一、实验目的

1．掌握基本表的删除与修改；

2．掌握实体完整性、参照完整性和用户定义的完整性的定义、检查和违约处理；

3．掌握视图的定义、查询和更新，了解视图的作用。

二、实验学时

2 学时

三、实验内容

1．完成以下操作：

⑴ 向在实验二中所定义的数据表增加“备注”列，其数据类型为字符型，并查看新增列的值。

```
mysql> alter table sumcostall add column note varchar(16);select *from sumcostall;
1060 - Duplicate column name 'note'
+----------------+------+----------+------+
| Unit           | Date | Cost     | note |
+----------------+------+----------+------+
| companyFirst   | 5    | 12100.00 | NULL |
| companySecond | 5    | 21300.00 | NULL |
| companyThird   | 5    | 10600.00 | NULL |
| companyThird   | 6    | 11300.00 | NULL |
+----------------+------+----------+------+
4 rows in set (0.02 sec)
```

⑵ 对上述数据表增加主码约束条件，并观察在数据表中存在数据的情况下主码约束是否创建成功，然后再次执行实验二中实验内容

```
mysql> alter table sumcostall
add primary key (Unit,Date);
select *
from sumcostall;
Query OK, 0 rows affected (0.06 sec)
Records: 0  Duplicates: 0  Warnings: 0

+----------------+------+----------+------+
| Unit           | Date | Cost     | note |
+----------------+------+----------+------+
| companyFirst   | 5    | 12100.00 | NULL |
| companySecond  | 5    | 21300.00 | NULL |
| companyThird   | 5    | 10600.00 | NULL |
| companyThird   | 6    | 11300.00 | NULL |
+----------------+------+----------+------+
4 rows in set (0.04 sec)
```

```
mysql> insert into sumCostALL(Unit,Date,Cost)
select constructionUnit,date_format(settleDate,'%y-%m-%d'),sum(allCost)
from costTable
group by constructionUnit,settleDate;
select *
from sumcostall;
1062 - Duplicate entry 'companyFirst-16-05-26' for key 'sumcostall.PRIMARY'
+---------------+----------+----------+------+
| Unit          | Date     | Cost     | note |
+---------------+----------+----------+------+
| companyFirst  | 16-05-26 | 12100.00 | NULL |
| companyFirst  | 5        | 12100.00 | NULL |
| companySecond | 16-05-26 | 21300.00 | NULL |
| companySecond | 5        | 21300.00 | NULL |
| companyThird  | 16-05-26 | 10600.00 | NULL |
| companyThird  | 16-06-01 | 11300.00 | NULL |
| companyThird  | 5        | 10600.00 | NULL |
| companyThird  | 6        | 11300.00 | NULL |
+---------------+----------+----------+------+
8 rows in set (0.07 sec)
```

(3) 删除上述数据表中的数据，然后再删除该数据表，对这两个操作进行比较。

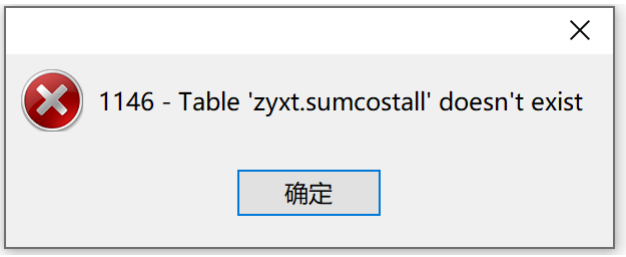
```
mysql> truncate table sumcostall;
select * from sumcostall;
Query OK, 0 rows affected (0.05 sec)

Empty set
```

Unit	Date	Cost	note
(N/A)	(N/A)	(N/A)	(N/A)

```
mysql> drop table sumcostall;
select * from sumcostall;
Query OK, 0 rows affected (0.03 sec)

1146 - Table 'zyxt.sumcostall' doesn't exist
```



2．完成以下任务：

⑴ 对实验一中所定义的5 个数据表增加主码约束条件，并观察在数据表中存在数据的情况下主码约束是否创建成功，然后执行以下2 个操作，观察并记录实体完整性的检查和违约处理。

```
mysql> alter table costtable
add primary key (invoice);
alter table departtable
add primary key (departID);
alter table materialcostdetail
add primary key(invoice,materialId);
alter table materiatable
add primary key(materialId,materialName);
alter table oilwalltable
add primary key(oilWallId);
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0

Query OK, 0 rows affected (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 0

Query OK, 0 rows affected (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 0

Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

① insert into 材料消耗表values('zy2020001','wm004',100)

```
mysql> insert into materialcostdetail value ('zy2020001','wm004',100);
select * from materialcostdetail;
Query OK, 1 row affected (0.01 sec)

+-----------+----------+----------------+
| invoice    | materialId | consumeQuantity |
+-----------+----------+----------------+
| zy2016001 | wm001    | 200.00         |
| zy2016001 | wm002    | 200.00         |
| zy2016001 | wm003    | 200.00         |
| zy2016001 | wm004    | 100.00         |
| zy2016002 | wm001    | 200.00         |
| zy2016002 | wm002    | 200.00         |
| zy2016002 | wm003    | 200.00         |
| zy2016003 | wm001    | 200.00         |
| zy2016003 | wm002    | 200.00         |
| zy2016003 | wm003    | 250.00         |
| zy2016004 | wm001    | 200.00         |
| zy2016004 | wm002    | 200.00         |
| zy2016004 | wm004    | 200.00         |
| zy2016005 | wm001    | 200.00         |
| zy2016005 | wm002    | 200.00         |
| zy2016005 | wm004    | 300.00         |
| zy2020001 | wm004    | 100.00         |
+-----------+----------+----------------+
17 rows in set (0.06 sec)
```

② insert into 材料消耗表values('zy2020002',NULL,200)

```
mysql> insert into materialcostdetail value('zy2020002',NULL,200);
1048 - Column 'materialId' cannot be null
```

⑵ 对实验一中所定义的5 个数据表增加相应的参照完整性约束，并观察在数据表中存在数据的情况下参照完整性约束是否创建成功，

然后执行以下操作，观察并记录参照完整性的检查和违约处理。

```
mysql> insert into materialcostdetail value('zy2020002',NULL,200);
1048 - Column 'materialId' cannot be null
mysql> alter table oilwalltable add foreign key(departID) references departtable(departID);
alter table costtable add foreign key(departmentId) references departtable(departID);
alter table costtable add foreign key(oilWall) references oilwalltable(oilWallId);
alter table materialcostdetail add foreign key(materialId) references materiatable(materialId);
Query OK, 8 rows affected (0.09 sec)
Records: 8  Duplicates: 0  Warnings: 0

Query OK, 5 rows affected (0.07 sec)
Records: 5  Duplicates: 0  Warnings: 0

Query OK, 5 rows affected (0.07 sec)
Records: 5  Duplicates: 0  Warnings: 0

Query OK, 17 rows affected (0.06 sec)
Records: 17  Duplicates: 0  Warnings: 0
```

① 将（y007 油井112203002）插入到油水井表。

② insert into 材料消耗表values('zy2020007','wm006',100)

③ 将单位表中的（112202002 采油二矿二队）删除，查看油水井表和成本表中的数据有何变化。

④ 将材料表中的（wm004 材料四袋10）修改为（wm04 材料四袋10）。

⑤ 撤销上述成功的更新操作。

```
mysql> insert into oilwalltable
value('y007','oilWall','112203002');
1452 - Cannot add or update a child row: a foreign key constraint fails (`zyxt`.`oilwalltable`, CONSTRAINT `oilwalltable_i
bfk_1` FOREIGN KEY (`departID`) REFERENCES `departtable` (`departID`))
```

```
mysql> insert into materialcostdetail
value('zy2020007','wm006',100);
1452 - Cannot add or update a child row: a foreign key constraint fails (`zyxt`.`materialcostdetail`, CONSTRAINT `material
costdetail_ibfk_1` FOREIGN KEY (`materialId`) REFERENCES `materiatable` (`materialId`))
```

```
mysql> delete from departtable
where departID = '112202002' and departName = 'oilTwoSecond';
1451 - Cannot delete or update a parent row: a foreign key constraint fails (`zyxt`.`costtable`, CONSTRAINT `costtable_ibf
k_1` FOREIGN KEY (`departmentId`) REFERENCES `departtable` (`departID`))
```

```
mysql> update materiatable
set materialId = 'wm04'
where materialId = 'wm004' and materialName = 'fourth';
1451 - Cannot delete or update a parent row: a foreign key constraint fails (`zyxt`.`materialcostdetail`, CONSTRAINT `mate
rialcostdetail_ibfk_1` FOREIGN KEY (`materialId`) REFERENCES `materiatable` (`materialId`))
mysql>
```

⑶ 对实验一中所定义的5 个数据表按以下要求增加相应的完整性约束条件，并观察在数据表中存在数据的情况下完整性约束是否创

建成功。

① 单位表的单位名称不能取空值、且取值唯一。

② 油水井表的井别只允许取“油井”或“水井”，单位代码不能取空值。

③ 材料表的名称不能取空值、且取值唯一，计量单位不能取空值。

④ 材料消耗表的消耗数量不能取空值。

⑤ 对成本表根据实际应用的要求定义适当的用户定义的完整性约束条件。

```
mysql> alter table departtable add unique(departName) ;
alter table departtable modify departName varchar(16) not null;
Query OK, 0 rows affected (0.04 sec)
Records: 0  Duplicates: 0  Warnings: 0

Query OK, 0 rows affected (0.06 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> alter table oilwalltable add check(oilWallType = 'oilWall' or oilWallType = 'waterWall');
Query OK, 8 rows affected (0.07 sec)
Records: 8  Duplicates: 0  Warnings: 0
```

```
mysql> alter table materiatable add unique(materialName,measureUnit);
alter table materiatable modify materialName varchar(16) not null;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

Query OK, 0 rows affected (0.01 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> alter table materialcostdetail modify consumeQuantity decimal(10,2) not null;
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> alter table costtable
modify departmentId varchar(16) not null,
modify oilWall varchar(16) not null ,
modify budgetAmount decimal(10,2) not null,
modify budgetPerson varchar(16) not null,
modify budgetDate datetime not null;
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

3．完成以下操作：

⑴ 定义视图V1，用于保存成本表和材料消耗表的全部列。

⑵ 查询上面定义的视图V1，可任意组合查询条件，构造出2 个查询。

⑶ 定义一个反映成本表预算状态的视图V2，并向该视图插入('zy2020008','112202002','y005',10000,'张三', '2020-07-02')，查看成本表

的数据有何变化。

⑷ 撤销上述成功的更新操作。

invoice	departmentI	oilWall	budgetAmou	budgetPerso	budgetDate	startDate	endDate	constructionI	construction	materialCost	presonCost	otherCost
zy2016001	112201001	y001	10000.00	A	2016-05-01 (	2016-05-04 (	2016-05-25 (	companyFirs	plugging	7000.00	2700.00	1000.00
zy2016001	112201001	y001	10000.00	A	2016-05-01 (	2016-05-04 (	2016-05-25 (	companyFirs	plugging	7000.00	2700.00	1000.00
zy2016001	112201001	y001	10000.00	A	2016-05-01 (	2016-05-04 (	2016-05-25 (	companyFirs	plugging	7000.00	2700.00	1000.00
zy2016001	112201001	y001	10000.00	A	2016-05-01 (	2016-05-04 (	2016-05-25 (	companyFirs	plugging	7000.00	2700.00	1000.00
zy2016002	112201002	y003	11000.00	A	2016-05-01 (	2016-05-04 (	2016-05-23 (	companySec	checkPump	6000.00	1500.00	1000.00
zy2016002	112201002	y003	11000.00	A	2016-05-01 (	2016-05-04 (	2016-05-23 (	companySec	checkPump	6000.00	1500.00	1000.00
zy2016002	112201002	y003	11000.00	A	2016-05-01 (	2016-05-04 (	2016-05-23 (	companySec	checkPump	6000.00	1500.00	1000.00
zy2016003	112201002	s001	10500.00	A	2016-05-01 (	2016-05-06 (	2016-05-23 (	companySec	profileContrc	6500.00	2000.00	500.00
zy2016003	112201002	s001	10500.00	A	2016-05-01 (	2016-05-06 (	2016-05-23 (	companySec	profileContrc	6500.00	2000.00	500.00
zy2016003	112201002	s001	10500.00	A	2016-05-01 (	2016-05-06 (	2016-05-23 (	companySec	profileContrc	6500.00	2000.00	500.00
zy2016004	112202001	s002	12000.00	A	2016-05-01 (	2016-05-04 (	2016-05-24 (	companyThir	unblock	6000.00	2000.00	1000.00
zy2016004	112202001	s002	12000.00	A	2016-05-01 (	2016-05-04 (	2016-05-24 (	companyThir	unblock	6000.00	2000.00	1000.00
zy2016004	112202001	s002	12000.00	A	2016-05-01 (	2016-05-04 (	2016-05-24 (	companyThir	unblock	6000.00	2000.00	1000.00
zy2016005	112202002	y005	12000.00	A	2016-05-01 (	2016-05-04 (	2016-05-28 (	companyThir	sandControl	7000.00	1000.00	2000.00
zy2016005	112202002	y005	12000.00	A	2016-05-01 (	2016-05-04 (	2016-05-28 (	companyThir	sandControl	7000.00	1000.00	2000.00
zy2016005	112202002	y005	12000.00	A	2016-05-01 (	2016-05-04 (	2016-05-28 (	companyThir	sandControl	7000.00	1000.00	2000.00

```
mysql> select invoice,materialId,consumeQuantity
from V1
where materialId = 'wm001';
+-----------+----------+----------------+
| invoice   | materialId | consumeQuantity |
+-----------+----------+----------------+
| zy2016001 | wm001    | 200.00         |
| zy2016002 | wm001    | 200.00         |
| zy2016003 | wm001    | 200.00         |
| zy2016004 | wm001    | 200.00         |
| zy2016005 | wm001    | 200.00         |
+-----------+----------+----------------+
5 rows in set (0.09 sec)
```

```
mysql> create view V2
as
select invoice,departmentId,oilWall,budgetAmount,budgetPerson,budgetDate
from costtable;
insert into V2
value ('zy2020008','112202002','y005',10000,'张三', '2020-07-02');
select *
from V2;
Query OK, 0 rows affected (0.01 sec)

Query OK, 1 row affected (0.01 sec)

+-----------+-------------+---------+--------------+--------------+-------------------+
| invoice   | departmentId | oilWall | budgetAmount | budgetPerson | budgetDate          |
+-----------+-------------+---------+--------------+--------------+-------------------+
| zy2016001 | 112201001   | y001    | 10000.00     | A            | 2016-05-01 00:00:00 |
| zy2016002 | 112201002   | y003    | 11000.00     | A            | 2016-05-01 00:00:00 |
| zy2016003 | 112201002   | s001    | 10500.00     | A            | 2016-05-01 00:00:00 |
| zy2016004 | 112202001   | s002    | 12000.00     | A            | 2016-05-01 00:00:00 |
| zy2016005 | 112202002   | y005    | 12000.00     | A            | 2016-05-01 00:00:00 |
| zy2020008 | 112202002   | y005    | 10000.00     | 张三          | 2020-07-02 00:00:00 |
+-----------+-------------+---------+--------------+--------------+-------------------+
6 rows in set (0.08 sec)
```

```
mysql> delete
from costtable
where invoice = 'zy2020008' and budgetPerson = '张三';
select *
from V2;
Query OK, 1 row affected (0.01 sec)

+-----------+-------------+-------+--------------+--------------+-------------------+
| invoice   | departmentId | oilWall | budgetAmount | budgetPerson | budgetDate        |
+-----------+-------------+-------+--------------+--------------+-------------------+
| zy2016001 | 112201001   | y001  | 10000.00     | A            | 2016-05-01 00:00:00 |
| zy2016002 | 112201002   | y003  | 11000.00     | A            | 2016-05-01 00:00:00 |
| zy2016003 | 112201002   | s001  | 10500.00     | A            | 2016-05-01 00:00:00 |
| zy2016004 | 112202001   | s002  | 12000.00     | A            | 2016-05-01 00:00:00 |
| zy2016005 | 112202002   | y005  | 12000.00     | A            | 2016-05-01 00:00:00 |
+-----------+-------------+-------+--------------+--------------+-------------------+
5 rows in set (0.07 sec)
```

invoice	departmentId	oilWall	budgetAmount	budgetPerson	budgetDate
zy2016001	112201001	y001	10000.00	A	2016-05-01 00:00:00
zy2016002	112201002	y003	11000.00	A	2016-05-01 00:00:00
zy2016003	112201002	s001	10500.00	A	2016-05-01 00:00:00
zy2016004	112202001	s002	12000.00	A	2016-05-01 00:00:00
zy2016005	112202002	y005	12000.00	A	2016-05-01 00:00:00

四、实验报告

提交实验内容中用SQL 语句完成的题目的SQL 语句文档及相应的执行结果。