

CSC 355 Database Systems 501

Assignment 1 (1/8)

Due 11:59:00pm, Wednesday 1/15.

Reading: (1) The posted Lecture 1 and Lecture 2 Slides; (2) Ullman/Widom Sections 1.1-1.3 and 2.1-2.2; (3) the posted CDM Oracle Tutorial handout; (4) the posted course syllabus; (5) DePaul's Academic Integrity Policy (link in syllabus). [Next week: Ullman/Widom Sections 2.3 and 6.1.]

Problems:

If you are not working in a CDM lab, first download and install SQLDeveloper from Oracle – use the link posted on the course web site.

1. As I demonstrated in class, create a new connection to `acadoradbprd01.dpu.depaul.edu` named ***YOURLASTNAME355*** – that is, use your last name in place of mine. Download the script file `university.sql` from the course web site, and run it in SQLDeveloper to create the set of five tables I created in class. Open some table in the database and display its data (not its columns/schema) in the center window.

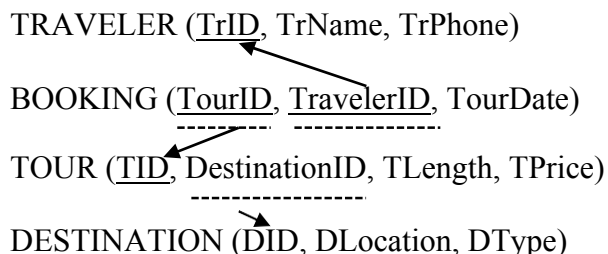
Take a single screen shot showing your open connection, the set of tables you have created, and the table of data in the center window, and include it in your solutions.

2. For some table other than the one you just displayed, run the SQL statement `SELECT * FROM TABLENAME`; in the center window so that the table contents are displayed under “Query Result”.

Take a single screen shot showing the SQL statement and all rows of the result, and include it in your solutions.

3. Answer the questions below for the following relational database schema and relational database instance containing four relations.

Database Schema:



Database Instance:

TRAVELER

TrID (P)	TrName	TrPhone
0001	White	5551234
0002	Goodman	5559876
0003	Pinkman	5551609
0004	Fring	5552112

BOOKING

TourID (P & F)	TravelerID (P&F)	TourDate
44890	0001	03-JUN-19
44890	0002	03-JUN-19
86428	0004	01-AUG-19
12345	0001	15-AUG-19

TOUR

TID (P)	DestinationID (F)	TLength	TPrice
12345	002	5	4000
44890	016	14	8000
70291	002	3	2500

DESTINATION

DID (P)	DLocation	DType
001	Cleveland	City
002	New York	City
003	Cozumel	Resort
004	Bermuda	Cruise

- **Primary Key**
 - keys that are underlined in the schema
 - can have many candidate keys, **only one primary key**
- **Foreign Key**
 - Shared key that links
 - dotted underline in schema
 - foreign key associates each tuple with exactly one tuple in the relation that it references
- **Referential Integrity**
 - Add a row w/ a foreign key: if the foreign key value is in the primary key
 - Remove w/ a primary key: if the value of the primary key isn't in the foreign key reference

a. List the attribute(s) that make up the primary key (if one exists) in DESTINATION.

Answer: DID

b. List the attribute(s) that make up the primary key (if one exists) in TOUR.

Answer: TID

c. List the attribute(s) that make up the primary key (if one exists) in BOOKING.

Answer: TourID, TravelerID

d. List the attribute(s) that make up the foreign key(s) (if any exist) in DESTINATION.

Answer: None

e. List the attribute(s) that make up the foreign key(s) (if any exist) in TOUR.

Answer: DestinationID

f. List the attribute(s) that make up the foreign key(s) (if any exist) in BOOKING.

Answer: TourID, TravelerID

g. Construct a new tuple that can be inserted into BOOKING without violating any constraints.

Answer: (44890,NULL,'04-23-2020')

h. Construct a new tuple that cannot be inserted into BOOKING because doing so would violate referential integrity (but would not violate any other constraints)

Answer: (90201,0008,'02-14-2017')

i. Construct a new tuple that can be inserted into TOUR without violating any constraints.

Answer: (54378,003,'01-01-2020')

j. Construct a new tuple that cannot be inserted into TOUR because doing so would violate a key constraint (and thus would also violate entity integrity), but would not violate any other constraints.

Answer: (NULL, 002,'05-14-1981')

k. Which of the tuples in DESTINATION could be removed without violating referential integrity? Explain why.

Answer:

(003,'Conzumel','Resort')

(004, 'Bermuda', 'Cruise')

(001,'Cleveland',' City')

- removing the following tuples wouldn't violate referential integrity since the primary ID of Destination (DID), where TOUR's foreign key (Destination ID) points to, is not referenced by Tour. Removing wouldn't disrupt any integrity of the tables because the relation is unidirectional from Tour to Destination, with destination having the primary key.

Remarks:

1. Your assignment submission should be a single electronic document – .docx/.doc/.pdf formats are preferred – including the requested screen shots for Problems 1 and 2 and your typed answers to Problem 3. Whenever you are asked to include a screen shot in your solutions, you should crop and resize it so that it fits in the document and is readable. Solutions should always be typed or drawn electronically, not by hand. Your name, course number and section, assignment number and date of submission should appear at the top of every assignment submission.

2. As will be the case for all assignments, everything you turn in must be your own individual work.

Connections: Oracle Connection: FILGUERAS355

Tables (Filter): Views, Indexes, Packages, Procedures, Functions, Operators, Queues, Queues Tab, Triggers, Types, Sequences, Materialized, Synonyms, Public Synon

Reports: All Reports, Analytic View Repo, Data Dictionary Re, Data Modeler Repo, OLAP Reports, TimesTen Reports, User Defined Repo

Worksheet: Query Builder

```
SELECT
*
FROM enrollment;
```

Script Output x Query Result x

SQL | All Rows Fetched: 19 in 0.057 seconds

STUDENTID	COURSEID	QUARTER	YEAR
1	11035	3201 Spring	2011
2	11035	1020 Fall	2012
3	11035	1092 Fall	2012
4	75234	3201 Winter	2012
5	88871	3201 Spring	2011
6	88871	1092 Fall	2013
7	39077	8772 Fall	2012
8	39077	1092 Fall	2013
9	57923	9219 Winter	2013
10	60973	9219 Winter	2013
11	19992	3201 Winter	2013
12	60973	8772 Spring	2013
13	90421	8772 Spring	2013
14	90421	2987 Spring	2013
15	60973	2987 Spring	2013
16	22989	8772 Fall	2014
17	22989	3201 Fall	2014
18	21705	9219 Fall	2014
19	21705	1092 Fall	2014

Line 3 Column 16 | Insert | Modified | Unix/Mac: U

Connections: Oracle Connection: FILGUERAS355

Tables (Filter): Views, Indexes, Packages, Procedures, Functions, Operators, Queues, Queues Tab, Triggers, Types, Sequences, Materialized, Synonyms, Public Synon

Reports: All Reports, Analytic View Repo, Data Dictionary Re, Data Modeler Repo, OLAP Reports, TimesTen Reports, User Defined Repo

SQL Worksheet: History

```
drop table COURSE;
drop table STUDENT;

create table STUDENT (
-- Syntax for creating a table
-- Schema is within the Student table parenthesis

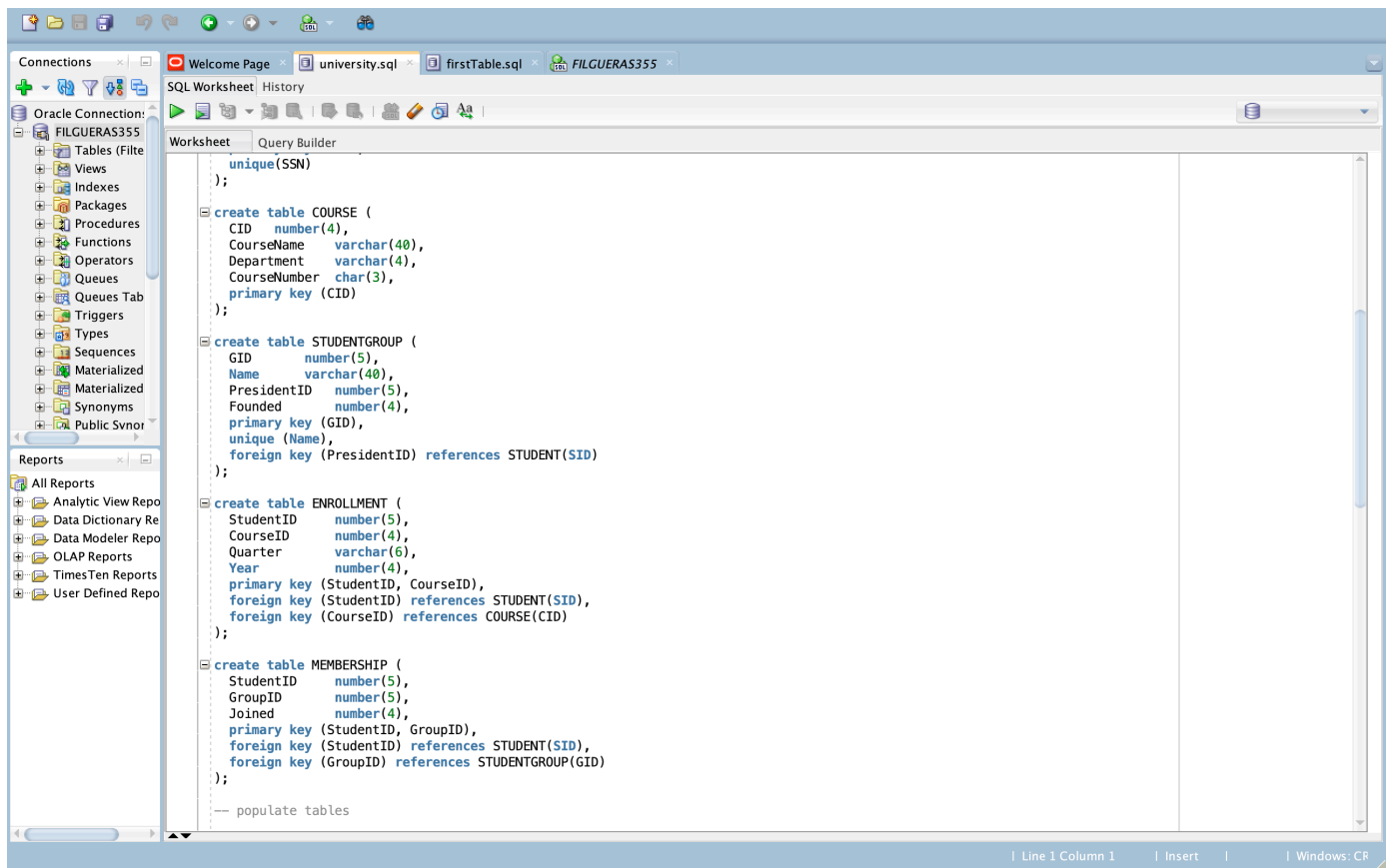
  LastName    varchar(40) not null,
  FirstName   varchar(40),
  SID         number(5),
  SSN         number(9),
  Career      varchar(4),
  Program     varchar(10),
  City        varchar(40),
  Started     number(4),
  primary key (SID),
  unique(SSN)
);

create table COURSE (
  CID         number(4),
  CourseName  varchar(40),
  Department  varchar(4),
  CourseNumber char(3),
  primary key (CID)
);

create table STUDENTGROUP (
  GID         number(5),
  Name        varchar(40),
  PresidentID number(5),
  Founded     number(4),
  primary key (GID),
  unique (Name),
  foreign key (PresidentID) references STUDENT(SID)
);

create table ENROLLMENT (
  StudentID   number(5),
  CourseID    number(4),
  Quarter     varchar(6),
  Year        number(4),
```

Line 1 Column 1 | Insert | Windows: C



HW Screenshots