

实验二 高级SQL语言的使用

2021秋





本学期实验总体安排

实验项目	一	二	三	四	五
学时数	2	2	4	4	4
实验内容	MySQL关系数据库管理系统及SQL语言的使用	高级SQL语言的使用	一个小型系统的设计与实现（数据库设计）	一个小型系统的设计与实现	查询处理算法的模拟实现
分数	4	4	7	7	8
检查方式	课堂抽查、提交实验截图	提交实验截图	提交模型图、实验报告、工程文件、系统介绍录频		提交实验报告、工程文件

本学期实验课程共 **16** 个学时，**5** 个实验项目，总成绩为 **30** 分。



1

2

3

4

5



实验二任务

实验目的：

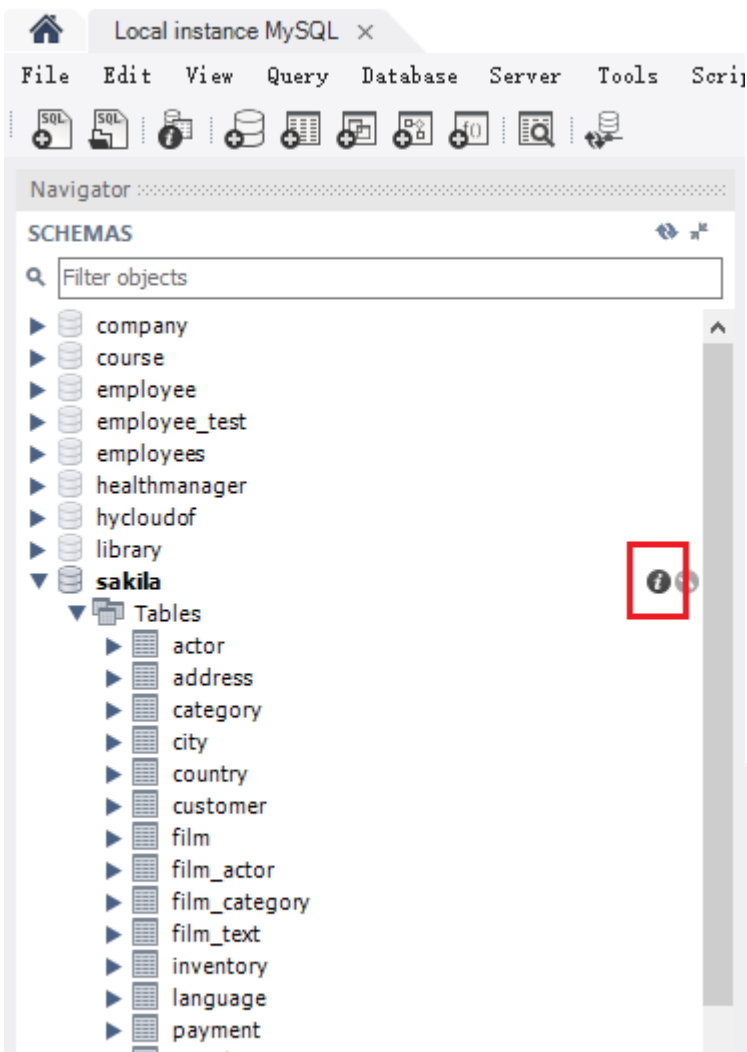
- 理解视图和触发器的基本概念和作用；
- 掌握视图和触发器的创建和调用，并可进行合理设计。

实验内容：

1. 理解Sakila数据库中的视图和触发器；
2. 掌握视图和触发器的创建方法；
3. 根据场景，为Sakila数据库设计并实现合理的视图和触发器。

实验内容

MySQL Workbench



Sakila样例数据库包括:

- 16 张表
- 7 个视图
- 6 个触发器

Name	Event	Table	Timing	Created
customer_create_date	INSERT	customer	BEFORE	2021-03-01 22:0...
ins_film	INSERT	film	AFTER	2021-03-01 22:0...
upd_film	UPDATE	film	AFTER	2021-03-01 22:0...
del_film	DELETE	film	AFTER	2021-03-01 22:0...
payment_date	INSERT	payment	BEFORE	2021-03-01 22:0...
rental_date	INSERT	rental	BEFORE	2021-03-01 22:0...

Name
actor_info
customer_list
film_list
nicer_but_slower_film_list

实验内容

触发器 (Triggers)

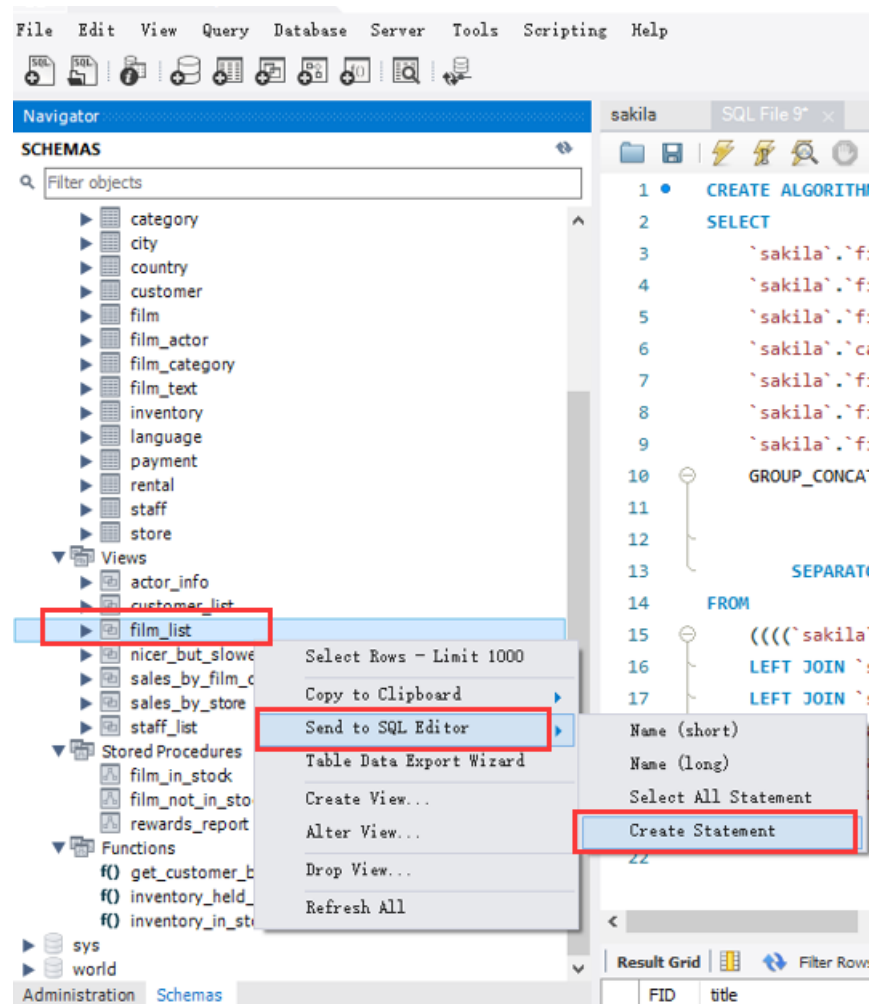
The screenshot displays a database management interface for the 'sakila' schema. The left pane shows the 'Schemas' tree with 'sakila' expanded, and the 'Tables' list containing 'film'. A red arrow labeled '1' points to the 'film' table. The main pane shows the 'film' table properties, including 'Table Name: film', 'Schema: sakila', 'Charset/Collation: utf8mb4', and 'Engine: InnoDB'. The 'Triggers' tab is selected at the bottom, showing a list of triggers: 'ins_film', 'updater', and 'del_film'. A red arrow labeled '2' points to the 'Triggers' tab. The 'updater' trigger is highlighted in the list, and a red arrow labeled '3' points to its definition in the right pane. The trigger definition is as follows:

```
1 CREATE DEFINER='root'@'localhost' TRIGGER `updater` AFTER UPDATE ON `film` FOR EACH ROW BEGIN
2   IF (old.title != new.title) OR (old.description != new.description) OR (old.film_id != new.film_id)
3   THEN
4     UPDATE film_text
5     SET title=new.title,
6         description=new.description,
7         film_id=new.film_id
8     WHERE film_id=old.film_id;
9   END IF;
10  END
```




- actor_info
- customer_list
- film_list
- nicer_but_slower_film_list
- sales_by_film_category
- sales_by_store
- staff_list

<https://dev.mysql.com/doc/sakila/en/sakila-structure-views.html>



实验内容

视图 (Views)

```
sakila  SQL File 9* x
Limit to 1000 rows

1 • CREATE ALGORITHM=UNDEFINED DEFINER=`root`@`localhost` SQL SECURITY DEFINER VIEW `sakila`.`film_list` AS
2 SELECT
3     `sakila`.`film`.`film_id` AS `FID`,
4     `sakila`.`film`.`title` AS `title`,
5     `sakila`.`film`.`description` AS `description`,
6     `sakila`.`category`.`name` AS `category`,
7     `sakila`.`film`.`rental_rate` AS `price`,
8     `sakila`.`film`.`length` AS `length`,
9     `sakila`.`film`.`rating` AS `rating`,
10    GROUP_CONCAT(CONCAT(`sakila`.`actor`.`first_name`,
11                        _utf8mb3 ' ',
12                        `sakila`.`actor`.`last_name`)
13                  SEPARATOR ', ') AS `actors`
14 FROM
15    ((((`sakila`.`category`
16  LEFT JOIN `sakila`.`film_category` ON ((`sakila`.`category`.`category_id` = `sakila`.`film_category`.`category_id`)))
17  LEFT JOIN `sakila`.`film` ON ((`sakila`.`film_category`.`film_id` = `sakila`.`film`.`film_id`)))
18  JOIN `sakila`.`film_actor` ON ((`sakila`.`film`.`film_id` = `sakila`.`film_actor`.`film_id`)))
19  JOIN `sakila`.`actor` ON ((`sakila`.`film_actor`.`actor_id` = `sakila`.`actor`.`actor_id`)))
20 GROUP BY `sakila`.`film`.`film_id` , `sakila`.`category`.`name`;
21
22
```

The film_list view

实验内容

Select * from film_list;

Result Grid								
Filter Rows: <input type="text"/>								
Export: <input type="button" value="Excel"/> Wrap Cell Content: <input checked="" type="checkbox"/>								
	FID	title	description	category	price	length	rating	actors
▶	1	ACADEMY DINOSAUR	A Epic Drama of a Feminist And a Mad Scientist ...	Documentary	0.99	86	PG	PENELOPE GUINESS, CHRISTIAN GABLE, LUCILLE TRACY, SANDRA PECK,
	2	ACE GOLDFINGER	A Astounding Epistle of a Database Administrat...	Horror	4.99	48	G	BOB FAWCETT, MINNIE ZELLWEGER, SEAN GUINESS, CHRIS DEPP
	3	ADAPTATION HOLES	A Astounding Reflection of a Lumberjack And a ...	Documentary	2.99	50	NC-17	NICK WAHLBERG, BOB FAWCETT, CAMERON STREEP, RAY JOHANSSON,
	4	AFFAIR PREJUDICE	A Fanciful Documentary of a Frisbee And a Lum...	Horror	2.99	117	G	JODIE DEGENERES, SCARLETT DAMON, KENNETH PESCI, FAY WINSLET, C
	5	AFRICAN EGG	A Fast-Paced Documentary of a Pastry Chef An...	Family	2.99	130	G	GARY PHOENIX, DUSTIN TAUTOU, MATTHEW LEIGH, MATTHEW CARREY,
	6	AGENT TRUMAN	A Intrepid Panorama of a Robot And a Boy who...	Foreign	2.99	169	PG	KIRSTEN PALTROW, SANDRA KILMER, JAYNE NEESON, WARREN NOLTE, F
	7	AIRPLANE SIERRA	A Touching Saga of a Hunter And a Butler who ...	Comedy	4.99	62	PG-13	JIM MOSTEL, RICHARD PENN, OPRAH KILMER, MENA HOPPER, MICHAEL B
	8	AIRPORT POLLOCK	A Epic Tale of a Moose And a Girl who must Con...	Horror	4.99	54	R	FAY KILMER, GENE WILLIS, SUSAN DAVIS, LUCILLE DEE
	9	ALABAMA DEVIL	A Thoughtful Panorama of a Database Administ...	Horror	2.99	114	PG-13	CHRISTIAN GABLE, ELVIS MARX, RIP CRAWFORD, MENA TEMPLE, RIP WI
	10	ALADDIN CALENDAR	A Action-Packed Tale of a Man And a Lumberjac...	Sports	4.99	63	NC-17	ALEC WAYNE, JUDY DEAN, VAL BOLGER, RAY JOHANSSON, RENEE TRACY
	11	ALAMO VIDEOTAPE	A Boring Epistle of a Butler And a Cat who must ...	Foreign	0.99	126	G	JOHNNY CAGE, SCARLETT DAMON, SEAN GUINESS, MICHAEL BENING
	12	ALASKA PHANTOM	A Fanciful Saga of a Hunter And a Pastry Chef ...	Music	0.99	136	PG	VAL BOLGER, BURT POSEY, SIDNEY CROWE, SYLVESTER DERN, ALBERT J
	13	ALI FOREVER	A Action-Packed Drama of a Dentist And a Croc...	Horror	4.99	150	PG	CARY MCCONAUGHEY, CHRISTOPHER BERRY, KENNETH TORN, MORGAN
	14	ALICE FANTASIA	A Emotional Drama of a A Shark And a Databas...	Classics	0.99	94	NC-17	WOODY HOFFMAN, MINNIE ZELLWEGER, MORGAN WILLIAMS, ROCK DUK
	15	ALIEN CENTER	A Brilliant Drama of a Cat And a Mad Scientist w...	Foreign	2.99	46	NC-17	BURT DUKAKIS, KENNETH PALTROW, SIDNEY CROWE, RENEE TRACY, HU
	16	ALLEY EVOLUTION	A Fast-Paced Drama of a Robot And a Compose...	Foreign	2.99	180	NC-17	KARL BERRY, JUDE CRUISE, ALBERT JOHANSSON, GREGORY GOODING, J
	17	ALONE TRIP	A Fast-Paced Character Study of a Composer A...	Music	0.99	82	R	ED CHASE, KARL BERRY, UMA WOOD, WOODY JOLIE, SPENCER DEPP, CH
	18	ALTER VICTORY	A Thoughtful Drama of a Composer And a Femi...	Animation	0.99	57	PG-13	REESE KILMER, JADA RYDER, ANGELA WITHERSPOON, OPRAH KILMER
	19	AMADEUS HOLY	A Emotional Display of a Pioneer And a Technica...	Action	0.99	113	PG	JOHNNY LLOBRIGIDA, JULIA MCQUEEN, VAL BOLGER, KIRK JOVOVICH,
	20	AMELIE HELLFIGHTERS	A Boring Drama of a Woman And a Squirrel who...	Music	4.99	79	R	CARMEN HUNT, WALTER TORN, ED MANSFIELD, EWAN GOODING, IAN TA
	21	AMERICAN CIRCUS	A Insightful Drama of a Girl And a Astronaut wh...	Action	4.99	129	R	KEVIN BLOOM, RIP CRAWFORD, SIDNEY CROWE, WARREN JACKMAN, FR
	22	AMISTAD MIDSUMMER	A Emotional Character Study of a Dentist And a ...	New	2.99	85	G	CARY MCCONAUGHEY, DARYL WAHLBERG, SALMA NOLTE, SCARLETT BEN
	23	ANACONDA CONFES...	A Lacklusture Display of a Dentist And a Dentist...	Animation	0.99	92	R	PENELOPE GUINESS, JENNIFER DAVIS, ELVIS MARX, JAYNE NOLTE, HUMPH
	24	ANALYZE HOOSIERS	A Thoughtful Display of a Explorer And a Pastry...	Horror	2.99	181	R	TOM MCKELLEN, TOM MIRANDA, JESSICA BAILEY, GRETA MALDEN, ED GL
	25	ANGELS LIFE	A Thoughtful Display of a Woman And a Astron...	New	2.99	74	G	PENELOPE GUINESS, JENNIFER DAVIS, GRACE MOSTEL, JULIA BARRYMOR
	26	ANNIE IDENTITY	A Amazing Panorama of a Pastry Chef And a Bo...	Sci-Fi	0.99	86	G	ADAM GRANT, CATE MCQUEEN, GRETA KEITEL
	27	ANONYMOUS HUMAN	A Amazing Reflection of a Database Administrat...	Sports	0.99	179	NC-17	GRACE MOSTEL, FAY KILMER, JIM MOSTEL, SUSAN DAVIS, WHOOP! HURT



思考题



如果可以给这个数据库做修改，你想修改哪些地方？请指出并说明原因。



作业提交

- **课后提交**：提交实验报告至作业提交平台（截止日期参考平台发布）

作业平台入口：<http://grader.tery.top:8000/#/login>

用户名、密码默认是你的**学号**

- 推荐使用 **Chrome** 浏览器
- 注意提交 **pdf** 格式的报告

