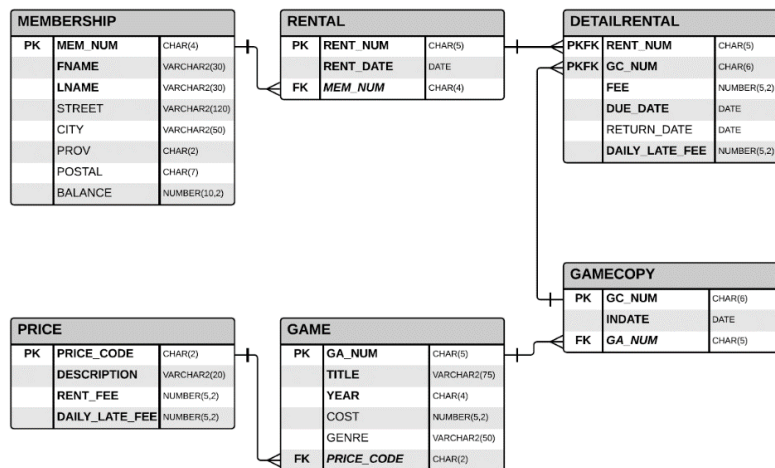GameUR is a startup company providing a GAME kiosk service in Fredericton. GameUR can own several copies of each game available for rent. For example, the store may have 10 copies of the game "DOOM". "DOOM" would be one GAME and each copy would be a GAMECOPY. A rental transaction (RENTAL) involves one or more games being rented to a member (MEMBERSHIP). A game copy can be rented many times over its lifetime, therefore, there is a M:N relationship between RENTAL and GAMECOPY. DETAILRENTAL is the bridge table to resolve this relationship.

Submit an SQL (text) file labeling each question with a comment (--1, --2, --3, etc.) accompanied by the SQL statement that fulfills the requirement for the question.

GameUR E-R Diagram – *see last page for larger view*

1. Create the table structures for the entities shown in E-R diagram above. The structures must contain the attributes specified in the E-R Diagram. Enforce primary key and foreign key constraints as indicated in the diagram along with the following business rules:

    Constraints must be named except for null constraints!

    a. Membership Table
        i.   Balance must be equal to or greater than 0
        ii. Member Number, First and Last Names cannot contain a null value
    b. Rental Table
        i.   All attributes cannot contain a null value
    c. Detail Rental Table
        i.   All attributes cannot contain a null value, **<u>except</u>** for Return Date.
    d. Game Copy Table
        i.   All attributes cannot contain a null value
    e.   Game Table
        i.   GA_NUM, Year, Title and Price code cannot contain a null value
        ii. Year must be a value equal to or greater than 1970
    f.   Price Table
        i.   All attributes cannot contain a null value
        ii. Rent Fee and Daily Late Fee must be equal to or greater than 0

2. The following tables provide a very small portion of the data that could be kept in the database. This data needs to be inserted into the database for testing purposes. Write the INSERT statements necessary to populate the tables the data supplied.
   *USE THE FULL DATE FORMAT OF **YYYY-MM-DD***

Rental Table

RENT_NUM	RENT_DATE	MEM_NUM
1001	17-03-01	103
1002	16-12-12	105
1003	16-11-13	102
1004	17-03-10	110
1005	17-02-04	111
1006	17-02-25	107
1007	16-12-12	104
1008	17-01-01	105
1009	16-10-12	111

Membership Table

MEM_NUM	FNAME	LNAME	STREET	CITY	PROV	POSTAL	BALANCE
102	TAMI	DAWSON	2632 TAKLI CIRCLE	FREDERICTON	NB	E4C 1X2	11
103	CURT	KNIGHT	4025 CORNELL COURT	HALIFAX	NS	E2T 1T2	6
104	JAMAL	MELENDEZ	788 EAST 145TH AVENUE	MONCTON	NB	E4T 1U2	0
105	IVA	MCCLAIN	6045 MUSKET BALL CIRCLE	SUMMIT	NS	E4C 1J2	15
106	MIRANDA	PARKS	4469 MAXWELL PLACE	GERMANTOWN	NB	E2H 1S2	0
107	ROSARIO	ELLIOTT	7578 DANNER AVENUE	TRACEY	NB	E4C 1G2	5
108	MATTIE	GUY	4390 EVERGREEN STREET	LILY	NS	E7C 1F2	0
109	CLINT	OCHOA	1711 ELM STREET	GREENEVILLE	NB	E2K 1H2	10
110	LEWIS	ROSALES	4524 SOUTHWIND CIRCLE	SUSSEX	NB	E7H 1X8	0
111	STACY	MANN	2789 EAST COOK AVENUE	DIEPPE	NB	E4C 1C2	8
112	LUIS	TRUJILLO	7267 MELVIN AVENUE	ST. ANDREWS	NB	E4A 1X2	3
113	MINNIE	GONZALES	6430 VASILI DRIVE	SAINT JOHN	NB	E3P 1X5	0

GameCopy

GC_NUM	INDATE	GA_NUM
34341	17-01-22	1235
34342	17-01-22	1235
34366	99-03-02	1236
34367	99-03-02	1236
34368	99-03-02	1236
34369	99-03-02	1236
44392	10-10-21	1237
44397	10-10-21	1237
54321	16-06-18	1234
54324	16-06-18	1234
54325	16-06-18	1234
59237	10-02-14	1237
61353	13-01-28	1245
61354	13-01-28	1245
61367	12-07-30	1246
61369	12-07-30	1246
61388	10-01-25	1239

DetailRental

RENT_NUM	GC_NUM	FEE	DUE_DATE	RETURN_DATE	DAILY_LATE_FEE
1001	34342	3.5	17-03-04	17-03-02	3
1001	34366	1.5	17-03-04	17-03-03	1
1001	61353	2	17-03-04	17-03-02	1.5
1002	59237	1.5	16-12-15	16-12-15	1
1003	54325	2	16-11-16	16-11-21	1.5
1003	61369	2	16-11-16	16-11-18	1.5
1003	61388	2	16-11-16	16-11-18	1.5
1004	34341	3.5	17-03-13	17-03-13	3
1004	34367	1.5	17-03-13	17-03-14	1
1004	44392	1.5	17-03-13	17-03-12	1
1005	34342	3.5	17-02-07	17-02-07	3
1005	44397	1.5	17-02-07	17-02-06	1
1006	34366	1.5	17-02-28	17-02-28	1
1006	61367	2	17-02-28		1.5
1007	34368	1.5	16-12-15		1
1008	34369	1.5	17-01-04	17-01-04	1
1009	54324	2	16-10-15		1.5

Game

GA_NUM	TITLE	YEAR	COST	GENRE	PRICE_CODE
1234	BATTLEFIELD 1	2016	79.99	ACTION	1
1235	MASS Effect Andromeda	2017	89.99	ACTION	2
1236	EverQuest	1999	59.95	RPG	3
1237	Fable II	2010	49.95	RPG	3
1238	Mario Kart 8 Deluxe	2017	89.95	RACING	2
1239	Blur	2010	29.49	RACING	1
1245	Grand Theft Auto V	2012	45.49	ACTION	1
1246	Halo 4	2012	58.29	ACTION	1
1247	Wipeout 3	2012	58.29	SIMULATION	1

Price

PRICE_CODE	DESCRIPTION	RENT_FEE	DAILY_LATE_FEE
1	Standard	2	1.5
2	New Release	3.5	3
3	Discount	1.5	1
4	Weekly Special	1	0.5

3. Be sure to commit the data to your tables.

   commit;

4. Write the SQL command to change the game year for game number **1245** to **2013**.

   UPDATE table game SET ga_num = 2013 WHERE ga_num= 1245;

5. Write the SQL command to change the price code for all Simulation games to price code 4.

   UPDATE game set price = 4 where genre = 'SIMULATION';

6. Write a single SQL command to increase all game rental fee values by $0.50

7. Save the changes made to the PRICE and GAME tables.

Important Note! Look at the **column headings** and **formatting** of the results. Your statements should match. Answer each question with a **single SQL statement**.

8. Write a query to display the game genre, game title, game year, and game cost for all games; sort by game genre in ascending order, then sort by game year in descending order within genre.

   ```
   GENRE          TITLE                  YEAR       COST
   -------------- ---------------------- ---- ----------
   ACTION         MASS Effect Andromeda  2017      89.99
   ACTION         BATTLEFIELD 1          2016      79.99
   ACTION         Grand Theft Auto V     2013      45.49
   ACTION         Halo 4                 2012      58.29
   RACING         Mario Kart 8 Deluxe    2017      89.95
   RACING         Blur                   2010      29.49
   RPG            Fable II               2010      49.95
   RPG            EverQuest              1999      59.95
   SIMULATION     Wipeout 3              2012      58.29

   9 rows selected.
   ```

9. Write a query that will display the member number, last name + first name, and balance of all members in the Membership table.

   ```
   Member #   Member Name             BALANCE
   ---------- ----------------- ------------
   102        DAWSON, TAMI          $11.00
   103        KNIGHT, CURT           $6.00
   104        MELENDEZ, JAMAL         $.00
   105        MCCLAIN, IVA          $15.00
   106        PARKS, MIRANDA          $.00
   107        ELLIOTT, ROSARIO       $5.00
   108        GUY, MATTIE             $.00
   109        OCHOA, CLINT          $10.00
   110        ROSALES, LEWIS          $.00
   111        MANN, STACY            $8.00
   112        TRUJILLO, LUIS         $3.00
   113        GONZALES, MINNIE        $.00

   12 rows selected.
   ```

10. Write a query that will add a new attribute called **Status** to the Membership table with a datatype of CHAR and a size of 8. Set the domain as ACTIVE, SUSPEND, and CLOSED. Then add the Status attribute to the query used in Part 9.

    A query to alter the table and another to display the results shown here is fine.

```
Member #    Member Name           BALANCE STATUS
----------  -------------------- ---------- --------
102         DAWSON, TAMI             $11.00
103         KNIGHT, CURT              $6.00
104         MELENDEZ, JAMAL            $.00
105         MCCLAIN, IVA             $15.00
106         PARKS, MIRANDA             $.00
107         ELLIOTT, ROSARIO          $5.00
108         GUY, MATTIE                $.00
109         OCHOA, CLINT             $10.00
110         ROSALES, LEWIS             $.00
111         MANN, STACY               $8.00
112         TRUJILLO, LUIS            $3.00
113         GONZALES, MINNIE           $.00

12 rows selected.
```

11. Write a query that will set the status of those members who have actually rented a game to ACTIVE.

```
Member #    Member Name           BALANCE STATUS
----------  -------------------- ---------- --------
102         DAWSON, TAMI             $11.00 ACTIVE
103         KNIGHT, CURT              $6.00 ACTIVE
104         MELENDEZ, JAMAL            $.00 ACTIVE
105         MCCLAIN, IVA             $15.00 ACTIVE
106         PARKS, MIRANDA             $.00
107         ELLIOTT, ROSARIO          $5.00 ACTIVE
108         GUY, MATTIE                $.00
109         OCHOA, CLINT             $10.00
110         ROSALES, LEWIS             $.00 ACTIVE
111         MANN, STACY               $8.00 ACTIVE
112         TRUJILLO, LUIS            $3.00
113         GONZALES, MINNIE           $.00

12 rows selected.
```

12. Write a query to display the game genre, game title, and cost for all games with a title that contains the letter sequence "ef" (case insensitive), sorted by game genre in ascending order, then sorted by game year in descending order within genre.

```
GENRE            TITLE                YEAR       COST
---------------  -------------------- ---- ----------
ACTION           MASS Effect Andromeda 2017      89.99
ACTION           BATTLEFIELD 1        2016      79.99
ACTION           Grand Theft Auto V   2013      45.49
```

13. Write a query to display the game genre, game title, game year, and game cost for all games that are either RPG or RACING games and that have a cost that is less than $60. Sort the results in ascending order by genre, the sorted by game title in ascending order.

```
GENRE            TITLE                YEAR       COST
---------------  -------------------- ---- ----------
RACING           Blur                 2010      29.49
RPG              EverQuest            1999      59.95
RPG              Fable II             2010      49.95
```

14. Write a query to display the game genre and the number of games in each genre.

```
GENRE                # IN STOCK
---------------      ----------
ACTION                        4
RACING                        2
RPG                           2
SIMULATION                    1
```

15. Write a query to display the average cost of all of the games.

```
AVG. GAM
--------
  $62.38
```

16. Write a query to display the game genre and average cost of games in each genre. Sort by genre in ascending order.

```
GENRE            AVG. GAME COST
---------------- --------------
ACTION                    68.44
RACING                    59.72
RPG                       54.95
SIMULATION                58.29
```

17. Write a query to display the game title, game genre, price description, price rental fee, and game cost fee for all games.

```
Game Title             Genre        Pricing Description  Rental Fee Game Cost
---------------------- ------------ -------------------- ---------- ---------
BATTLEFIELD 1          ACTION       Standard                  $2.50    $79.99
Blur                   RACING       Standard                  $2.50    $29.49
EverQuest              RPG          Discount                  $2.00    $59.95
Fable II               RPG          Discount                  $2.00    $49.95
Grand Theft Auto V     ACTION       Standard                  $2.50    $45.49
Halo 4                 ACTION       Standard                  $2.50    $58.29
MASS Effect Andromeda  ACTION       New Release               $4.00    $89.99
Mario Kart 8 Deluxe    RACING       New Release               $4.00    $89.95
Wipeout 3              SIMULATION   Weekly Special            $1.50    $58.29

9 rows selected.
```

18. Write a query to display the game genre and average rental fee for games in each genre; sort by genre in ascending order.

```
Genre            Avg. Fee
---------------- --------
ACTION              $2.88
RACING              $3.25
RPG                 $2.00
SIMULATION          $1.50
```

19. Write a single SQL to display those games whose cost is above their respective average genre cost.

```
GENRE            TITLE                     COST
---------------- ------------------------- ----------
ACTION           BATTLEFIELD 1                  79.99
ACTION           MASS Effect Andromeda          89.99
RACING           Mario Kart 8 Deluxe            89.95
RPG              EverQuest                      59.95
```

20. Write a single SQL command to decrease game cost value by $2.50 – for those games whose cost is above their respective average genre cost. Be sure to commit your changes to the database.

```
GENRE            TITLE                     COST
---------------- ------------------------- ----------
ACTION           BATTLEFIELD 1                  77.49
ACTION           MASS Effect Andromeda          87.49
RACING           Mario Kart 8 Deluxe            87.45
RPG              EverQuest                      57.45
```

21. Write a query to display the game title, game year, and the game cost divided by the rental fee for each game to determine the number of rentals it will take to break even on the purchase of the game.

```
TITLE                    YEAR BER#
---------------------    ---- ------
BATTLEFIELD 1            2016  32.00
Blur                     2010  11.80
EverQuest                1999  29.98
Fable II                 2010  24.98
Grand Theft Auto V       2013  18.20
Halo 4                   2012  23.32
MASS Effect Andromeda    2017  22.50
Mario Kart 8 Deluxe      2017  22.49
Wipeout 3                2012  38.86

9 rows selected.
```

22. Write a query to display the membership number, first name, last name, and balance of the memberships that have a rental. Sort by last name in ascending order.

```
Member #   Customer Name                   BALANCE
--------   -----------------------------   ----------
102        DAWSON, TAMI                      $11.00
107        ELLIOTT, ROSARIO                   $5.00
103        KNIGHT, CURT                       $6.00
111        MANN, STACY                        $8.00
105        MCCLAIN, IVA                      $15.00
104        MELENDEZ, JAMAL                     $.00
110        ROSALES, LEWIS                      $.00

7 rows selected.
```

23. Write a query to display the rental number, rental date, game title, and rental fee for each game that was **returned on or before** the due date.

```
Rental # Rented On    Game Title             Rental Fee
-------- -----------  ---------------------- ----------
1001     2017-03-01   EverQuest                 $2.00
1001     2017-03-01   Grand Theft Auto V        $2.50
1001     2017-03-01   MASS Effect Andromeda     $4.00
1002     2016-12-12   Fable II                  $2.00
1004     2017-03-10   Fable II                  $2.00
1004     2017-03-10   MASS Effect Andromeda     $4.00
1005     2017-02-04   Fable II                  $2.00
1005     2017-02-04   MASS Effect Andromeda     $4.00
1006     2017-02-25   EverQuest                 $2.00
1008     2017-01-01   EverQuest                 $2.00

10 rows selected.
```

24. Write a query to display the rental number, game copy number, game title, rental date, due date, and return date for all games that were returned **after the due date**. Sort the results by rental number and game title.

```
Rental # Copy Number Game Title            Rented On   Due Back By Returned On
-------- ----------- --------------------- ----------- ----------- -----------
1003     54325       BATTLEFIELD 1         2016-11-13  2016-11-16  2016-11-21
1003     61388       Blur                  2016-11-13  2016-11-16  2016-11-18
1003     61369       Halo 4                2016-11-13  2016-11-16  2016-11-18
1004     34367       EverQuest             2017-03-10  2017-03-13  2017-03-14
```

25. Refer to #24 - Write a query to display the rental number, game copy number, game title, rental date, due date, return date, and number of days past the due date that the game was returned for each game that was **returned after the due date**. Sort the results by rental number and game title.

```
Rental # Copy Number Game Title          Rented On   Due Back By Returned On Days Late
-------- ----------- -----------         ----------- ----------- ----------- ----------
1003     54325       BATTLEFIELD 1       2016-11-13  2016-11-16  2016-11-21           5
1003     61388       Blur                2016-11-13  2016-11-16  2016-11-18           2
1003     61369       Halo 4              2016-11-13  2016-11-16  2016-11-18           2
1004     34367       EverQuest           2017-03-10  2017-03-13  2017-03-14           1
```

26. Refer to #25 - Write a query to display the rental number, game copy number, game title, rental date, due date, return date, number of days past the due date , and total late fees paid for each game that was **returned after the due date**. Sort the results by rental number and game title.

```
Rental # Copy Number Game Title          Rented On   Due Back By Returned On  Days Late Late Fees Paid
-------- ----------- -----------         ----------- ----------- -----------  --------- --------------
1003     54325       BATTLEFIELD 1       16-11-13    16-11-16    16-11-21             5 $7.50
1003     61388       Blur                16-11-13    16-11-16    16-11-18             2 $3.00
1003     61369       Halo 4              16-11-13    16-11-16    16-11-18             2 $3.00
1004     34367       EverQuest           17-03-10    17-03-13    17-03-14             1 $1.00
```

27. Refer to 26 – Write a query to display the rental number, game copy number, game title, rental date, due date, number of days past the due date, and total late fees currently due for each game that have not been returned and are past their **return due date**. Sort the results by rental number and game title. **The actual number of days late will vary** as it is calculated when run.

```
Rental # Copy Number Game Title              Rented On   Due Back By  Days Late Late Fees Owing
-------- ----------- ----------------------- ----------- -----------  --------- ---------------
1006     61367       Halo 4                  17-02-25    17-02-28            75  $112.50
1007     34368       EverQuest               16-12-12    16-12-15           150  $150.00
1009     54324       BATTLEFIELD 1           16-10-12    16-10-15           211  $316.50
```

28. Write a query to display the membership number, last name + first name, number of games rented to date, total rental fees, total late fees incurred, and total fees earned from that membership. The total fees earned is the sum of the total rental fees and the calculated late fees from all games that the member has rented.

```
Member #    Customer Name           # Games Rented  Rental Fee Late Fee Total Fees
----------  ----------------------- --------------  ---------- -------- ----------
102         DAWSON, TAMI                         3      $6.00    $13.50    $19.50
103         KNIGHT, CURT                        3      $7.00              $7.00
104         MELENDEZ, JAMAL                     1      $1.50              $1.50
105         MCCLAIN, IVA                        1      $3.00              $3.00
105         MCCLAIN, IVA                        1      $3.00              $3.00
107         ELLIOTT, ROSARIO                    2      $3.50              $3.50
110         ROSALES, LEWIS                      3      $6.50     $1.00    $7.50
111         MANN, STACY                         1      $7.00              $7.00
111         MANN, STACY                         2      $7.00              $7.00

9 rows selected.
```

MEMBERSHIP

PK	MEM_NUM	CHAR(4)
	FNAME	VARCHAR2(30)
	LNAME	VARCHAR2(30)
	STREET	VARCHAR2(120)
	CITY	VARCHAR2(50)
	PROV	CHAR(2)
	POSTAL	CHAR(7)
	BALANCE	NUMBER(10,2)

RENTAL

PK	RENT_NUM	CHAR(5)
	RENT_DATE	DATE
FK	*MEM_NUM*	CHAR(4)

DETAILRENTAL

PKFK	RENT_NUM	CHAR(5)
PKFK	GC_NUM	CHAR(6)
	FEE	NUMBER(5,2)
	DUE_DATE	DATE
	RETURN_DATE	DATE
	DAILY_LATE_FEE	NUMBER(5,2)

GAMECOPY

PK	GC_NUM	CHAR(6)
	INDATE	DATE
FK	*GA_NUM*	CHAR(5)

PRICE

PK	PRICE_CODE	CHAR(2)
	DESCRIPTION	VARCHAR2(20)
	RENT_FEE	NUMBER(5,2)
	DAILY_LATE_FEE	NUMBER(5,2)

GAME

PK	GA_NUM	CHAR(5)
	TITLE	VARCHAR2(75)
	YEAR	CHAR(4)
	COST	NUMBER(5,2)
	GENRE	VARCHAR2(50)
FK	*PRICE_CODE*	CHAR(2)