####Zhicheng Pan, 104639463, Assignment 3

####Correct order is very important.
####The SQL code are as below:

DROP DATABASE IF EXISTS XYZVideo;
CREATE DATABASE XYZVideo;
USE XYZVideo;

####Part A:
####Q1:
DROP TABLE IF EXISTS `MEMBERSHIP`;
CREATE TABLE `MEMBERSHIP` (
 `MEM_NUM` int(11) NOT NULL,
 `Mem_Fname` varchar(50) NULL DEFAULT NULL,
 `Mem_Lname` varchar(50) NULL DEFAULT NULL,
 `Mem_Street` varchar(255) NULL DEFAULT NULL,
 `Mem_City` varchar(50) NULL DEFAULT NULL,
 `Mem_State` varchar(10) NULL DEFAULT NULL,
 `Mem_Zip` int(11) NULL DEFAULT NULL,
 `Mem_Balance` float NULL DEFAULT NULL,
 PRIMARY KEY (`MEM_NUM`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;

DROP TABLE IF EXISTS `RENTAL`;
CREATE TABLE `RENTAL` (
 `Rent_Num` int(11) NOT NULL,
 `Rent_Date` date NULL DEFAULT NULL,
 `Mem_Num` int(11) NOT NULL,
 PRIMARY KEY (`Rent_Num`),
 KEY `FK_in_RENTAL_table` (`Mem_Num`),
 CONSTRAINT `FK_in_RENTAL_table` FOREIGN KEY (`Mem_Num`) REFERENCES
`MEMBERSHIP` (`MEM_NUM`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;

DROP TABLE IF EXISTS `PRICE`;
CREATE TABLE `PRICE` (
 `Price_Code` int(11) NOT NULL AUTO_INCREMENT,
 `Price_Description` varchar(50) NULL DEFAULT NULL,
 `Price_Rentfee` float NULL DEFAULT NULL,
 `Price_Dailylatefee` float NULL DEFAULT NULL,
 PRIMARY KEY (`Price_Code`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;

DROP TABLE IF EXISTS `MOVIE`;

```sql
CREATE TABLE `MOVIE` (
`Movie_Num` int(11) NOT NULL,
`Movie_Name` varchar(50) NULL DEFAULT NULL,
`Movie_Year` int(11) NULL DEFAULT NULL,
`Movie_Cost` float NULL DEFAULT NULL,
`Movie_Genre` varchar(50) NULL DEFAULT NULL,
`Price_Code` int(11) NULL DEFAULT NULL,
PRIMARY KEY (`Movie_Num`),
KEY `FK_in_MOVIE_table` (`Price_Code`),
CONSTRAINT `FK_in_MOVIE_table` FOREIGN KEY (`Price_Code`) REFERENCES `PRICE`
(`Price_Code`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;


DROP TABLE IF EXISTS `VIDEO`;
CREATE TABLE `VIDEO` (
  `Vid_Num` int(11) NOT NULL,
  `Vid_Indate` date NULL DEFAULT NULL,
  `Movie_Num` int(11) NOT NULL,
  PRIMARY KEY (`Vid_Num`),
  KEY `FK_in_VIDEO_table` (`Movie_Num`),
  CONSTRAINT `FK_in_VIDEO_table` FOREIGN KEY (`Movie_Num`) REFERENCES `MOVIE`
(`Movie_Num`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;


DROP TABLE IF EXISTS `DETAILRENTAL`;
CREATE TABLE `DETAILRENTAL` (
  `Rent_Num` int(11) NOT NULL,
  `Vid_Num` int(11) NOT NULL,
  `Detail_Fee` float NULL DEFAULT NULL,
  `Detail_Duedate` date NOT NULL,
  `Detail_Returndate` date NULL DEFAULT NULL,
  `Detail_Dailylatefee` float NULL DEFAULT NULL,
  PRIMARY KEY (`Rent_Num`,`Vid_Num`),
  KEY `FK_in_DETAILRENTAL_table1` (`Rent_Num`),
  KEY `FK_in_DETAILRENTAL_table2` (`Vid_Num`),
  CONSTRAINT `FK_in_DETAILRENTAL_table1` FOREIGN KEY (`Rent_Num`) REFERENCES
`RENTAL` (`Rent_Num`),
  CONSTRAINT `FK_in_DETAILRENTAL_table2` FOREIGN KEY (`Vid_Num`)  REFERENCES
`VIDEO` (`Vid_Num`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Q2:
```sql
####''==empty, not equal to 'NULL'(taking up memory), not allow 'NULL' but can be '';
#### empty int ---> NULL(not 'NULL'), empty date ---> NULL, empty string ---> 'NULL'

LOCK TABLES `MEMBERSHIP` WRITE;
```

```sql
INSERT INTO `MEMBERSHIP` VALUES (102,'Tami','Dawson','2632 Takli Circle','Norene','TN',37136,11);
INSERT INTO `MEMBERSHIP` VALUES (103,'Curt','Knight','4025 Cornell Court','Flatgap','KY',41219,6);
INSERT INTO `MEMBERSHIP` VALUES (104,'Jamal','Melendez','788 East 145th Avenue','Quebeck','TN',38579,0);
INSERT INTO `MEMBERSHIP` VALUES (105,'Iva','Mcclain','6045 Musket Ball Circle','Summit','KY',42783,15);
INSERT INTO `MEMBERSHIP` VALUES (106,'Miranda','Parks','4469 Maxwell Place','Germantown','TN',38183,0);
INSERT INTO `MEMBERSHIP` VALUES (107,'Rosario','Elliott','7578 Danner Avenue','Columbia','TN',38402,5);
INSERT INTO `MEMBERSHIP` VALUES (108,'Mattie','Guy','4390 Evergreen Street','Lily','KY',40740,0);
INSERT INTO `MEMBERSHIP` VALUES (109,'Clint','Ochoa','1711 Elm Street','Greeneville','TN',37745,10);
INSERT INTO `MEMBERSHIP` VALUES (110,'Lewis','Rosales','4524 Southwind Circle','Counce','TN',38326,0);
INSERT INTO `MEMBERSHIP` VALUES (111,'Stacy','Mann','2789 East Cook Avenue','Murfreesboro','TN',37132,8);
INSERT INTO `MEMBERSHIP` VALUES (112,'Luis','Trujillo','7267 Melvin Avenue','Heiskell','TN',37754,3);
INSERT INTO `MEMBERSHIP` VALUES (113,'Minnie','Gonzales','6430 Vasili Drive','Williston','TN',38076,0);
UNLOCK TABLES;

LOCK TABLES `RENTAL` WRITE;
INSERT INTO `RENTAL` VALUES (1001,'2013-03-01 00:00:00',103);
INSERT INTO `RENTAL` VALUES (1002,'2013-03-01 00:00:00',105);
INSERT INTO `RENTAL` VALUES (1003,'2013-03-02 00:00:00',102);
INSERT INTO `RENTAL` VALUES (1004,'2013-03-02 00:00:00',110);
INSERT INTO `RENTAL` VALUES (1005,'2013-03-02 00:00:00',111);
INSERT INTO `RENTAL` VALUES (1006,'2013-03-02 00:00:00',107);
INSERT INTO `RENTAL` VALUES (1007,'2013-03-02 00:00:00',104);
INSERT INTO `RENTAL` VALUES (1008,'2013-03-03 00:00:00',105);
INSERT INTO `RENTAL` VALUES (1009,'2013-03-03 00:00:00',111);
UNLOCK TABLES;

LOCK TABLES `PRICE` WRITE;
INSERT INTO `PRICE` VALUES (1,'Standard',2,1);
INSERT INTO `PRICE` VALUES (2,'New Release',3.5,3);
INSERT INTO `PRICE` VALUES (3,'Discount',1.5,1);
INSERT INTO `PRICE` VALUES (4,'Weekly Special',1,0.5);
UNLOCK TABLES;

LOCK TABLES `MOVIE` WRITE;
INSERT INTO `MOVIE` VALUES (1234,'The Cesar Family Christmas',2011,39.95,'FAMILY',2);
INSERT INTO `MOVIE` VALUES (1235,'Smokey Mountain Wildlife',2008,59.95,'ACTION',1);
INSERT INTO `MOVIE` VALUES (1236,'Richard Goodhope',2012,59.95,'DRAMA',2);
```

```
INSERT INTO `MOVIE` VALUES (1237,'Beatnik Fever',2011,29.95,'COMEDY',2);
INSERT INTO `MOVIE` VALUES (1238,'Constant Companion',2012,89.95,'DRAMA',2);
INSERT INTO `MOVIE` VALUES (1239,'Where Hope Dies',2002,25.49,'DRAMA',3);
INSERT INTO `MOVIE` VALUES (1245,'Time to Burn',2009,45.49,'ACTION',1);
INSERT INTO `MOVIE` VALUES (1246,'What He Doesn\'t Know',2010,58.29,'COMEDY',1);
UNLOCK TABLES;


LOCK TABLES `VIDEO` WRITE;
INSERT INTO `VIDEO` VALUES (54321,'2012-06-18 00:00:00',1234);
INSERT INTO `VIDEO` VALUES (54324,'2012-06-18 00:00:00',1234);
INSERT INTO `VIDEO` VALUES (54325,'2011-06-18 00:00:00',1234);
INSERT INTO `VIDEO` VALUES (34341,'2011-01-22 00:00:00',1235);
INSERT INTO `VIDEO` VALUES (34342,'2011-01-22 00:00:00',1235);
INSERT INTO `VIDEO` VALUES (34366,'2013-03-02 00:00:00',1236);
INSERT INTO `VIDEO` VALUES (34367,'2013-03-02 00:00:00',1236);
INSERT INTO `VIDEO` VALUES (34368,'2013-03-02 00:00:00',1236);
INSERT INTO `VIDEO` VALUES (34369,'2013-03-02 00:00:00',1236);
INSERT INTO `VIDEO` VALUES (44392,'2012-10-21 00:00:00',1237);
INSERT INTO `VIDEO` VALUES (44397,'2012-10-21 00:00:00',1237);
INSERT INTO `VIDEO` VALUES (59237,'2013-02-14 00:00:00',1237);
INSERT INTO `VIDEO` VALUES (61388,'2011-01-25 00:00:00',1239);
INSERT INTO `VIDEO` VALUES (61353,'2010-01-28 00:00:00',1245);
INSERT INTO `VIDEO` VALUES (61354,'2010-01-28 00:00:00',1245);
INSERT INTO `VIDEO` VALUES (61367,'2012-07-30 00:00:00',1246);
INSERT INTO `VIDEO` VALUES (61369,'2012-07-30 00:00:00',1246);
UNLOCK TABLES;

LOCK TABLES `DETAILRENTAL` WRITE;
INSERT INTO `DETAILRENTAL` VALUES (1001,34342,2,'2013-03-04 00:00:00','2013-03-02
00:00:00',NULL);
INSERT INTO `DETAILRENTAL` VALUES (1001,61353,2,'2013-03-04 00:00:00','2013-03-03
00:00:00',1);
INSERT INTO `DETAILRENTAL` VALUES (1002,59237,3.5,'2013-03-04 00:00:00','2013-03-04
00:00:00',3);
INSERT INTO `DETAILRENTAL` VALUES (1003,54325,3.5,'2013-03-04 00:00:00','2013-03-09
00:00:00',3);
INSERT INTO `DETAILRENTAL` VALUES (1003,61369,2,'2013-03-06 00:00:00','2013-03-09
00:00:00',1);
INSERT INTO `DETAILRENTAL` VALUES (1003,61388,0,'2013-03-06 00:00:00','2013-03-09
00:00:00',1);

INSERT INTO `DETAILRENTAL` VALUES (1004,44392,3.5,'2013-03-05 00:00:00','2013-03-07
00:00:00',3);
INSERT INTO `DETAILRENTAL` VALUES (1004,34367,3.5,'2013-03-05 00:00:00','2013-03-07
00:00:00',3);
INSERT INTO `DETAILRENTAL` VALUES (1004,34341,2,'2013-03-07 00:00:00','2013-03-07
00:00:00',1);
```

```sql
INSERT INTO `DETAILRENTAL` VALUES (1005,34342,2,'2013-03-07 00:00:00','2013-03-05 00:00:00',1);
INSERT INTO `DETAILRENTAL` VALUES (1005,44397,3.5,'2013-03-05 00:00:00','2013-03-05 00:00:00',3);

INSERT INTO `DETAILRENTAL` VALUES (1006,34366,3.5,'2013-03-05 00:00:00','2013-03-04 00:00:00',3);
INSERT INTO `DETAILRENTAL` VALUES (1006,61367,2,'2013-03-07 00:00:00',NULL,1);

INSERT INTO `DETAILRENTAL` VALUES (1007,34368,3.5,'2013-03-05 00:00:00',NULL,3);
INSERT INTO `DETAILRENTAL` VALUES (1008,34369,3.5,'2013-03-05 00:00:00','2013-03-05 00:00:00',3);
INSERT INTO `DETAILRENTAL` VALUES (1009,54324,3.5,'2013-03-05 00:00:00',NULL,3);
INSERT INTO `DETAILRENTAL` VALUES (1001,34366,3.5,'2013-03-04 00:00:00','2013-03-02 00:00:00',3);
UNLOCK TABLES;
```

####Q3:
```sql
COMMIT;
```

####Q4:
```sql
UPDATE MOVIE SET Movie_Year=2010 WHERE Movie_Num=1245;
```

####Q5:
```sql
UPDATE MOVIE SET Price_Code=3 WHERE Movie_Genre='ACTION';
```

####Q6:
```sql
UPDATE PRICE SET Price_Rentfee=Price_Rentfee+0.50;
```

####Q7:
```sql
COMMIT;
```

####Q8:
```sql
SELECT Movie_Name AS Movie_Title, Movie_Year, Movie_Genre FROM MOVIE;
```

####Q9:
```sql
SELECT Movie_Year, Movie_Name AS Movie_Title, Movie_Cost FROM MOVIE ORDER BY Movie_Year DESC;
```

####Q10:
```sql
SELECT Movie_Name AS Movie_Title, Movie_Year, Movie_Genre FROM MOVIE ORDER BY Movie_Genre ASC, Movie_Year DESC;
```

####Q11

SELECT Movie_Num, Movie_Name AS Movie_Title, Price_Code FROM MOVIE WHERE Movie_Name LIKE 'R%';

Q12
SELECT Movie_Name AS Movie_Title, Movie_Year, Movie_Cost FROM MOVIE WHERE Movie_Name LIKE '%hope%' ORDER BY Movie_Title ASC;

Q13
SELECT Movie_Name AS Movie_Title, Movie_Year, Movie_Genre FROM MOVIE WHERE Movie_Genre='ACTION';

Q14
SELECT Movie_Num, Movie_Name AS Movie_Title, Movie_Cost FROM MOVIE WHERE Movie_Cost > 40;

Q15
SELECT Movie_Num, Movie_Name AS Movie_Title, Movie_Cost, Movie_Genre FROM MOVIE WHERE Movie_Genre='ACTION' OR Movie_Genre='COMEDY' OR Movie_Cost < 40 ORDER BY Movie_Genre ASC;

Q16
SELECT Movie_Num, CONCAT(Movie_Name, ' (', Movie_Year, ') ', Movie_Genre) AS 'Movie Description' FROM MOVIE;

####NEW####
Q17
SELECT Movie_Genre, COUNT(*) AS 'Number Of Movies' FROM MOVIE GROUP BY Movie_Genre;

Q18
SELECT AVG(Movie_Cost) AS 'Average Movie Cost' FROM MOVIE;

Q19
SELECT Movie_Genre, AVG(Movie_Cost) AS 'Average Cost' FROM MOVIE GROUP BY Movie_Genre;

Q20
SELECT Movie_Name AS Movie_Title, Movie_Genre, Price_Description, Price_Rentfee FROM MOVIE, PRICE WHERE MOVIE.Price_Code=PRICE.Price_Code;

Q21
SELECT Movie_Genre, AVG(Price_Rentfee) AS 'Average Rental Fee' FROM MOVIE, PRICE WHERE MOVIE.Price_Code=PRICE.Price_Code GROUP BY Movie_Genre;

Q22

SELECT Movie_Name AS Movie_Title, Movie_Year, Movie_Cost/Price_Rentfee AS 'Breakeven Rentals' FROM MOVIE, PRICE WHERE MOVIE.Price_Code=PRICE.Price_Code;

Q23
SELECT Movie_Name AS Movie_Title, Movie_Year FROM MOVIE WHERE Price_Code IS NOT NULL;

Q24
SELECT Movie_Name AS Movie_Title, Movie_Year, Movie_Cost FROM MOVIE WHERE Movie_Cost > 44.99 AND Movie_Cost < 49.99;

Q25
SELECT Movie_Name AS Movie_Title, Movie_Year, Price_Description, Price_Rentfee, Movie_Genre FROM MOVIE, PRICE WHERE MOVIE.Price_Code=PRICE.Price_Code AND (Movie_Genre='FAMILY' OR Movie_Genre='COMEDY' OR Movie_Genre='DRAMA');

Q26
SELECT Movie_Num, Movie_Name AS Movie_Title, Movie_Year FROM MOVIE WHERE MOVIE.Movie_Num NOT IN (SELECT DISTINCT VIDEO.Movie_Num FROM VIDEO);

Q27
SELECT DISTINCT MEMBERSHIP.Mem_Num, Mem_Fname, Mem_Lname, Mem_Balance FROM MEMBERSHIP, RENTAL WHERE MEMBERSHIP.MEM_NUM=RENTAL.MEM_NUM;

Q28
SELECT MIN(Mem_Balance) AS 'Minimum Balance', MAX(Mem_Balance) AS 'Maximum Balance', AVG(Mem_Balance) AS 'Average Balance' FROM MEMBERSHIP WHERE MEMBERSHIP.MEM_NUM IN (SELECT MEM_NUM FROM RENTAL);

Q29
SELECT RENTAL.Rent_Num, Rent_Date, DETAILRENTAL.Vid_Num, Movie_Name AS Movie_Title, Detail_Duedate, Detail_Returndate FROM RENTAL,DETAILRENTAL,VIDEO,MOVIE WHERE RENTAL.Rent_Num=DETAILRENTAL.Rent_Num AND DETAILRENTAL.Vid_Num=VIDEO.Vid_Num AND VIDEO.Movie_Num=MOVIE.Movie_Num AND DETAILRENTAL.Detail_Returndate > DETAILRENTAL.Detail_Duedate ORDER BY Rent_Num ASC, Movie_Title ASC;

Q30
SELECT RENTAL.Rent_Num, Rent_Date, DETAILRENTAL.Vid_Num, Movie_Name AS Movie_Title, Detail_Duedate, Detail_Returndate, Detail_Fee, (Detail_Returndate-Detail_Duedate) AS 'Days Past Due' FROM RENTAL,DETAILRENTAL,VIDEO,MOVIE WHERE RENTAL.Rent_Num=DETAILRENTAL.Rent_Num AND DETAILRENTAL.Vid_Num=VIDEO.Vid_Num AND VIDEO.Movie_Num=MOVIE.Movie_Num AND DETAILRENTAL.Detail_Returndate > DETAILRENTAL.Detail_Duedate ORDER BY Rent_Num ASC, Movie_Title ASC;

Part B

Q1
ALTER TABLE DETAILRENTAL ADD COLUMN DETAIL_DAYSLATE int(3) NULL DEFAULT NULL;
UPDATE DETAILRENTAL SET DETAIL_DAYSLATE=(Detail_Returndate-Detail_Duedate) WHERE Detail_Returndate IS NOT NULL AND Detail_Duedate IS NOT NULL AND Detail_Returndate > Detail_Duedate;

Q2
ALTER TABLE VIDEO ADD COLUMN VID_STATUS ENUM('IN','OUT','LOST') NOT NULL DEFAULT 'IN';

Q3
UPDATE VIDEO SET VID_STATUS='OUT' WHERE Vid_Num IN (SELECT Vid_Num FROM DETAILRENTAL WHERE Detail_Returndate IS NULL);

Q4
ALTER TABLE PRICE ADD COLUMN PRICE_RENTDAYS int(2) NOT NULL DEFAULT 3;

Q5
UPDATE PRICE SET PRICE_RENTDAYS=5 WHERE PRICE_CODE=1;
UPDATE PRICE SET PRICE_RENTDAYS=3 WHERE PRICE_CODE=2;
UPDATE PRICE SET PRICE_RENTDAYS=5 WHERE PRICE_CODE=3;
UPDATE PRICE SET PRICE_RENTDAYS=7 WHERE PRICE_CODE=4;