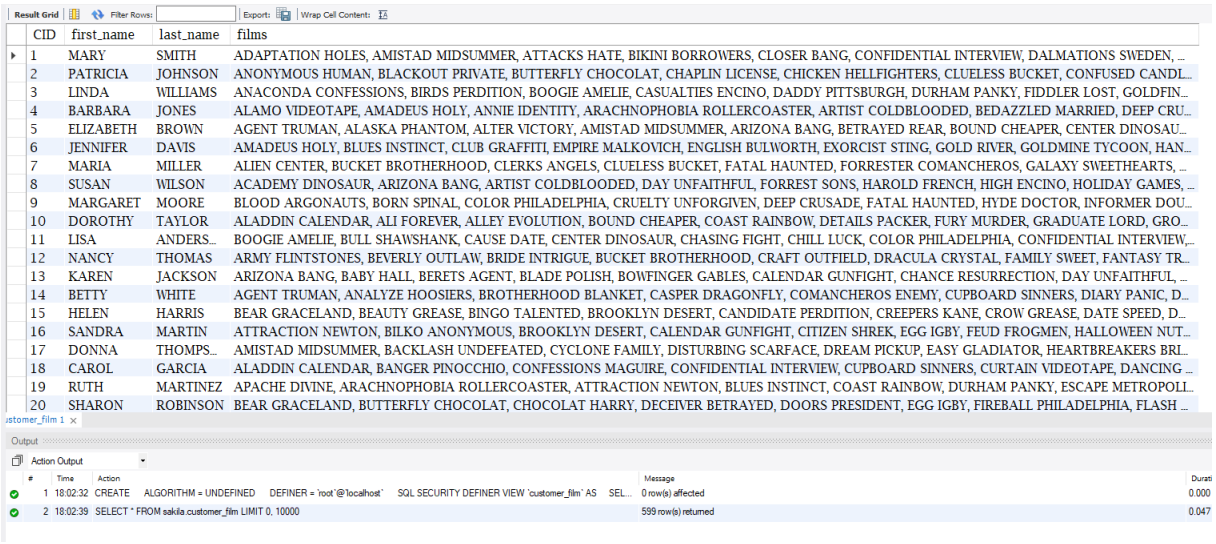
二、 设计并实现

根据应用场景，为 Sakila 数据库合理地设计并实现：

（注意：请将创建语句、调用结果截图记录到实验报告里）

1. 设计 1 个视图，至少关联 3 个表；

```
CREATE
    ALGORITHM = UNDEFINED
    DEFINER = `root`@`localhost`
    SQL SECURITY DEFINER
VIEW `customer_film` AS
    SELECT
        `customer`.`customer_id` AS `CID`,
        `customer`.`first_name`,
        `customer`.`last_name`,
        GROUP_CONCAT(distinct `film`.`title` SEPARATOR ', ') AS `films`
    FROM
        `customer`
        LEFT JOIN `rental` ON (`customer`.`customer_id` = `rental`.`customer_id`)
        LEFT JOIN `inventory` ON (`rental`.`inventory_id` = `inventory`.`inventory_id`)
        LEFT JOIN `film` ON (`inventory`.`film_id` = `film`.`film_id`)
    group by `CID`
```



CID	first_name	last_name	films
1	MARY	SMITH	ADAPTATION HOLES, AMISTAD MIDSUMMER, ATTACKS HATE, BIKINI BORROWERS, CLOSER BANG, CONFIDENTIAL INTERVIEW, DALMATIONS SWEDEN, ...
2	PATRICIA	JOHNSON	ANONYMOUS HUMAN, BLACKOUT PRIVATE, BUTTERFLY CHOCOLAT, CHAPLIN LICENSE, CHICKEN HELLFIGHTERS, CLUELESS BUCKET, CONFUSED CANDL...
3	LINDA	WILLIAMS	ANACONDA CONFESSIONS, BIRDS PERDITION, BOOGIE AMELIE, CASUALTIES ENCINO, DADDY PITTSBURGH, DURHAM PANKY, FIDDLER LOST, GOLDFIN...
4	BARBARA	JONES	ALAMO VIDEOTAPE, AMADEUS HOLY, ANNIE IDENTITY, ARACHNOPHOBIA ROLLERCOASTER, ARTIST COLDBLOODED, BEDAZZLED MARRIED, DEEP CRU...
5	ELIZABETH	BROWN	AGENT TRUMAN, ALASKA PHANTOM, ALTER VICTORY, AMISTAD MIDSUMMER, ARIZONA BANG, BETRAYED REAR, BOUND CHEAPER, CENTER DINOSAU...
6	JENNIFER	DAVIS	AMADEUS HOLY, BLUES INSTINCT, CLUB GRAFFITI, EMPIRE MALKOVICH, ENGLISH BULWORTH, EXORCIST STING, GOLD RIVER, GOLDMINE TYCOON, HAN...
7	MARIA	MILLER	ALIEN CENTER, BUCKET BROTHERHOOD, CLERKS ANGELS, CLUELESS BUCKET, FATAL HAUNTED, FORRESTER COMANCHEROS, GALAXY SWEETHEARTS, ...
8	SUSAN	WILSON	ACADEMY DINOSAUR, ARIZONA BANG, ARTIST COLDBLOODED, DAY UNFAITHFUL, FORREST SONS, HAROLD FRENCH, HIGH ENCINO, HOLIDAY GAMES, ...
9	MARGARET	MOORE	BLOOD ARGONAUTS, BORN SPINAL, COLOR PHILADELPHIA, CRUELTY UNFORGIVEN, DEEP CRUSADE, FATAL HAUNTED, HYDE DOCTOR, INFORMER DOU...
10	DOROTHY	TAYLOR	ALADDIN CALENDAR, ALI FOREVER, ALLEY EVOLUTION, BOUND CHEAPER, COAST RAINBOW, DETAILS PACKER, FURY MURDER, GRADUATE LORD, GRO...
11	LISA	ANDERS...	BOOGIE AMELIE, BULL SHAWSHANK, CAUSE DATE, CENTER DINOSAUR, CHASING FIGHT, CHILL LUCK, COLOR PHILADELPHIA, CONFIDENTIAL INTERVIEW,...
12	NANCY	THOMAS	ARMY FLINTSTONES, BEVERLY OUTLAW, BRIDE INTRIGUE, BUCKET BROTHERHOOD, CRAFT OUTFIELD, DRACULA CRYSTAL, FAMILY SWEET, FANTASY TR...
13	KAREN	JACKSON	ARIZONA BANG, BABY HALL, BERETS AGENT, BLADE POLISH, BOWFINGER GABLES, CALENDAR GUNFIGHT, CHANCE RESURRECTION, DAY UNFAITHFUL, ...
14	BETTY	WHITE	AGENT TRUMAN, ANALYZE HOOSIERS, BROTHERHOOD BLANKET, CASPER DRAGONFLY, COMANCHEROS ENEMY, CUPBOARD SINNERS, DIARY PANIC, D...
15	HELEN	HARRIS	BEAR GRACELAND, BEAUTY GREASE, BINGO TALENTED, BROOKLYN DESERT, CANDIDATE PERDITION, CREEPERS KANE, CROW GREASE, DATE SPEED, D...
16	SANDRA	MARTIN	ATTRACTION NEWTON, BILKO ANONYMOUS, BROOKLYN DESERT, CALENDAR GUNFIGHT, CITIZEN SHREK, EGG IGBY, FEUD FROGMEN, HALLOWEEN NUT...
17	DONNA	THOMPS...	AMISTAD MIDSUMMER, BACKLASH UNDEFEATED, CYCLONE FAMILY, DISTURBING SCARFACE, DREAM PICKUP, EASY GLADIATOR, HEARTBREAKERS BRI...
18	CAROL	GARCIA	ALADDIN CALENDAR, BANGER PINOCCHIO, CONFESSIONS MAGUIRE, CONFIDENTIAL INTERVIEW, CUPBOARD SINNERS, CURTAIN VIDEOTAPE, DANCING ...
19	RUTH	MARTINEZ	APACHE DIVINE, ARACHNOPHOBIA ROLLERCOASTER, ATTRACTION NEWTON, BLUES INSTINCT, COAST RAINBOW, DURHAM PANKY, ESCAPE METROPOLI...
20	SHARON	ROBINSON	BEAR GRACELAND, BUTTERFLY CHOCOLAT, CHOCOLAT HARRY, DECEIVER BETRAYED, DOORS PRESIDENT, EGG IGBY, FIREBALL PHILADELPHIA, FLASH ...

#	Time	Action	Message	Durati
1	18:02:32	CREATE ALGORITHM = UNDEFINED DEFINER = 'root'@'localhost' SQL SECURITY DEFINER VIEW 'customer_film' AS SEL...	0 row(s) affected	0.000
2	18:02:39	SELECT * FROM sakila.customer_film LIMIT 0, 10000	599 row(s) returned	0.047

设计了一个名为 customer_film 的视图，关联了 customer，rental，inventory，film 四个表，作用是列出所有 customer 的 id，姓名以及他们所租赁的全部电影。

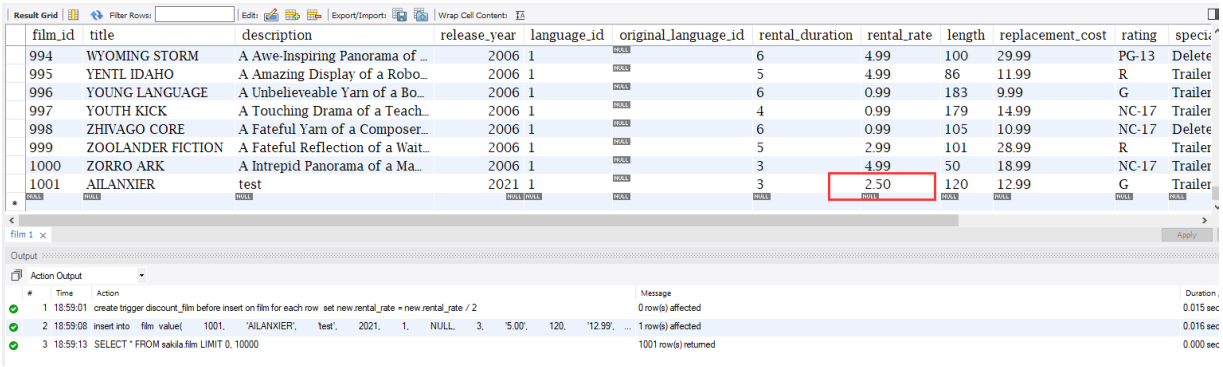
2. 设计 1 个触发器，需要在报告里体现触发器生效。

触发器代码：

```
create trigger discount_film before insert on film
    for each row
    set new.rental_rate = new.rental_rate / 2
```

插入代码：

```
insert into
    film
value(
        1001,
        'AILANXIER',
        'test',
        2021,
        1,
        NULL,
        3,
        '5.00',
        120,
        '12.99',
        'G',
        'Trailers,Deleted Scenes',
        now()
)
```



film_id	title	description	release_year	language_id	original_language_id	rental_duration	rental_rate	length	replacement_cost	rating	speci
994	WYOMING STORM	A Awe-Inspiring Panorama of ...	2006	1	NULL	6	4.99	100	29.99	PG-13	Delete
995	YENTL IDAHO	A Amazing Display of a Robo...	2006	1	NULL	5	4.99	86	11.99	R	Trailer
996	YOUNG LANGUAGE	A Unbelieveable Yarn of a Bo...	2006	1	NULL	6	0.99	183	9.99	G	Trailer
997	YOUTH KICK	A Touching Drama of a Teach...	2006	1	NULL	4	0.99	179	14.99	NC-17	Trailer
998	ZHIVAGO CORE	A Fateful Yarn of a Composer...	2006	1	NULL	6	0.99	105	10.99	NC-17	Delete
999	ZOOLANDER FICTION	A Fateful Reflection of a Wait...	2006	1	NULL	5	2.99	101	28.99	R	Trailer
1000	ZORRO ARK	A Intrepid Panorama of a Ma...	2006	1	NULL	3	4.99	50	18.99	NC-17	Trailer
1001	AILANXIER	test	2021	1	NULL	3	2.50	120	12.99	G	Trailer

触发器的意义是，对于 film 表的新数据的 rental_rate 减半，相当于打 5 折。这里测试的插入代码原 rental_rate 为 5.00，插入后 rental_rate 变为 2.50，说明触发器生效了。

三、 思考题

（这部分不是必做题，供有兴趣的同学思考）

如果可以给这个数据库做修改，你想修改哪个地方？指出并说明原因。

可以将 city 表和 country 表合并，让 city 表增加一列 country。因为 country 表中只有 country 属性真正有意义，而它又只和 city 表连接，完全可以去掉这一连接，合并为一个表。