DBMS

Mini Project Phase 2

Online Bookstore Database

Krunal Rank – U18CO081

CONTENT

Implementation of Relation Models in SQL

As seen from the Relation Models section, all the constraints have been properly mentioned.

Most of the Constraints such as PRIMARY KEY, FOREIGN KEY, NOT NULL, UNIQUE and DEFAULT have been included.

Certain constraints such as ENUM and SET have not been used because they are not needed in current implementation due to the Relations being in BCNF.

The Following SQL Code correctly Implements the Relations along with certain Joins and Views:-

TABLE CREATION

```
CREATE TABLE Authors(

    AuthorID NUMBER(15) GENERATED ALWAYS AS IDENTITY (START WITH 10000000001
INCREMENT BY 1) NOT NULL,

    AuthorFName VARCHAR(255) NOT NULL,

    AuthorLName VARCHAR(255) NOT NULL,

    AuthorAddress VARCHAR(255) NOT NULL,

    AuthorURL VARCHAR(255) NOT NULL,

    PRIMARY KEY(AuthorID)
);



CREATE TABLE AuthorPhones(

    AuthorID NUMBER(15) NOT NULL,

    AuthorPhone NUMBER(14) NOT NULL,

    PRIMARY KEY(AuthorID, AuthorPhone),

    FOREIGN KEY(AuthorID) REFERENCES Authors(AuthorID) ON DELETE CASCADE
);


CREATE TABLE Publishers(

    PublisherID NUMBER(15) GENERATED ALWAYS AS IDENTITY (START WITH 20000000001
INCREMENT BY 1),

    PublisherName VARCHAR(255) NOT NULL,

    PublisherAddress VARCHAR(255) NOT NULL,
```

```sql
    PublisherURL VARCHAR(255) NOT NULL,

    PRIMARY KEY(PublisherID)
);


CREATE TABLE PublisherPhones(

    PublisherID NUMBER(15) NOT NULL,

    PublisherPhone NUMBER(14) NOT NULL,

    PRIMARY KEY(PublisherID, PublisherPhone),

    FOREIGN KEY(PublisherID) REFERENCES Publishers(PublisherID)  ON DELETE
CASCADE
);


CREATE TABLE Customers(

    CustomerID NUMBER(15) GENERATED ALWAYS AS IDENTITY (START WITH 30000000001
INCREMENT BY 1),

    CustomerFName VARCHAR(255) NOT NULL,

    CustomerLName VARCHAR(255) NOT NULL,

    CustomerAddress VARCHAR(255) NOT NULL,

    CustomerEmail VARCHAR(255) NOT NULL,

    CustomerUsername VARCHAR(255) NOT NULL UNIQUE,

    CustomerPassword VARCHAR(255) NOT NULL,

    PRIMARY KEY(CustomerID)
);


CREATE TABLE CustomerPhones(

    CustomerID NUMBER(15) NOT NULL,

    CustomerPhone NUMBER(14) NOT NULL,

    PRIMARY KEY(CustomerID, CustomerPhone),

    FOREIGN KEY(CustomerID) REFERENCES Customers(CustomerID) ON DELETE CASCADE
);


CREATE TABLE Warehouses(
```

```
    WarehouseID NUMBER(15) GENERATED ALWAYS AS IDENTITY (START WITH 40000000001
INCREMENT BY 1) NOT NULL,

    WarehousePhone NUMBER(14) NOT NULL UNIQUE,

    WarehouseAddress VARCHAR(255) NOT NULL,

    PRIMARY KEY(WarehouseID)
);


CREATE TABLE Books(

    ISBN VARCHAR(255) PRIMARY KEY,

    PublisherID NUMBER(15) NOT NULL,

    AuthorID NUMBER(15) NOT NULL,

    ReleaseDate DATE DEFAULT CURRENT_DATE,

    Title VARCHAR(255) NOT NULL,

    Price NUMBER(10,2) NOT NULL,

    FOREIGN KEY(AuthorID) REFERENCES Authors(AuthorID)  ON DELETE CASCADE,

    FOREIGN KEY(PublisherID) REFERENCES Publishers(PublisherID)  ON DELETE
CASCADE
);


CREATE TABLE ShoppingBasket_Book(

    CustomerID NUMBER(15) NOT NULL,

    ISBN VARCHAR(255) NOT NULL,

    BookCount NUMBER(15) NOT NULL,

    PRIMARY KEY(CustomerID,ISBN),

    FOREIGN KEY(CustomerID) REFERENCES Customers(CustomerID) ON DELETE CASCADE,

    FOREIGN KEY(ISBN) REFERENCES Books(ISBN) ON DELETE CASCADE
);


CREATE TABLE Warehouse_Book(

    WarehouseID NUMBER(15) NOT NULL,

    ISBN VARCHAR(255) NOT NULL,
```

```
    BookCount NUMBER(15) NOT NULL,

    PRIMARY KEY(WarehouseID,ISBN),

    FOREIGN KEY(WarehouseID) REFERENCES Warehouses(WarehouseID) ON DELETE
CASCADE,

    FOREIGN KEY(ISBN) REFERENCES Books(ISBN) ON DELETE CASCADE
);
```

POPULATING TABLES WITH CORRECT DATA

INSERT INTO Authors(AuthorFName,AuthorLName,AuthorAddress,AuthorURL) VALUES
('Joanne','Rowling','557 Broadway New York','www.jkrowling.com');

INSERT INTO Authors(AuthorFName,AuthorLName,AuthorAddress,AuthorURL) VALUES
('Mark', 'Twain','351 Farmington Avenue','www.marktwainproject.com');

INSERT INTO Authors(AuthorFName,AuthorLName,AuthorAddress,AuthorURL) VALUES
('Rick', 'Riordan','125 West End Avenue','www.rickriordan.com');

INSERT INTO Authors(AuthorFName,AuthorLName,AuthorAddress,AuthorURL) VALUES
('Enid', 'Blyton','83 Shortlands Road, Shortlands','www.enidblyton.net');

INSERT INTO Authors(AuthorFName,AuthorLName,AuthorAddress,AuthorURL) VALUES
('Arundhati', 'Roy','55 LaxmanNagar New Delhi','www.weroy.com');

SELECT * FROM Authors;

	AUTHORID	AUTHORFNAME	AUTHORLNAME	AUTHORADDRESS	AUTHORURL
1	10000000001	Joanne	Rowling	557 Broadway New York	www.jkrowling.com
2	10000000002	Mark	Twain	351 Farmington Avenue	www.marktwainproject.com
3	10000000003	Rick	Riordan	125 West End Avenue	www.rickriordan.com
4	10000000004	Enid	Blyton	83 Shortlands Road, Shortlands	www.enidblyton.net
5	10000000005	Arundhati	Roy	55 LaxmanNagar New Delhi	www.weroy.com

INSERT INTO AuthorPhones VALUES(10000000001,2884713658);

INSERT INTO AuthorPhones VALUES(10000000002,7865412019);

INSERT INTO AuthorPhones VALUES(10000000002,2881069845);

INSERT INTO AuthorPhones VALUES(10000000004,1100548762);

INSERT INTO AuthorPhones VALUES(10000000004,7842361220);

INSERT INTO AuthorPhones VALUES(10000000004,1100745288);

INSERT INTO AuthorPhones VALUES(10000000005,7063254112);

SELECT * FROM AuthorPhones;

	AUTHORID	AUTHORPHONE
1	10000000001	2884713658
2	10000000002	7865412019
3	10000000002	2881069845
4	10000000004	1100548762
5	10000000004	7842361220
6	10000000004	1100745288
7	10000000005	7063254112

```
INSERT INTO Publishers(PublisherName,PublisherAddress,PublisherURL)
VALUES('IndianInk','India','www.indianink.com');

INSERT INTO Publishers(PublisherName,PublisherAddress,PublisherURL)
VALUES('Bloomsburry Publishing','UK','www.bloomsburry.com');

INSERT INTO Publishers(PublisherName,PublisherAddress,PublisherURL)
VALUES('Miramax Books','US','www.miramax.com');

INSERT INTO Publishers(PublisherName,PublisherAddress,PublisherURL)
VALUES('Disney','Hollywood, LA','www.disney.com');

INSERT INTO Publishers(PublisherName,PublisherAddress,PublisherURL) VALUES('S
Chand','Mumbai, India','www.schandpublishing.com');

INSERT INTO Publishers(PublisherName,PublisherAddress,PublisherURL)
VALUES('Hachette','UK','www.hachette.com');

SELECT * FROM Publishers;
```

	PUBLISHERID	PUBLISHERNAME	PUBLISHERADDRESS	PUBLISHERURL
1	20000000001	IndianInk	India	www.indianink.com
2	20000000002	Bloomsburry Publishing	UK	www.bloomsburry.com
3	20000000003	Miramax Books	US	www.miramax.com
4	20000000004	Disney	Hollywood, LA	www.disney.com
5	20000000005	S Chand	Mumbai, India	www.schandpublishing.com
6	20000000006	Hachette	UK	www.hachette.com

```
INSERT INTO PublisherPhones VALUES(20000000001,2881076632);

INSERT INTO PublisherPhones VALUES(20000000001,2881036547);

INSERT INTO PublisherPhones VALUES(20000000002,1124533125);
```

```
INSERT INTO PublisherPhones VALUES(20000000003,3665544712);

INSERT INTO PublisherPhones VALUES(20000000004,1004569774);

INSERT INTO PublisherPhones VALUES(20000000005,6644722331);

INSERT INTO PublisherPhones VALUES(20000000005,3655110124);

INSERT INTO PublisherPhones VALUES(20000000006,4975233110);
SELECT * FROM PublisherPhones;
```

	PUBLISHERID	PUBLISHERPHONE
1	20000000001	2881076632
2	20000000001	2881036547
3	20000000002	1124533125
4	20000000003	3665544712
5	20000000004	1004569774
6	20000000006	4975233110
7	20000000005	6644722331
8	20000000005	3655110124

```
INSERT INTO
Customers(CustomerFName,CustomerLName,CustomerAddress,CustomerEmail,CustomerUse
rname,CustomerPassword)

    VALUES('Krunal','Rank','Jamnagar,
India','krunalrnak@gmail.com','krunalrank123','K@runal0609');

INSERT INTO
Customers(CustomerFName,CustomerLName,CustomerAddress,CustomerEmail,CustomerUse
rname,CustomerPassword)

    VALUES('Tanmay','Shah','Jamnagar,
India','tanmayshah29@gmail.com','tanmay2901','ultimate@360');

INSERT INTO
Customers(CustomerFName,CustomerLName,CustomerAddress,CustomerEmail,CustomerUse
rname,CustomerPassword)

    VALUES('Hardev','Khandhar','Jamnagar,
India','hardevkhandhar71@gmail.com','hardevk','Hardev@Kh');

INSERT INTO
Customers(CustomerFName,CustomerLName,CustomerAddress,CustomerEmail,CustomerUse
rname,CustomerPassword)

    VALUES('Neil','Pandya','Ahmedabad,
India','pandyaneil08@gmail.com','neilP','neilPandya@0710');
```

```
INSERT INTO
Customers(CustomerFName,CustomerLName,CustomerAddress,CustomerEmail,CustomerUse
rname,CustomerPassword)

    VALUES('Mihir','Khambhati','Ankleshwar,
Gujarat','mihirk1313@gmail.com','mihir1313','KhambhatiM@1313');

INSERT INTO
Customers(CustomerFName,CustomerLName,CustomerAddress,CustomerEmail,CustomerUse
rname,CustomerPassword)

    VALUES('Miley','Joshi','Texas,
US','mileyj@hotmail.com','MileyJ','MileyJoshi@Texas');

SELECT * FROM Customers;
```

	CUSTOMERID	CUSTOMERFNAME	CUSTOMERLNAME	CUSTOMERADDRESS	CUSTOMEREMAIL	CUSTOMERUSERNAME	CUSTOMERPASSWORD
1	30000000001	Krunal	Rank	Jamnagar, India	krunalrnak@gmail.com	krunalrank123	K@runal0609
2	30000000002	Tanmay	Shah	Jamnagar, India	tanmayshah29@gmail.com	tanmay2901	ultimate@360
3	30000000003	Hardev	Khandhar	Jamnagar, India	hardevkhandhar71@gmail.com	hardevk	Hardev@Kh
4	30000000004	Neil	Pandya	Ahmedabad, India	pandyaneil08@gmail.com	neilP	neilPandya@0710
5	30000000005	Mihir	Khambhati	Ankleshwar, Gujarat	mihirk1313@gmail.com	mihir1313	KhambhatiM@1313
6	30000000006	Miley	Joshi	Texas, US	mileyj@hotmail.com	MileyJ	MileyJoshi@Texas

```
INSERT INTO CustomerPhones VALUES(30000000001,9979891142);

INSERT INTO CustomerPhones VALUES(30000000001,7016507648);

INSERT INTO CustomerPhones VALUES(30000000002,6355487754);

INSERT INTO CustomerPhones VALUES(30000000003,7444689954);

INSERT INTO CustomerPhones VALUES(30000000004,3667844566);

INSERT INTO CustomerPhones VALUES(30000000005,9999633145);

INSERT INTO CustomerPhones VALUES(30000000006,4477233145);

SELECT * FROM CustomerPhones;
```

	CUSTOMERID	CUSTOMERPHONE
1	30000000001	9979891142
2	30000000001	7016507648
3	30000000002	6355487754
4	30000000003	7444689954
5	30000000004	3667844566
6	30000000005	9999633145
7	30000000006	4477233145

```
INSERT INTO Warehouses(WarehousePhone,WarehouseAddress)
VALUES(2886423114,'Mumbai, India');

INSERT INTO Warehouses(WarehousePhone,WarehouseAddress)
VALUES(2369984512,'Delhi, India');

INSERT INTO Warehouses(WarehousePhone,WarehouseAddress)
VALUES(1014662133,'Texas, US');

INSERT INTO Warehouses(WarehousePhone,WarehouseAddress) VALUES(1001355645,'New
York, US');

INSERT INTO Warehouses(WarehousePhone,WarehouseAddress)
VALUES(5423300112,'Beijing, China');

INSERT INTO Warehouses(WarehousePhone,WarehouseAddress)
VALUES(4231100148,'London, UK');

SELECT * FROM Warehouses;
```

	WAREHOUSEID	WAREHOUSEPHONE	WAREHOUSEADDRESS
1	40000000001	2886423114	Mumbai, India
2	40000000002	2369984512	Delhi, India
3	40000000003	1014662133	Texas, US
4	40000000004	1001355645	New York, US
5	40000000005	5423300112	Beijing, China
6	40000000006	4231100148	London, UK

```
INSERT INTO Books VALUES('9780747532743',20000000002,10000000001,'25-01-
2004','Harry Potter and the Philosophers Stone',449.99);

INSERT INTO Books VALUES('9780747532744',20000000002,10000000001,'17-07-
2004','Harry Potter and the Chamber of Secrets',500.50);

INSERT INTO Books VALUES('9780747532745',20000000002,10000000001,'15-03-
2005','Harry Potter and the Prisoner of Azkaban',510.31);

INSERT INTO Books VALUES('9780747532746',20000000002,10000000001,'07-06-
2005','Harry Potter and the Goblet of Fire',530.27);

INSERT INTO Books VALUES('9780747532747',20000000002,10000000001,'25-12-
2005','Harry Potter and the Order of Pheonix',570.00);

INSERT INTO Books VALUES('9780747532748',20000000002,10000000001,'20-08-
2006','Harry Potter and the Half Blood Prince',630.47);

INSERT INTO Books VALUES('9780747532749',20000000002,10000000001,'14-07-
2007','Harry Potter and the Deathly Hallows',700.00);
```

```
INSERT INTO Books VALUES('9780141346816',20000000003,10000000003,'27-03-
2005','Perccy Jackson The Lightning Thief',890.30);

INSERT INTO Books VALUES('9781484707234',20000000003,10000000003,'18-04-
2011','Perccy Jackson The Last Olympian',900.00);

INSERT INTO Books VALUES('9780520266124',20000000005,10000000002,'23-05-
1876','The Adventures of Tom Sawyer',900.50);

INSERT INTO Books VALUES('9780525120014',20000000005,10000000002,'15-06-
1878','Huckleberry Finn',230.99);

INSERT INTO Books VALUES('9780532021509',20000000001,10000000005,'21-07-
1997','The God of Small Things',500.00);

INSERT INTO Books VALUES('9780350016478',20000000001,10000000005,'05-03-
2017','The Ministry of Utmost Happiness',500.45);

INSERT INTO Books VALUES('9780042100364',20000000001,10000000005,'03-04-
1998','The End of Imagination',360.00);

INSERT INTO Books VALUES('9785633100784',20000000006,10000000004,'03-04-
1998','The Magic Faraway Tree',120.00);

INSERT INTO Books VALUES('9780566210017',20000000006,10000000004,'28-02-
1938','The Secret Island',150.00);

INSERT INTO Books VALUES('9780332100140',20000000006,10000000004,'12-05-
1947','The Valley of Adventure',130.97);

SELECT * FROM Books;
```

	ISBN	PUBLISHERID	AUTHORID	RELEASEDATE	TITLE	PRICE
1	9780747532743	20000000002	10000000001	25-01-04	Harry Potter and the Philosophers Stone	449.99
2	9780747532744	20000000002	10000000001	17-07-04	Harry Potter and the Chamber of Secrets	500.5
3	9780747532745	20000000002	10000000001	15-03-05	Harry Potter and the Prisoner of Azkaban	510.31
4	9780747532746	20000000002	10000000001	07-06-05	Harry Potter and the Goblet of Fire	530.27
5	9780747532747	20000000002	10000000001	25-12-05	Harry Potter and the Order of Pheonix	570
6	9780747532748	20000000002	10000000001	20-08-06	Harry Potter and the Half Blood Prince	630.47
7	9780747532749	20000000002	10000000001	14-07-07	Harry Potter and the Deathly Hallows	700
8	9780141346816	20000000003	10000000003	27-03-05	Perccy Jackson The Lightning Thief	890.3
9	9781484707234	20000000003	10000000003	18-04-11	Perccy Jackson The Last Olympian	900
10	9780520266124	20000000005	10000000002	23-05-76	The Adventures of Tom Sawyer	900.5
11	9780525120014	20000000005	10000000002	15-06-78	Huckleberry Finn	230.99
12	9780532021509	20000000001	10000000005	21-07-97	The God of Small Things	500
13	9780350016478	20000000001	10000000005	05-03-17	The Ministry of Utmost Happiness	500.45
14	9780042100364	20000000001	10000000005	03-04-98	The End of Imagination	360
15	9785633100784	20000000006	10000000004	03-04-98	The Magic Faraway Tree	120
16	9780566210017	20000000006	10000000004	28-02-38	The Secret Island	150
17	9780332100140	20000000006	10000000004	12-05-47	The Valley of Adventure	130.97

```sql
INSERT INTO Warehouse_Book VALUES(40000000001,'9780747532743',200);
INSERT INTO Warehouse_Book VALUES(40000000002,'9780747532743',230);
INSERT INTO Warehouse_Book VALUES(40000000003,'9780747532743',300);
INSERT INTO Warehouse_Book VALUES(40000000004,'9780747532743',120);
INSERT INTO Warehouse_Book VALUES(40000000005,'9780747532743',350);
INSERT INTO Warehouse_Book VALUES(40000000006,'9780747532743',200);


INSERT INTO Warehouse_Book VALUES(40000000001,'9780747532744',250);
INSERT INTO Warehouse_Book VALUES(40000000002,'9780747532744',100);
INSERT INTO Warehouse_Book VALUES(40000000003,'9780747532744',310);
INSERT INTO Warehouse_Book VALUES(40000000004,'9780747532744',250);
INSERT INTO Warehouse_Book VALUES(40000000005,'9780747532744',311);
INSERT INTO Warehouse_Book VALUES(40000000006,'9780747532744',250);


INSERT INTO Warehouse_Book VALUES(40000000001,'9780747532745',120);
INSERT INTO Warehouse_Book VALUES(40000000002,'9780747532745',310);
INSERT INTO Warehouse_Book VALUES(40000000003,'9780747532745',120);
INSERT INTO Warehouse_Book VALUES(40000000004,'9780747532745',120);
INSERT INTO Warehouse_Book VALUES(40000000005,'9780747532745',120);
INSERT INTO Warehouse_Book VALUES(40000000006,'9780747532745',200);


INSERT INTO Warehouse_Book VALUES(40000000001,'9780747532746',200);
INSERT INTO Warehouse_Book VALUES(40000000003,'9780747532746',130);
INSERT INTO Warehouse_Book VALUES(40000000005,'9780747532746',150);
INSERT INTO Warehouse_Book VALUES(40000000006,'9780747532746',90);


INSERT INTO Warehouse_Book VALUES(40000000001,'9780747532747',200);


INSERT INTO Warehouse_Book VALUES(40000000001,'9780747532748',100);
INSERT INTO Warehouse_Book VALUES(40000000003,'9780747532748',100);
INSERT INTO Warehouse_Book VALUES(40000000004,'9780747532748',100);
```

```sql
INSERT INTO Warehouse_Book VALUES(40000000005,'9780747532748',100);

INSERT INTO Warehouse_Book VALUES(40000000005,'9780747532749',10);

INSERT INTO Warehouse_Book VALUES(40000000001,'9780141346816',50);
INSERT INTO Warehouse_Book VALUES(40000000002,'9780141346816',45);
INSERT INTO Warehouse_Book VALUES(40000000003,'9780141346816',150);
INSERT INTO Warehouse_Book VALUES(40000000004,'9780141346816',120);
INSERT INTO Warehouse_Book VALUES(40000000005,'9780141346816',200);
INSERT INTO Warehouse_Book VALUES(40000000006,'9780141346816',150);

INSERT INTO Warehouse_Book VALUES(40000000001,'9781484707234',70);
INSERT INTO Warehouse_Book VALUES(40000000002,'9781484707234',120);
INSERT INTO Warehouse_Book VALUES(40000000003,'9781484707234',130);
INSERT INTO Warehouse_Book VALUES(40000000005,'9781484707234',100);


INSERT INTO Warehouse_Book VALUES(40000000001,'9780520266124',70);
INSERT INTO Warehouse_Book VALUES(40000000002,'9780520266124',120);
INSERT INTO Warehouse_Book VALUES(40000000003,'9780520266124',130);
INSERT INTO Warehouse_Book VALUES(40000000005,'9780520266124',100);

INSERT INTO Warehouse_Book VALUES(40000000001,'9780525120014',50);
INSERT INTO Warehouse_Book VALUES(40000000002,'9780525120014',45);
INSERT INTO Warehouse_Book VALUES(40000000003,'9780525120014',150);
INSERT INTO Warehouse_Book VALUES(40000000004,'9780525120014',120);
INSERT INTO Warehouse_Book VALUES(40000000005,'9780525120014',200);
INSERT INTO Warehouse_Book VALUES(40000000006,'9780525120014',150);

INSERT INTO Warehouse_Book VALUES(40000000001,'9780532021509',50);
INSERT INTO Warehouse_Book VALUES(40000000002,'9780532021509',45);
```

```sql
INSERT INTO Warehouse_Book VALUES(40000000003,'9780532021509',150);
INSERT INTO Warehouse_Book VALUES(40000000004,'9780532021509',120);
INSERT INTO Warehouse_Book VALUES(40000000005,'9780532021509',200);
INSERT INTO Warehouse_Book VALUES(40000000006,'9780532021509',150);


INSERT INTO Warehouse_Book VALUES(40000000001,'9780350016478',175);
INSERT INTO Warehouse_Book VALUES(40000000002,'9780350016478',150);
INSERT INTO Warehouse_Book VALUES(40000000003,'9780350016478',100);
INSERT INTO Warehouse_Book VALUES(40000000004,'9780350016478',200);
INSERT INTO Warehouse_Book VALUES(40000000005,'9780350016478',100);
INSERT INTO Warehouse_Book VALUES(40000000006,'9780350016478',150);


INSERT INTO Warehouse_Book VALUES(40000000001,'9780042100364',175);
INSERT INTO Warehouse_Book VALUES(40000000002,'9780042100364',150);
INSERT INTO Warehouse_Book VALUES(40000000006,'9780042100364',150);


INSERT INTO Warehouse_Book VALUES(40000000004,'9785633100784',200);
INSERT INTO Warehouse_Book VALUES(40000000005,'9785633100784',100);
INSERT INTO Warehouse_Book VALUES(40000000006,'9785633100784',150);


INSERT INTO Warehouse_Book VALUES(40000000001,'9780566210017',200);
INSERT INTO Warehouse_Book VALUES(40000000002,'9780566210017',140);
INSERT INTO Warehouse_Book VALUES(40000000003,'9780566210017',300);
INSERT INTO Warehouse_Book VALUES(40000000004,'9780566210017',170);
INSERT INTO Warehouse_Book VALUES(40000000005,'9780566210017',280);
INSERT INTO Warehouse_Book VALUES(40000000006,'9780566210017',190);


INSERT INTO Warehouse_Book VALUES(40000000001,'9780332100140',120);
INSERT INTO Warehouse_Book VALUES(40000000002,'9780332100140',130);
INSERT INTO Warehouse_Book VALUES(40000000003,'9780332100140',400);
INSERT INTO Warehouse_Book VALUES(40000000004,'9780332100140',320);
```

```
INSERT INTO Warehouse_Book VALUES(40000000005,'9780332100140',250);
INSERT INTO Warehouse_Book VALUES(40000000006,'9780332100140',180);


SELECT * FROM Warehouse_Book;
```

	WAREHOUSEID	ISBN	BOOKCOUNT
1	40000000001	9780747532743	200
2	40000000002	9780747532743	230
3	40000000004	9780747532743	120
4	40000000005	9780747532743	350
5	40000000006	9780747532743	15
6	40000000001	9780747532744	250
7	40000000002	9780747532744	100
8	40000000003	9780747532744	310
9	40000000004	9780747532744	250
10	40000000005	9780747532744	311
11	40000000006	9780747532744	250
12	40000000001	9780747532745	120
13	40000000002	9780747532745	310
14	40000000003	9780747532745	120
15	40000000004	9780747532745	120
16	40000000005	9780747532745	120
17	40000000006	9780747532745	200
18	40000000001	9780747532746	200
19	40000000003	9780747532746	130
20	40000000005	9780747532746	150
21	40000000006	9780747532746	90

```
INSERT INTO ShoppingBasket_Book VALUES(30000000001,'9780747532743',1);
INSERT INTO ShoppingBasket_Book VALUES(30000000001,'9780747532744',1);
INSERT INTO ShoppingBasket_Book VALUES(30000000001,'9780747532745',1);
INSERT INTO ShoppingBasket_Book VALUES(30000000001,'9780747532746',1);
INSERT INTO ShoppingBasket_Book VALUES(30000000001,'9780747532747',1);
INSERT INTO ShoppingBasket_Book VALUES(30000000001,'9780747532748',1);
INSERT INTO ShoppingBasket_Book VALUES(30000000001,'9780747532749',1);


INSERT INTO ShoppingBasket_Book VALUES(30000000002,'9780042100364',2);
```

```
INSERT INTO ShoppingBasket_Book VALUES(30000000002,'9780520266124',1);


INSERT INTO ShoppingBasket_Book VALUES(30000000003,'9780532021509',1);

INSERT INTO ShoppingBasket_Book VALUES(30000000003,'9780350016478',2);

INSERT INTO ShoppingBasket_Book VALUES(30000000003,'9781484707234',2);


INSERT INTO ShoppingBasket_Book VALUES(30000000005,'9780525120014',1);

INSERT INTO ShoppingBasket_Book VALUES(30000000005,'9780332100140',2);

INSERT INTO ShoppingBasket_Book VALUES(30000000005,'9780747532747',1);


INSERT INTO ShoppingBasket_Book VALUES(30000000006,'9781484707234',3);

SELECT * FROM ShoppingBasket_Book;
```

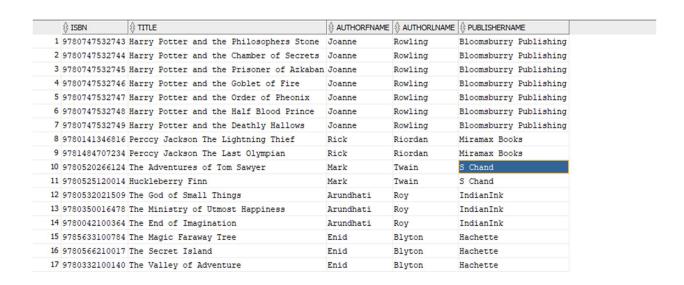|	CUSTOMERID	ISBN	BOOKCOUNT
1	30000000001	9780747532743	1
2	30000000001	9780747532744	1
3	30000000001	9780747532745	1
4	30000000001	9780747532746	1
5	30000000001	9780747532747	1
6	30000000001	9780747532748	1
7	30000000001	9780747532749	1
8	30000000001	9780042100364	2
9	30000000001	9780520266124	1
10	30000000002	9780042100364	2
11	30000000002	9780520266124	1
12	30000000003	9780532021509	1
13	30000000003	9780350016478	2
14	30000000003	9781484707234	2
15	30000000005	9780525120014	1
16	30000000005	9780332100140	2
17	30000000005	9780747532747	1
18	30000000006	9781484707234	3

RECOMMENDED JOINS AND VIEWS

The View BookDetailsView shows detailed view of the Books along with the Author Name and Publisher Name:

```
CREATE OR REPLACE VIEW BookDetailsView AS

    SELECT Books.ISBN ,Books.Title , Authors.AuthorFName, Authors.AuthorLName ,
Publishers.PublisherName, Book.Price

    FROM Books NATURAL JOIN Authors NATURAL JOIN Publishers;

SELECT * FROM BookDetailsView;
```

	ISBN	TITLE	AUTHORFNAME	AUTHORLNAME	PUBLISHERNAME
1	9780747532743	Harry Potter and the Philosophers Stone	Joanne	Rowling	Bloomsburry Publishing
2	9780747532744	Harry Potter and the Chamber of Secrets	Joanne	Rowling	Bloomsburry Publishing
3	9780747532745	Harry Potter and the Prisoner of Azkaban	Joanne	Rowling	Bloomsburry Publishing
4	9780747532746	Harry Potter and the Goblet of Fire	Joanne	Rowling	Bloomsburry Publishing
5	9780747532747	Harry Potter and the Order of Pheonix	Joanne	Rowling	Bloomsburry Publishing
6	9780747532748	Harry Potter and the Half Blood Prince	Joanne	Rowling	Bloomsburry Publishing
7	9780747532749	Harry Potter and the Deathly Hallows	Joanne	Rowling	Bloomsburry Publishing
8	9780141346816	Perccy Jackson The Lightning Thief	Rick	Riordan	Miramax Books
9	9781484707234	Perccy Jackson The Last Olympian	Rick	Riordan	Miramax Books
10	9780520266124	The Adventures of Tom Sawyer	Mark	Twain	S Chand
11	9780525120014	Huckleberry Finn	Mark	Twain	S Chand
12	9780532021509	The God of Small Things	Arundhati	Roy	IndianInk
13	9780350016478	The Ministry of Utmost Happiness	Arundhati	Roy	IndianInk
14	9780042100364	The End of Imagination	Arundhati	Roy	IndianInk
15	9785633100784	The Magic Faraway Tree	Enid	Blyton	Hachette
16	9780566210017	The Secret Island	Enid	Blyton	Hachette
17	9780332100140	The Valley of Adventure	Enid	Blyton	Hachette

The View AuthorDetailsView shows detailed view of the Authors along with the Author Phone Numbers and the number of Books written by the Author:

```
CREATE OR REPLACE VIEW AuthorDetailsView AS

    WITH TTABLE(AuthorID,Phone) AS

    (SELECT AuthorID, RTRIM (XMLAGG (XMLELEMENT (e, AuthorPhone || ' ,
')).EXTRACT ('//text()'), ',') Phone

    FROM AuthorPhones GROUP BY AuthorID),

    TTABLE2(AuthorID,BooksWritten) AS

    (SELECT AuthorID,COUNT(*) FROM Books GROUP BY AuthorID)

        SELECT
Authors.AuthorID,AuthorFName,AuthorLName,AuthorURL,TTABLE.Phone,AuthorAddress,B
ooksWritten
```

```
        FROM Authors LEFT JOIN TTABLE ON(Authors.AuthorID = TTABLE.AuthorID)
LEFT JOIN TTABLE2 ON (Authors.AuthorID=TTABLE2.AuthorID);

SELECT * FROM AuthorDetailsView;
```

	AUTHORID	AUTHOR...	AUTHORLNAME	AUTHORURL	PHONE	AUTHORADDRESS	BOOKSWR...
1	10000000001	Joanne	Rowling	www.jkrowling.com	2884713658 ,	557 Broadway New ...	7
2	10000000002	Mark	Twain	www.marktwainproject.com	2881069845 , 7865412019 ,	351 Farmington Av...	2
3	10000000004	Enid	Blyton	www.enidblyton.net	1100548762 , 7842361220 , 11007452...	83 Shortlands Roa...	3
4	10000000005	Arundhati	Roy	www.weroy.com	7063254112 ,	55 LaxmanNagar Ne...	3
5	10000000003	Rick	Riordan	www.rickriordan.com	(null)	125 West End Avenue	2

The View PublisherDetailsView shows detailed view of the Publishers along with the Publisher Phone Numbers and the number of Books published by the Publisher:

```
CREATE OR REPLACE VIEW PublisherDetailsView AS

    WITH TTABLE(PublisherID,Phone) AS

    (SELECT PublisherID, RTRIM (XMLAGG (XMLELEMENT (e, PublisherPhone || ' ,
')).EXTRACT ('//text()'), ',') Phone

    FROM PublisherPhones

    GROUP BY PublisherID),

    TTABLE2(PublisherID,BooksPublished) AS

    (SELECT PublisherID, COUNT(*) FROM Books GROUP BY PublisherID)

        SELECT
Publishers.PublisherID,PublisherName,PublisherURL,TTABLE.Phone,PublisherAddress
,BooksPublished

        FROM Publishers LEFT JOIN TTABLE ON(Publishers.PublisherID =
TTABLE.PublisherID) LEFT JOIN TTABLE2 ON(Publishers.PublisherID =
TTABLE2.PublisherID);

SELECT * FROM PublisherDetailsView;
```

	PUBLISHERID	PUBLISHERNAME	PUBLISHERURL	PHONE	PUBLISHERADDRESS	BOOKSPUBLISHED
1	20000000001	IndianInk	www.indianink.com	2881036547 , 2881076632 ,	India	3
2	20000000002	Bloomsbury Publishing	www.bloomsburry.com	1124533125 ,	UK	7
3	20000000003	Miramax Books	www.miramax.com	3665544712 ,	US	2
4	20000000004	Disney	www.disney.com	1004569774 ,	Hollywood, LA	(null)
5	20000000005	S Chand	www.schandpublishing.com	3655110124 , 6644722331 ,	Mumbai, India	2
6	20000000006	Hachette	www.hachette.com	4975233110 ,	UK	3

The view CustomerDetailsView shows detailed information about Customers that even includes their Phone Numbers:

```
CREATE OR REPLACE VIEW CustomerDetailsView AS

    WITH TTABLE(CustomerID,Phone) AS

    (SELECT CustomerID, RTRIM (XMLAGG (XMLELEMENT (e, CustomerPhone || ' ,
')).EXTRACT ('//text()'), ',') Phone

    FROM CustomerPhones

    GROUP BY CustomerID)
        SELECT
Customers.CustomerID,CustomerFName,CustomerLName,CustomerUsername,CustomerPassw
ord,CustomerEmail,TTABLE.Phone,CustomerAddress

        FROM Customers LEFT JOIN TTABLE ON(Customers.CustomerID =
TTABLE.CustomerID);

SELECT * FROM Customers;
```

	CUSTOMERID	CUSTOME...	CUSTOMERLNAME	CUSTOMERUSERNAME	CUSTOMERPASSWORD	CUSTOMEREMAIL	PHONE	CUSTOMERADDRESS
1	30000000001	Krunal	Rank	krunalrank123	K@runal0609	krunalrnak@gmail.com	7016507648 , 9979891142 ,	Jamnagar, India
2	30000000002	Tanmay	Shah	tanmay2901	ultimate@360	tanmayshah29@gmail.com	6355487754 ,	Jamnagar, India
3	30000000003	Hardev	Khandhar	hardevk	Hardev@Kh	hardevkhandhar71@gm...	7444689954 ,	Jamnagar, India
4	30000000004	Neil	Pandya	neilP	neilPandya@0710	pandyaneil08@gmail.com	3667844566 ,	Ahmedabad, India
5	30000000005	Mihir	Khambhati	mihir1313	KhambhatiM@1313	mihirk1313@gmail.com	9999633145 ,	Ankleshwar, Gujarat
6	30000000006	Miley	Joshi	MileyJ	MileyJoshi@Texas	mileyj@hotmail.com	4477233145 ,	Texas, US

Implementation of PLSQL Functions/Triggers

PLSQL Functions and Triggers allow us to easily regulate changes in data and view these changes in a compact manner.

Most of the PLSQL Triggers are used before, during or after the execution of an SQL statement which provides the Database Administrator with numerous functionalities.

I have implemented following PLSQL Functionalities for convenient searching of Data in the Relations formed in the previous section:-

The below Procedure is used for Displaying Shopping Cart of a given User based on Username as Input:

```
CREATE OR REPLACE PROCEDURE show_shopping_basket(customer_username IN VARCHAR)

IS

total NUMBER(10,2);

BEGIN

    DBMS_OUTPUT.PUT_LINE('Shopping Basket: '||customer_username);

    total := 0.00;

    FOR rec IN (SELECT ISBN,Title,Price,BookCount FROM Books NATURAL JOIN
ShoppingBasket_Book NATURAL JOIN Customers WHERE CustomerUsername =
customer_username)

    LOOP

        total := total + (rec.Price * rec.BookCount);

        DBMS_OUTPUT.PUT_LINE(rec.ISBN||' '||rec.Title||' '||rec.Price||'
'||rec.BookCount);

        END LOOP;

    DBMS_OUTPUT.PUT_LINE('Shopping Basket Total: Rs.'||total);

END;
/


DECLARE

    customer_username VARCHAR(255):= '&customer_username';

BEGIN

    show_shopping_basket(customer_username);

END;
/
```

```
Shopping Basket: krunalrank123
9780747532743 Harry Potter and the Philosophers Stone 449.99 1
9780747532744 Harry Potter and the Chamber of Secrets 500.5 1
9780747532745 Harry Potter and the Prisoner of Azkaban 510.31 1
9780747532746 Harry Potter and the Goblet of Fire 530.27 1
9780747532747 Harry Potter and the Order of Pheonix 570 1
9780747532748 Harry Potter and the Half Blood Prince 630.47 1
9780747532749 Harry Potter and the Deathly Hallows 700 1
9780520266124 The Adventures of Tom Sawyer 900.5 1
9780042100364 The End of Imagination 360 2
Shopping Basket Total: Rs.5512.04



PL/SQL procedure successfully completed.
```

The below Trigger warns the Administrator when the Book Count of a particular warehouse for a particular existing Book falls below 20 and asks for Restocking books:

CREATE OR REPLACE TRIGGER show_low_book_levels

AFTER INSERT OR UPDATE ON Warehouse_Book

FOR EACH ROW

WHEN (NEW.BookCount<20)

DECLARE

    CURSOR cur IS

    SELECT ISBN,Title FROM Books WHERE ISBN = :NEW.ISBN;

BEGIN

    FOR rec IN cur

    LOOP

        DBMS_OUTPUT.PUT_LINE(rec.ISBN||' '||rec.Title||' '||'have been reduced below 20 at Warehouse '||:NEW.WarehouseID||'! Restock required!');

    END LOOP;

END;

/

Update Warehouse_Book set BookCount=15 WHERE ISBN = '9780747532743' AND WarehouseID=40000000006;

```
9780141346816 Perccy Jackson The Lightning Thief have been reduced below 20 at Warehouse 40000000002! Restock required!

1 row updated.
```

1 row updated.

The Mini Project has been successfully completed under the guidance of SVNIT Computer Engineering Department faculties for Course BTech 2nd Year DBMS Course

THANK YOU