Task

Write SQL statements to create all tables in the final normalized ERD in Task 4.2C

```
CREATE TABLE USERS (
        USER_ID NUMERIC ( 20, 0 ) PRIMARY KEY,
        FIRST_NAME VARCHAR ( 25 ) NOT NULL,
        SURNAME VARCHAR ( 25 ) NOT NULL,
        `PASSWORD` VARCHAR ( 50 ) NOT NULL,
        PHONE CHAR ( 10 ) NOT NULL,
        EMAIL VARCHAR ( 100 ),
        BIRTHDAY DATE,
        GENDER CHAR ( 1 ) DEFAULT '1' COMMENT '1 MALE, 2 FEMALE',
        `LANGUAGE` CHAR ( 3 ) DEFAULT '1' COMMENT '1 ENGLISH, 2 CHINESE, 3 OTHER',
        ADDR VARCHAR ( 50 ) NOT NULL,
        SUBURB VARCHAR ( 10 ) NOT NULL,
        STATE VARCHAR ( 5 ) NOT NULL,
        POSTCODE CHAR ( 4 ) NOT NULL,
        COUNTRY VARCHAR ( 10 ),
        RESIDENTIAL_AREA VARCHAR ( 10 )
);
```

```
CREATE TABLE STAFF (
        STAFF_ID NUMERIC ( 20, 0 ) PRIMARY KEY,
        `NAME` VARCHAR ( 50 ) NOT NULL,
        PHONE CHAR ( 10 ) NOT NULL,
        BIRTHDAY DATE,
        EMAIL VARCHAR ( 100 ),
        `LANGUAGE` CHAR ( 3 ) DEFAULT '1' COMMENT '1 ENGLISH, 2 CHINESE, 3 OTHER',
        ADDR VARCHAR ( 50 ) NOT NULL,
        SUBURB VARCHAR ( 10 ) NOT NULL,
        STATE VARCHAR ( 5 ) NOT NULL,
        POSTCODE CHAR ( 4 ) NOT NULL,
        COUNTRY VARCHAR ( 10 ),
        RESIDENTIAL_AREA VARCHAR ( 10 )
);
```

```
CREATE TABLE BOOKS (
        BOOK_ID NUMERIC ( 20, 0 ) PRIMARY KEY,
        BOOK_NAME VARCHAR ( 100 ) NOT NULL,
        MAIN_TITLE VARCHAR ( 200 ) NOT NULL,
        AUTHOR VARCHAR ( 50 ) NOT NULL,
        WORK VARCHAR ( 100 ),
        IMPRINT VARCHAR ( 100 ) NOT NULL,
        COLLATION VARCHAR ( 100 ),
        AUDIENCE VARCHAR ( 200 ),
        ISBN VARCHAR ( 50 ),
        DEWEY_CLASS VARCHAR ( 150 ),
        `LANGUAGE` CHAR ( 3 ) DEFAULT '1' COMMENT '1 ENGLISH, 2 CHINESE, 3 OTHER',
        `SUBJECT` VARCHAR ( 50 ) NOT NULL,
        BRN VARCHAR ( 100 ) NOT NULL,
        BOOKMARK_LINK VARCHAR ( 255 ),
```

```
        CREATOR NUMERIC ( 20, 0 ) NOT NULL,
        UPDATER NUMERIC ( 20, 0 ) NOT NULL,
        FOREIGN KEY ( CREATOR ) REFERENCES STAFF ( STAFF_ID ),
        FOREIGN KEY ( UPDATER ) REFERENCES STAFF ( STAFF_ID )
);
```

```
CREATE TABLE BOOK_INSTANCE (
        INSTANCE_ID NUMERIC ( 30, 0 ) PRIMARY KEY,
        BOOK_ID NUMERIC ( 20, 0 ),
        IS_PHYSICAL_BOOK CHAR ( 1 ) DEFAULT 'Y' COMMENT 'Y, N',
        LOCATION VARCHAR ( 100 ),
        LINK VARCHAR ( 200 ) ,
        FOREIGN KEY (BOOK_ID) REFERENCES BOOKS(BOOK_ID)
);
```

```
CREATE TABLE BORROW_RECORDS (
BORROW_ID NUMERIC ( 30, 0 ) PRIMARY KEY,
INSTANCE_ID NUMERIC ( 30, 0 ),
USER_ID NUMERIC ( 30, 0 ),
START_DATE DATE,
DUE_DATE DATE,
IS_FINISH CHAR ( 1 ) DEFAULT 'Y' COMMENT 'Y, N',
FOREIGN KEY (INSTANCE_ID) REFERENCES BOOK_INSTANCE(INSTANCE_ID),
FOREIGN KEY (USER_ID) REFERENCES USERS(USER_ID)
);
```

```
34 •    show databases;
35 •    use sit772_4_2c;
36 •    show tables;
37
```

Result Grid | Filter Rows:

Tables_in_sit772_4_2c
book_instance
books
borrow_records
staff
users

Insert at least FIVE records in each table using SQL.

```
INSERT INTO USERS (
   USER_ID, FIRST_NAME, SURNAME, `PASSWORD`, PHONE, EMAIL, BIRTHDAY, GENDER,
`LANGUAGE`, ADDR, SUBURB, STATE, POSTCODE, COUNTRY, RESIDENTIAL_AREA
) VALUES
(1, 'John', 'Doe', 'Password123', '0412345678', 'john.doe@example.com', '1985-07-15', '1',
'1', '123 Main St', 'Melbourne', 'VIC', '3000', 'Australia', 'Urban'),
(2, 'Jane', 'Smith', 'SecurePass456', '0412345679', 'jane.smith@example.com', '1990-02-
28', '2', '2', '456 Oak St', 'Sydney', 'NSW', '2000', 'Australia', 'Urban'),
(3, 'Alice', 'Johnson', 'MyPassword789', '0412345680', 'alice.johnson@example.com',
'1978-11-12', '2', '1', '789 Pine St', 'Brisbane', 'QLD', '4000', 'Australia', 'Suburban'),
```

(4, 'Bob', 'Brown', 'BobPass123', '0412345681', 'bob.brown@example.com', '1982-05-24', '1', '3', '321 Birch St', 'Adelaide', 'SA', '5000', 'Australia', 'Urban'),
(5, 'Charlie', 'Davis', 'PassWord456', '0412345682', 'charlie.davis@example.com', '1995-08-30', '1', '2', '654 Maple St', 'Perth', 'WA', '6000', 'Australia', 'Suburban');

```
37 •  SELECT * FROM sit772_4_2c.STAFF;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

STAFF_ID	NAME	PHONE	BIRTHDAY	EMAIL	LANGUAGE	ADDR	SUBURB	STATE	POSTCODE	COUNTRY	RESIDENTIAL_AREA
1	Michael Green	0412345673	1975-03-15	michael.green@example.com	1	10 Elm St	Melbourne	VIC	3000	Australia	Urban
2	Lisa White	0412345674	1983-06-22	lisa.white@example.com	2	22 Cedar St	Sydney	NSW	2000	Australia	Urban
3	James Black	0412345675	1992-09-08	james.black@example.com	1	15 Willow St	Brisbane	QLD	4000	Australia	Suburban
4	Emily Brown	0412345676	1988-12-19	emily.brown@example.com	3	7 Ash St	Adelaide	SA	5000	Australia	Urban
5	Robert Harris	0412345677	1980-01-30	robert.harris@example.com	1	5 Spruce St	Perth	WA	6000	Australia	Suburban
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

INSERT INTO STAFF (
STAFF_ID, `NAME`, PHONE, BIRTHDAY, EMAIL, `LANGUAGE`, ADDR, SUBURB, STATE, POSTCODE, COUNTRY, RESIDENTIAL_AREA
) VALUES
(1, 'Michael Green', '0412345673', '1975-03-15', 'michael.green@example.com', '1', '10 Elm St', 'Melbourne', 'VIC', '3000', 'Australia', 'Urban'),
(2, 'Lisa White', '0412345674', '1983-06-22', 'lisa.white@example.com', '2', '22 Cedar St', 'Sydney', 'NSW', '2000', 'Australia', 'Urban'),
(3, 'James Black', '0412345675', '1992-09-08', 'james.black@example.com', '1', '15 Willow St', 'Brisbane', 'QLD', '4000', 'Australia', 'Suburban'),
(4, 'Emily Brown', '0412345676', '1988-12-19', 'emily.brown@example.com', '3', '7 Ash St', 'Adelaide', 'SA', '5000', 'Australia', 'Urban'),
(5, 'Robert Harris', '0412345677', '1980-01-30', 'robert.harris@example.com', '1', '5 Spruce St', 'Perth', 'WA', '6000', 'Australia', 'Suburban');

```
38 •  SELECT * FROM sit772_4_2c.USERS;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

USER_ID	FIRST_NAME	SURNAME	PASSWORD	PHONE	EMAIL	BIRTHDAY	GENDER	LANGUAGE	ADDR	SUBURB	STATE	POSTCODE	COUNTRY	RESIDENTIAL_AREA
1	John	Doe	Password123	0412345678	john.doe@example.com	1985-07-15	1	1	123 Main St	Melbourne	VIC	3000	Australia	Urban
2	Jane	Smith	SecurePass456	0412345679	jane.smith@example.com	1990-02-28	2	2	456 Oak St	Sydney	NSW	2000	Australia	Urban
3	Alice	Johnson	MyPassword789	0412345680	alice.johnson@example.com	1978-11-12	2	1	789 Pine St	Brisbane	QLD	4000	Australia	Suburban
4	Bob	Brown	BobPass123	0412345681	bob.brown@example.com	1982-05-24	1	3	321 Birch St	Adelaide	SA	5000	Australia	Urban
5	Charlie	Davis	PassWord456	0412345682	charlie.davis@example.com	1995-08-30	1	2	654 Maple St	Perth	WA	6000	Australia	Suburban
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

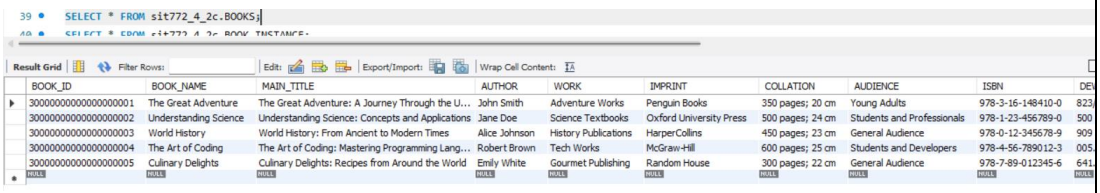
INSERT INTO BOOKS (
BOOK_ID, BOOK_NAME, MAIN_TITLE, AUTHOR, WORK, IMPRINT, COLLATION, AUDIENCE, ISBN, DEWEY_CLASS, `LANGUAGE`, `SUBJECT`, BRN, BOOKMARK_LINK, CREATOR, UPDATER
) VALUES
(30000000000000000001, 'The Great Adventure', 'The Great Adventure: A Journey Through the Unknown', 'John Smith', 'Adventure Works', 'Penguin Books', '350 pages; 20 cm', 'Young Adults', '978-3-16-148410-0', '823/.92', '1', 'Adventure', 'BRN001', 'http://example.com/book1', 1, 2),

(30000000000000000002, 'Understanding Science', 'Understanding Science: Concepts and Applications', 'Jane Doe', 'Science Textbooks', 'Oxford University Press', '500 pages; 24 cm', 'Students and Professionals', '978-1-23-456789-0', '500', '1', 'Science', 'BRN002', 'http://example.com/book2', 3, 1),

(30000000000000000003, 'World History', 'World History: From Ancient to Modern Times', 'Alice Johnson', 'History Publications', 'HarperCollins', '450 pages; 23 cm', 'General Audience', '978-0-12-345678-9', '909', '1', 'History', 'BRN003', 'http://example.com/book3', 2, 4),

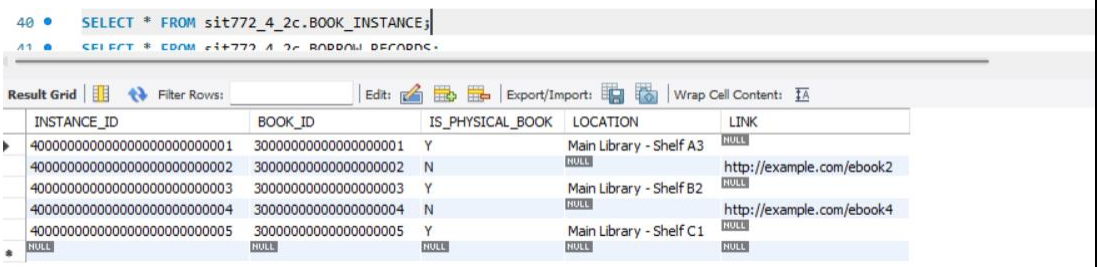
(30000000000000000004, 'The Art of Coding', 'The Art of Coding: Mastering Programming Languages', 'Robert Brown', 'Tech Works', 'McGraw-Hill', '600 pages; 25 cm', 'Students and Developers', '978-4-56-789012-3', '005.1', '1', 'Technology', 'BRN004', 'http://example.com/book4', 4, 3),

(30000000000000000005, 'Culinary Delights', 'Culinary Delights: Recipes from Around the World', 'Emily White', 'Gourmet Publishing', 'Random House', '300 pages; 22 cm', 'General Audience', '978-7-89-012345-6', '641.5', '1', 'Cooking', 'BRN005', 'http://example.com/book5', 5, 2);



BOOK_ID	BOOK_NAME	MAIN_TITLE	AUTHOR	WORK	IMPRINT	COLLATION	AUDIENCE	ISBN	DE
30000000000000000001	The Great Adventure	The Great Adventure: A Journey Through the U...	John Smith	Adventure Works	Penguin Books	350 pages; 20 cm	Young Adults	978-3-16-148410-0	823
30000000000000000002	Understanding Science	Understanding Science: Concepts and Applications	Jane Doe	Science Textbooks	Oxford University Press	500 pages; 24 cm	Students and Professionals	978-1-23-456789-0	500
30000000000000000003	World History	World History: From Ancient to Modern Times	Alice Johnson	History Publications	HarperCollins	450 pages; 23 cm	General Audience	978-0-12-345678-9	909
30000000000000000004	The Art of Coding	The Art of Coding: Mastering Programming Lang...	Robert Brown	Tech Works	McGraw-Hill	600 pages; 25 cm	Students and Developers	978-4-56-789012-3	005.
30000000000000000005	Culinary Delights	Culinary Delights: Recipes from Around the World	Emily White	Gourmet Publishing	Random House	300 pages; 22 cm	General Audience	978-7-89-012345-6	641

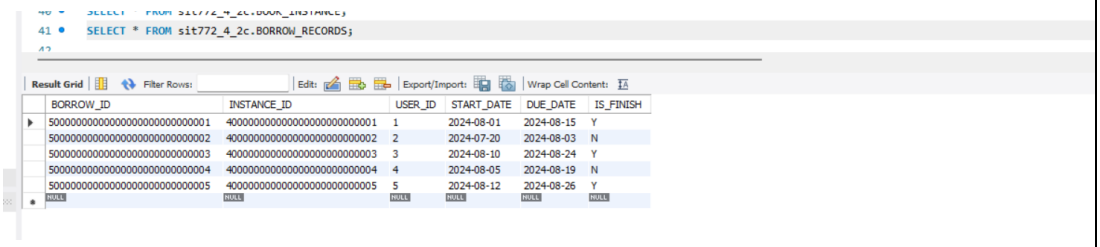
INSERT INTO BOOK_INSTANCE (
  INSTANCE_ID, BOOK_ID, IS_PHYSICAL_BOOK, LOCATION, LINK
) VALUES
(40000000000000000000000000000001, 30000000000000000001, 'Y', 'Main Library - Shelf A3', NULL),
(40000000000000000000000000000002, 30000000000000000002, 'N', NULL, 'http://example.com/ebook2'),
(40000000000000000000000000000003, 30000000000000000003, 'Y', 'Main Library - Shelf B2', NULL),
(40000000000000000000000000000004, 30000000000000000004, 'N', NULL, 'http://example.com/ebook4'),
(40000000000000000000000000000005, 30000000000000000005, 'Y', 'Main Library - Shelf C1', NULL);



INSTANCE_ID	BOOK_ID	IS_PHYSICAL_BOOK	LOCATION	LINK
40000000000000000000000000000001	30000000000000000001	Y	Main Library - Shelf A3	NULL
40000000000000000000000000000002	30000000000000000002	N	NULL	http://example.com/ebook2
40000000000000000000000000000003	30000000000000000003	Y	Main Library - Shelf B2	NULL
40000000000000000000000000000004	30000000000000000004	N	NULL	http://example.com/ebook4
40000000000000000000000000000005	30000000000000000005	Y	Main Library - Shelf C1	NULL

INSERT INTO BORROW_RECORDS (
  BORROW_ID, INSTANCE_ID, USER_ID, START_DATE, DUE_DATE, IS_FINISH
) VALUES
(50000000000000000000000000000001, 40000000000000000000000000000001, 1, '2024-08-01', '2024-08-15', 'Y'),
(50000000000000000000000000000002, 40000000000000000000000000000002, 2, '2024-07-20', '2024-08-03', 'N'),

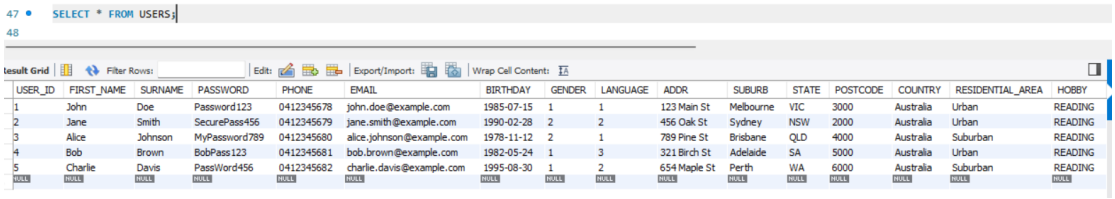
(50000000000000000000000000003, 40000000000000000000000000003, 3, '2024-08-10', '2024-08-24', 'Y'),
(50000000000000000000000000004, 40000000000000000000000000004, 4, '2024-08-05', '2024-08-19', 'N'),
(50000000000000000000000000005, 40000000000000000000000000005, 5, '2024-08-12', '2024-08-26', 'Y');



Write and run an SQL statement to add one additional column (attribute) in any one of the existing tables with a default value.

Add a new column in USERS table, column name is hobby, data type is varchar, length is 20, default value is READING;

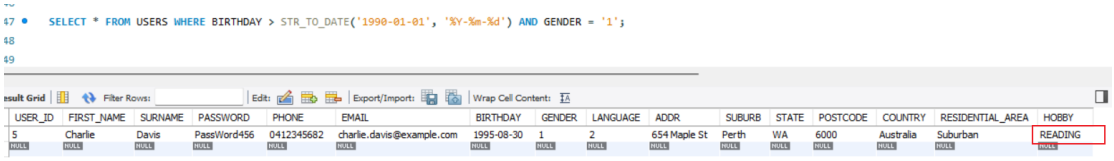
SQL: ALTER TABLE USERS ADD COLUMN HOBBY VARCHAR(25) NULL DEFAULT 'READING' AFTER `RESIDENTIAL_AREA`;



Write and run an SQL statement to update the default value of the newly added column to a different value for certain rows based on a condition using any other column.

Change the hobby of users who were born after 1990 and whose gender is male to BASKETBALL.

SELECT * FROM USERS WHERE BIRTHDAY > STR_TO_DATE('1990-01-01', '%Y-%m-%d') AND GENDER = '1';



UPDATE USERS SET HOBBY='BASKETBALL' WHERE BIRTHDAY > STR_TO_DATE('1990-01-01', '%Y-%m-%d') AND GENDER = '1';

```
47 • SELECT * FROM USERS WHERE BIRTHDAY > STR_TO_DATE('1990-01-01', '%Y-%m-%d') AND GENDER = '1';
48
49 • UPDATE USERS SET HOBBY='BASKETBALL' WHERE BIRTHDAY > STR_TO_DATE('1990-01-01', '%Y-%m-%d') AND GENDER = '1';
50
51
52
53
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

USER_ID	FIRST_NAME	SURNAME	PASSWORD	PHONE	EMAIL	BIRTHDAY	GENDER	LANGUAGE	ADDR	SUBURB	STATE	POSTCODE	COUNTRY	RESIDENTIAL_AREA	HOBBY
5	Charlie	Davis	PassWord456	0412345682	charlie.davis@example.com	1995-08-30	1	2	654 Maple St	Perth	WA	6000	Australia	Suburban	BASKETBALL
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

In this section, you are required to write SQL queries to interact with the database you implemented. Answer each SQL question in this section with the following:

a) Write an SQL query to demonstrate the use of SELECT with INNER JOIN and ORDER BY.

SELECT * **FROM** BORROW_RECORDS BR

INNER JOIN BOOK_INSTANCE BI **ON** BR.INSTANCE_ID =BI.INSTANCE_ID

INNER JOIN BOOKS B **ON** BI.BOOK_ID =B.BOOK_ID

ORDER BY BORROW_ID **DESC** ;

```
48
49 • UPDATE USERS SET HOBBY='BASKETBALL' WHERE BIRTHDAY > STR_TO_DATE('1990-01-01', '%Y-%m-%d') AND GENDER = '1';
50
51 • SELECT * FROM BORROW_RECORDS BR
52   INNER JOIN BOOK_INSTANCE BI ON BR.INSTANCE_ID =BI.INSTANCE_ID
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

BORROW_ID	INSTANCE_ID	USER_ID	START_DATE	DUE_DATE	IS_FINISH	INSTANCE_ID	BOOK_ID	IS_PHYSICAL_BOOK	LOCATION	LINK
50000000000000000000000005	40000000000000000000000005	5	2024-08-12	2024-08-26	Y	40000000000000000000000005	30000000000000000005	Y	Main Library - Shelf C1	NULL
50000000000000000000000004	40000000000000000000000004	4	2024-08-05	2024-08-19	N	40000000000000000000000004	30000000000000000004	N	NULL	http:
50000000000000000000000003	40000000000000000000000003	3	2024-08-10	2024-08-24	Y	40000000000000000000000003	30000000000000000003	Y	Main Library - Shelf B2	NULL
50000000000000000000000002	40000000000000000000000002	2	2024-07-20	2024-08-03	N	40000000000000000000000002	30000000000000000002	N	NULL	http:
50000000000000000000000001	40000000000000000000000001	1	2024-08-01	2024-08-15	Y	40000000000000000000000001	30000000000000000001	Y	Main Library - Shelf A3	NULL

b) Write an SQL query to demonstrate the use of SELECT with WHERE and IN.

SELECT * FROM USERS U

WHERE USER_ID IN (SELECT USER_ID FROM BORROW_RECORDS BR WHERE BR.START_DATE > '2024-08-10');

```
50
51 • SELECT * FROM USERS U
52   WHERE USER_ID IN (SELECT USER_ID FROM BORROW_RECORDS BR WHERE BR.START_DATE > '2024-08-10');
53
54
55
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

USER_ID	FIRST_NAME	SURNAME	PASSWORD	PHONE	EMAIL	BIRTHDAY	GENDER	LANGUAGE	ADDR	SUBURB	STATE	POSTCODE	COUNTRY	RESIDENTIAL_AREA	HOBBY
5	Charlie	Davis	PassWord456	0412345682	charlie.davis@example.com	1995-08-30	1	2	654 Maple St	Perth	WA	6000	Australia	Suburban	BASKETBALL

c) Write an SQL query to demonstrate the use of at least one DATE function.

SELECT CONCAT(U.FIRST_NAME,' ',U.SURNAME) 'USER_NAME',
B.BOOK_NAME ,DATEDIFF(NOW() ,DUE_DATE) AS 'OVERDUE'

FROM BORROW_RECORDS BR,BOOK_INSTANCE BI ,BOOKS B ,USERS U

WHERE

BR.INSTANCE_ID =BI.INSTANCE_ID

AND BI.BOOK_ID =B.BOOK_ID

AND BR.USER_ID =U.USER_ID

AND U.FIRST_NAME ='JOHN';

```
53
54 •  SELECT CONCAT(U.FIRST_NAME,' ',U.SURNAME) 'USER_NAME', B.BOOK_NAME ,DATEDIFF(NOW() ,DUE_DATE) AS 'OVERDUE'
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

USER_NAME	BOOK_NAME	OVERDUE
John Doe	The Great Adventure	2

d) Write an SQL statement to create a VIEW using a SELECT statement with a JOIN. Provide the statement to create the VIEW you want and demonstrate the output of the VIEW using 'SELECT * FROM ;'.

```
CREATE VIEW USER_BOOK_OVERDUE AS
SELECT U.USER_ID, CONCAT(U.FIRST_NAME,' ',U.SURNAME),
B.BOOK_NAME ,DATEDIFF(NOW() ,DUE_DATE) AS 'OVERDUE'
FROM BORROW_RECORDS BR,BOOK_INSTANCE BI ,BOOKS B ,USERS U
WHERE
BR.INSTANCE_ID =BI.INSTANCE_ID
AND BI.BOOK_ID =B.BOOK_ID
AND BR.USER_ID =U.USER_ID ;

SELECT * FROM USER_BOOK_OVERDUE;
```

```
70 •  SELECT * FROM USER_BOOK_OVERDUE;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

USER_ID	concat(u.FIRST_NAME,' ',u.SURNAME)	BOOK_NAME	Overdue
1	John Doe	The Great Adventure	2
2	Jane Smith	Understanding Science	14
3	Alice Johnson	World History	-7
4	Bob Brown	The Art of Coding	-2
5	Charlie Davis	Culinary Delights	-9