**DATABASE SYSTEMS (5330 – 005)**

**PROJECT PHASE – II**

**Project Team 10**

**Team Members - Ravi Prakasha (1002026832), Silpa Vijayan Geetha (1001989441)**

**Database Implementation For Arlington Art Gallery**

**Database Tables**

**ARTIST** ( aID, name, birthDate, deathDate, commission, street, city, stateAb, zipcode)

**ARTWORK** ( aID, artID, creationDate, acquisitionDate, price, form)

**CONTRACT**( aID, coID, startDate, endDate, mRate, orgName, )

**CUSTOMER** ( cID, name, street, city, stateAb, zipcode)

**BOUGHT** ( artID, cID, saleDate)

**STATE** ( stateAb, stateName)

**PAYMENTS** ( pID, artID, upfrontDate, finalDate)

**Creating Database**

CREATE DATABASE ARTGALLERY;

**Part – 1**

**Create Queries of Tables**

**a) ARTIST**

**CREATE TABLE ARTIST**

**( aID INT(11) NOT NULL,**

**Name VARCHAR(30) NOT NULL,**

**BirthDate DATE,**

**DeathDate DATE,**

**Commission DECIMAL(3,0),**

**Street VARCHAR(30),**

**City VARCHAR(35),**

**StateAb VARCHAR(3) NOT NULL,**

**ZipCode VARCHAR(30),**

**CONSTRAINT ARTPK**

**PRIMARY KEY (aID),**

**CONSTRAINT ARTSTATFK**

**FOREIGN KEY (StateAb) REFERENCES STATE(StateAb)**

**ON DELETE CASCADE ON UPDATE CASCADE);**

**b) ARTWORK**

**CREATE TABLE ARTWORK**

**(aID INT(11) NOT NULL,**

**artID INT(11) NOT NULL,**

**Title VARCHAR(30),**

**creationDate DATE,**

**acquisitionDate DATE,**

**Price DECIMAL(8,2),**

**Form VARCHAR(30),**

**CONSTRAINT ARTWKPK**

**PRIMARY KEY (artID),**

**CONSTRAINT ARTWRKARTFK**

**FOREIGN KEY (aID) REFERENCES ARTIST(aID)**

**ON DELETE CASCADE ON UPDATE CASCADE);**

**c) CONTRACT**

**CREATE TABLE CONTRACT**

**(aID INT(11) NOT NULL,**

**coID INT(11) NOT NULL,**

**startDate DATE,**

**endDate DATE,**

**mRate INT(8),**

**OrgName VARCHAR(30),**

**CONSTRAINT CONTRPK**

**PRIMARY KEY (aID, coID),**

**CONSTRAINT CONTRART**

**FOREIGN KEY (aID) REFERENCES ARTIST(aID)**

**ON DELETE CASCADE ON UPDATE CASCADE);**

**d) CUSTOMER**

**CREATE TABLE CUSTOMER**

**(cID INT(11) NOT NULL,**

**Name VARCHAR(15),**

**Street VARCHAR(15),**

**City VARCHAR(15),**

**StateAb VARCHAR(3) NOT NULL,**

**ZipCode INT(11),**

**CONSTRAINT CUSTPK**

**PRIMARY KEY (cID),**

**CONSTRAINT CUSTSTA**

**FOREIGN KEY (StateAb) REFERENCES STATE(StateAb)**

**ON DELETE CASCADE ON UPDATE CASCADE);**

**e) BOUGHT**

**CREATE TABLE BOUGHT**

**(artID INT(11) NOT NULL,**

**cID INT(11) NOT NULL,**

**saleDate DATE,**

**PRIMARY KEY (artID,cID),**

**CONSTRAINT BTARTWKFK**

**FOREIGN KEY (artID) REFERENCES ARTWORK(artID)**

**ON DELETE CASCADE ON UPDATE CASCADE,**

**CONSTRAINT BTCUSTFK**

**FOREIGN KEY (cID) REFERENCES CUSTOMER(cID)**

**ON DELETE CASCADE ON UPDATE CASCADE);**

**f) STATE**

**CREATE TABLE STATE**

**(StateAb VARCHAR(3) NOT NULL,**

**StateName VARCHAR(15) ,**

**CONSTRAINT STPK**

**PRIMARY KEY (StateAb));**

**g) PAYMENTS**

**CREATE TABLE PAYMENTS**

**(pID INT(11) NOT NULL,**

**artID INT(11) NOT NULL,**

**Upfront\_Date DATE,**

**Final\_Date DATE,**

**CONSTRAINT STPK**

**PRIMARY KEY (pID),**

**CONSTRAINT PTARTFK**

**FOREIGN KEY (artID) REFERENCES ARTWORK(artID)**

**ON DELETE CASCADE ON UPDATE CASCADE );**

**Select Results of all Tables**

1. A screenshot of a computer

   Description automatically generated**ARTIST**
2. **A screenshot of a computer

   Description automatically generatedARTWORK**
3. **A screenshot of a computer

   Description automatically generatedCUSTOMER**
4. **BOUGHT**

**A screenshot of a computer

Description automatically generated**

1. **CONTRACT**

**A screenshot of a computer

Description automatically generated**

1. **PAYMENTS**

**A screenshot of a computer

Description automatically generated**

**g) STATE**

**A screenshot of a computer

Description automatically generated**

**Part -2**

1. Retrieve the total number of artists in each state along with the state name (not the state abbreviation).

Select s.stateName, count(\*) as Number\_of\_artists from (state s join artist a on s.stateAb= a.stateAb ) GROUP by s.stateName;

A screenshot of a computer

Description automatically generated

1. Retrieve the artist’s name, date of birth, and the title of artwork that was sold on August 8, 2021.

Select ai.name, ai.birthDate, a.title from artwork a,artist ai, bought b where a.aID = ai.aID and a.artID = b.artID and b.saleDate = '2021-08-08';

Graphical user interface, text, application

Description automatically generated

1. Retrieve the names and address (Street, City, State Abbreviation, and Zipcode) of all the artists in our database whose first name start with a vowel.

Select a.name, a.street, a.city, a.stateAb, a.zipcode from artist a where a.name REGEXP "^[aeiou].\*";

Graphical user interface, application

Description automatically generated

1. Retrieve the names of the artists, list of their artwork (title) when the acquisition price is higher than $20,000 and less than $40,000. Order the result by the price of the artworks.

Graphical user interface, text, application

Description automatically generatedSelect ai.Name,a.title from artwork a,artist ai where a.aID = ai.aID and a.price BETWEEN 20000 and 40000 order by a.price;

1. Retrieve the titles, acquisition price, and the artists names of the 10 least expensive artworks in the gallery.

select ai.Name,a.title,a.price from artwork a,artist ai where a.aID = ai.aID order by a.price ASC LIMIT 10;

Graphical user interface, text, application

Description automatically generated

1. Retrieve the artist name, artwork title, and the acquisition price for all artworks of artists who hale from Kansas and has an artwork whose acquisition price is between $8,000.00 and $15,000.00. List the result in a descending order by the price of the artwork. The price should be stated with $, appropriate commas, and up to 2 decimal places. (Example: $12,000.00)

Graphical user interface, text, application

Description automatically generatedSelect ai.Name,a.title,concat(‘$’,format(a.price,2)) as Acquisition\_Price from artist ai, artwork a , state s where ai.StateAb=s.StateAb and ai.aID = a.aID and s.stateName = 'Kansas' and a.price BETWEEN 8000 and 15000 order BY a.price DESC;

1. Retrieve a list of state names, artist names from each of the states, and the total number of artworks by each artist to have been listed in the Art Gallery. Order the list by the number of their artworks. Exclude Texas artists from the list.

Select s.statename,ai.name,count(a.aID) as no\_of\_artworks from artist ai, state s,artwork a where ai.stateAb=s.stateAb and ai.aID=a.aID and s.stateName!="Texas" group by ai.aID order by no\_of\_artworks ;

Graphical user interface, text, application

Description automatically generated

1. Retrieve, the minimum, maximum, average, and total price of listed artwork of the artists from the state of Kansas. The price should be stated with $, appropriate commas, and up to 2 decimal places. (Example: $12,000.00)

Graphical user interface, text, application

Description automatically generatedSelect concat('$',format(min(a.price),2)) as min\_price, concat('$',format(max(a.price),2))as max\_price, concat('$',format(avg(a.price),2)) as avg\_price ,concat('$',format(sum(a.price),2)) as total\_price from artwork a , artist ai , state s where a.aID = ai.aID and ai.stateAb= s.stateAb and s.stateName="Kansas";

1. Retrieve the states, the total number of customers from each state. (Your query will be considered incorrect if it returns the state abbreviation instead of the full state name).

Select s.stateName,count(\*) as No\_of\_customers from state s,customer c where s.StateAb = c.stateAb group by s.stateAb;

Graphical user interface, text, application

Description automatically generated

1. Retrieve the artist name, artwork title and the acquisition price of the most expensive artwork acquired by the gallery so far.

Graphical user interface, application

Description automatically generatedSelect ai.Name, a.title,a.price from artwork a,artist ai where a.aID = ai.aID and a.price IN (select max(a.price) FROM artwork a);

1. Retrieve a list of records that each consists of the customer’s name, and the title of the artwork they bought, and their price for all the artwork that was bought by only one customer. How will you verify that the results of your query are correct?

Select c.name, a.title ,a.price from customer c, bought b,artwork a where c.cID=b.cID and a.artID=b.artID group by c.cID;

Graphical user interface, application

Description automatically generatedCalendar

Description automatically generated with low confidenceGraphical user interface

Description automatically generated

In this query, we can verify that the all the artworks were bought by only one customer since we are joining the customer id of BOUGHT table and customer id of customer table and that here there are 22 customers and for each customer id , an entry is there in BOUGHT table(22 rows) which means that each customer has bought one artwork. So the result count of this query is equal to 22 which is the number of customers.

1. Retrieve a list of records that is comprised of the state name, artist name, artform, and the number of pieces sold by the type of artform. Sort the list of records by the State name, artist’s name, artform, and the number of pieces sold. How can you verify that your query returns correct answers?

Select s.stateName,ai.name, a.form,count(b.artID) as no\_of\_artpieces\_sold from artwork a , state s ,artist ai, bought b where a.aID=ai.aID and s.stateAb=ai.stateAb and a.artID=b.artID GROUP by b.artID order by s.stateName, ai.name , a.form, no\_of\_artpieces\_sold;

Graphical user interface, application, Word

Description automatically generated

Select count(b.artID) as no\_of\_artpieces\_sold ,ai.name from artwork a , artist ai, bought b where a.aID=ai.aID and a.artID=b.artID GROUP by b.artID order by no\_of\_artpieces\_sold;

Here in this query, we have found out the list of artist names along with the no of artworks sold by joining artist and artwork table and it is grouped according to number of artworks sold which contain 16 records which is same as the query result count which is asked in the question which uses state table as an additional table to display the state name.Hence we can verify that the results are correct.

Graphical user interface, application

Description automatically generated

1. Retrieve a list of records that each consists of the customer’s name, the state that hale from, and the title of the artwork they bought, for all the artwork that was bought by a group of two or more people

Select c.name,s.stateName,a.title from customer c,state s ,artwork a,bought b where c.stateAb = s.StateAb and a.artID = b.artID and c.cID = b.cID and c.cID in (select b.cID from bought b where b.artID in (select b.artID from bought b GROUP BY (b.artID) HAVING COUNT(b.cID) >1)) order by a.title;

Graphical user interface, application, Word

Description automatically generated

1. Execute a command to delete a record that violates a referential integrity constraint. State the message produced by the DBMS.

DELETE from artwork where artID= 3;

Here we cannot delete this record as Payment table references Artist table(artID).

(Note: In order to replicate the referntial constraint violation in this question, we have removed on Delete cascade constraint on Artist table)

Graphical user interface, text, application, email

Description automatically generated

1. Execute an update command for PAYMENTS table that attempts to update a record and thereby violates the foreign key constraint. State the message produced by the DBMS.

UPDATE payments set artID = 100 where pID =1;

Here the referntial integrity constraint is violated as we are trying to update artID which is the primary key of artwork table.

Graphical user interface, text, application, email

Description automatically generated

1. Execute 3 insert commands for artist table that attempt to insert records, such that the records violate the explicit schema-based constraints (Key, Entity Integrity, Referential Integrity constraints). Make each of the 3 records violate a different types of integrity constraint. Include the insert statements and the error messages produced.
2. Insert Into customer ( cid, name, street , city, stateAb, zipcode) values (‘Brendon Mac’,’1002 Greek Row Dr’,’Arlington’,’TX’,’76013’);

Graphical user interface, text, application

Description automatically generated

Here, we are trying to insert a row without cid which violates Primary key constraint hence error is thrown while insertion.

1. Insert Into customer ( cid, name, street , city, stateAb, zipcode) values (NULL,’1002 Greek Row Dr’,’Arlington’,’TX’,’76013’);

Here, we are trying to insert a row with cid as NULL which violates Primary key constraint hence error is thrown while insertion.

Graphical user interface, text, application

Description automatically generated

1. Insert Into customer ( cid, name, street , city, stateAb, zipcode) values (30,‘Brendon Mac’,’1002 Greek Row Dr’,’Arlington’,’SX’,’76013’);

Here, we are trying to insert a row with stateAB ad SX which violates Referential integrity constraint as stateAb in Artist references stateAb of State and SX is not present in State table.Hence error is thrown while insertion.

Graphical user interface, text, application

Description automatically generated

**Work Distribution**

**Part 1 – Ravi Prakasha**

**Part 2 – Ravi Prakasha & Silpa Vijayan Geetha**

**Project Phase 2 Doumentation – Silpa Vijayan Geetha**

**Project Phase 2 Evaluation – Ravi Prakasha**

**HONOR CODE**

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or that I contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

I will not participate in any form of cheating/sharing the questions/solutions.

**Ravi Prakasha Silpa Vijayan Geetha**

**1002026832 1001989441**

**Date: 04 April 2022**

Text, letter

Description automatically generatedText, letter

Description automatically generated