**DB\_Admin, Auditing, and security (4/542) Fall 2021 –** **Inclass Assignments**

In Class Team Assignment #5 (IC5) Mon 9/21/21

Objective: Exploring DG Database

* To load DGDB-v3 database in MSSQL and explore its contents
* To analyze meta data available in DG database
* Analysis will be based on DGDB script (available in D2L) and data model ([click](#DG_Data_Model))
* Analyze the DGDB by develop the following SQL queries based on Zeota schema

1. List all tables in belong to Zeota database/schema
2. List all tables and number of columns in each table
3. List table name, column name, pk constraint name, Fk constraint name, CC constraint name, NN name, IDX constraint name, and PGM constraint name
4. List users of Zeota schema
5. List roles of Zeota schema
6. List units of Zeota schema
7. List number of tables for each unit of Zeota schema
8. List unit name, table name, and role name
9. List unit name, username, and role name
10. List all table names, and column names

Deliverables:

1. 1. A notepad document to hold query in English, SQL code, and result to the above questions

2. One report per team ONLY include name of members that ARE present

3. Submit to IC5 folder in D2L by the end of class but no later than 11:59pm on the same day

Solution

In Class Team Assignment #4 (IC4) Mon 9/16/21

Objective: To expand Data Gathering Requirements (DGR) excel document to include constraint names.

These names will be added to ALTER commands to be appended to Company database script.

Your task is to expand Company-DGR\_v1 to include the constraint names for PK, FK, NN, CC, and IDX.

The following resources are provided to assist you with your task:

* Company Data Model ([click](#Company_DM))
* Company data sheet ([click](#CCompany_Worksheets))
* Company database script ([click](#Company_database))
* Company DGR ([click](#MDG))
* Sample create Table command ([click](#CREATE_TABLE))
* Sample Create Table command where PK is composite ([click](#COMPOSITE_KEY))
* Sample Constraint names for all key values (PK, FK, NN, CC, and IDX) ([click](#Constraint_Name))
* Use of ALTER Commands to add or modify database structures ([click](#ALTER_Command))

Deliverables:

1. Expand the DGR spreadsheet provided and submit it back

2. One report per team ONLY include name of members that ARE present

3. Submit to IC4 folder in D2L by the end of class but no later than 11:59pm on the same day

Solution

In Class Team Assignment #3 (IC3) Mon 9/14/21

Based on using the [SP\_data\_model](#SP_Data_Model), answer the following queries:

1. Give the supplier name that supplies the maximum quantity of parts.
2. Give the name of the supplier whose supplies red parts and whose weight is greater than 10.
3. Give all the part numbers that are from the same city. Make sure the result does not have any duplicate.
4. Give how many parts each supplier has and the total qty each part has.
5. Give the total quantity of all the blue part
6. Give the top and bottom suppliers based on the quantity they supply.
7. Give the top 3 parts that weigh the most.
8. Give the total weight of all the red parts
9. Give the total qty for all the parts
10. Rank suppliers on the total quantity and number of parts

Deliverables:

1. A notepad document to hold query in English, SQL code, and result to the above questions

2. One report per team ONLY include name of members that ARE present

3. Submit to IC3 folder in D2L by the end of class but no later than 11:59pm on the same day

Solution

In Class Team Assignment #2 (IC2)

1. Based on using the [Zeota](#Zeota) data model, develop 20 use cases.
2. Write each use case in English

Deliverables:

1. A notepad document to hold query in English, SQL code, and result to the above questions

2. One report per team ONLY include name of members that ARE present

3. Submit to IC2 folder in D2L by the end of class but no later than 11:59pm on the same day

Solution

In Class Team Assignment #1 (IC1)

Your task is to create INSERT statement and append it to the end of CREATE TABLE script (section 5). Make sure your script works before submitting it

1. Based on Company data model ([Company\_DM](#Company_DM)) and list of CREATE TABLE ([Company Script](#Company)) script, develop INSERT statements
2. Use the [company\_worksheet](#CCompany_Worksheets) to create INSERT Statment
3. Count how many tables are in each level

Deliverables:

1. a word document to hold answers to the above questions

2. One report per team ONLY include name of members that ARE present

3. Submit to IC1 folder in D2L by the end of class but no later than 11:59pm on the same day

Solution

Zeota Data Model ([Back](#Phase1))

A picture containing diagram

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Use\_Case template

Use\_Case ID:

Use\_Case description:

Use\_Case implementation plan in SQL :

Prepared by:

Verified by:

Date Created:

Date of last Update:

Sample of use-case template

Use\_Case ID:1

Use\_Case description: List of customers from every branch that have not ordered any product

Use\_Case implementation plan in SQL:

select b.branch\_no, c.Customer\_no, c.lname

from Branch B join Customer c on b.branch\_no=C.branch\_no

left join orders o on c.customer\_no=o.customer\_no

where o.customer\_no is null

Prepared by: John Black

Verified by: Adam Jones

Date Created: 9/13/21

Date of last Update:

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Screenshot of sample data from MDG document ([Back](#Inclass))

Table

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**-- This script creates and populates the** **Company\_database in Oracle DBMS** ([Back](#Inclass))

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-- 1. Drop tables

DROP TABLE DEPARTMENT cascade constraint;

DROP TABLE EMPLOYEE cascade constraint;

DROP TABLE DEPENDENT cascade constraint;

DROP TABLE DEPT\_LOCATIONS cascade constraint;

DROP TABLE PROJECT cascade constraint;

DROP TABLE WORKS\_ON cascade constraint;

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-- 2. Create tables with PK and FK

CREATE TABLE DEPARTMENT(

DNUMBER NUMBER(2) NOT NULL,

DNAME VARCHAR(50) NOT NULL,

MGRSSN NUMBER(9)NOT NULL,

MGRSTARTDATE DATE NOT NULL,

CONSTRAINT DEPT\_DNUM\_PK PRIMARY KEY (DNUMBER));

CREATE TABLE EMPLOYEE(

SSN NUMBER (9) NOT NULL,

FNAME VARCHAR(25) NOT NULL,

MINIT VARCHAR(1),

LNAME VARCHAR(25) NOT NULL,

BDATE DATE NOT NULL,

ADDRESS VARCHAR(150) NOT NULL,

SEX VARCHAR(1) NOT NULL,

SALARY FLOAT,

SUPERSSN NUMBER(9),

DNO NUMBER(2) NOT NULL,

CONSTRAINT EMP\_SSN\_PK PRIMARY KEY(SSN),

CONSTRAINT EMP\_DNO\_FK FOREIGN KEY (DNO) REFERENCES DEPARTMENT(DNUMBER));

CREATE TABLE DEPENDENT(

ESSN NUMBER(9) NOT NULL,

DEPENDENT\_NAME VARCHAR(50) NOT NULL,

SEX VARCHAR(1) NOT NULL,

BDATE DATE NOT NULL,

RELATIONSHIP VARCHAR(15) NOT NULL,

CONSTRAINT DEP\_ESSN\_NAME\_PK PRIMARY KEY(ESSN, DEPENDENT\_NAME),

CONSTRAINT DEP\_ESSN\_FK FOREIGN KEY (ESSN) REFERENCES EMPLOYEE(SSN));

CREATE TABLE DEPT\_LOCATIONS(

DNUMBER NUMBER(2) NOT NULL,

DLOCATION VARCHAR(50) NOT NULL,

CONSTRAINT DEPTLOC\_DNUM\_DLOC\_PK PRIMARY KEY(DNUMBER, DLOCATION),

CONSTRAINT DEPTLOC\_DNUM\_FK FOREIGN KEY (DNUMBER) REFERENCES DEPARTMENT(DNUMBER));

CREATE TABLE PROJECT(

PNUMBER NUMBER(3) NOT NULL,

PNAME VARCHAR(25) NOT NULL,

PLOCATION VARCHAR(50),

DNUM NUMBER(2) NOT NULL,

CONSTRAINT PROJ\_PNUM\_PK PRIMARY KEY (PNUMBER) ,

CONSTRAINT PROJ\_DNUM\_FK FOREIGN KEY (DNUM) REFERENCES DEPARTMENT(DNUMBER));

CREATE TABLE WORKS\_ON(

ESSN NUMBER(9) NOT NULL,

PNO NUMBER(3) NOT NULL,

DNUM FLOAT,

CONSTRAINT WRK\_ESSN\_PNO\_PK PRIMARY KEY (ESSN, PNO),

CONSTRAINT WRK\_ESSN\_FK FOREIGN KEY (ESSN) REFERENCES EMPLOYEE(SSN),

CONSTRAINT WRK\_PNO\_FK FOREIGN KEY (PNO) REFERENCES PROJECT(PNUMBER));

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-- 3. Create indexes

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-- 3.1. Drop indexes

DROP INDEX DEPTLOC\_DNUM\_IDX;

DROP INDEX PROJ\_DNUM\_IDX;

DROP INDEX EMP\_DNO\_IDX;

DROP INDEX DEP\_ESSN\_IDX;

DROP INDEX WRK\_ESSN\_IDX;

DROP INDEX WRK\_PNO\_IDX;

-- 3.2. Create indexes

CREATE INDEX DEPTLOC\_DNUM\_IDX ON DEPT\_LOCATIONS(DNUMBER);

CREATE INDEX PROJ\_DNUM\_IDX ON PROJECT(DNUM);

CREATE INDEX EMP\_DNO\_IDX ON EMPLOYEE(DNO);

CREATE INDEX DEP\_ESSN\_IDX ON DEPENDENT(ESSN);

CREATE INDEX WRK\_ESSN\_IDX ON WORKS\_ON(ESSN);

CREATE INDEX WRK\_PNO\_IDX ON WORKS\_ON(PNO);

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-- 4. grant privileges

grant select on DEPARTMENT to public;

grant select on EMPLOYEE to public;

grant select on DEPENDENT to public;

grant select on DEPT\_LOCATIONS to public;

grant select on PROJECT to public;

grant select on WORKS\_ON to public;

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5. Insert values to SPJ's tables

Company\_Worksheets ([Back](#Inclass))

Table

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Company Data Model (Company\_DM) ([Back](#Inclass))

Diagram

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**CREATE\_TABLE WITH FULL (Oracle example)** ([Back](#Phase1))

CREATE TABLE employee4

(

employee\_no VARCHAR2(5)

,fname VARCHAR(15) CONSTRAINT employee\_fname\_nn NOT NULL

,lname VARCHAR(15) CONSTRAINT employee\_lname\_nn NOT NULL

,SSN VARCHAR2(11) NOT NULL CONSTRAINT employee\_SSN\_uq UNIQUE

,position varchar2(15)

,sex char(1) CONSTRAINT employee\_sex\_cc CHECK(‘M’ OR ‘F’)

,dob date DEFAULT (‘JAN-01-1990’)

,commission number(7,2) CONSTRAINT employee\_commission\_cc CHECK((commission>10) AND (commission<25))

,branch\_no varchar2(5)

,CONSTRAINT employee\_employee\_no\_pk PRIMARY KEY (employee\_no)

CONSTRAINT employee\_branch\_no\_fk FOREIGN KEY(branch\_no) REFERENCES branch(branch\_no)

);

**CREATE\_TABLE WITH** **COMPOSITE\_KEY (Oracle example)** ([Back](#Phase1))

CREATE TABLE ORDERS

(

ONO NUMBER(5) CONSTRAINT ORDERS\_ONO\_NN NOT NULL

,PNO VARCHAR(5) CONSTRAINT PARODUCT\_PNO\_NN NOT NULL

,CNO NUMBER(5) CONSTRAINT ORDERS\_CNO\_NN NOT NULL

,ENO NUMBER(5) CONSTRAINT ORDERS\_ENO\_NN NOT NULL

,Order\_qty NUMBER(5) CONSTRAINT ORDERS\_ ORDER\_QTY\_NN NOT NULL)

,CUST\_ORDER\_DATE date

,CUST\_SHIP\_DATE date)

,CONSTRAINT ORDER\_pk PRIMARY KEY (CNO, ONO, PNO, CUST\_ORDER\_DATE)

,CONSTRAINT ORDER\_CNO\_fk FOREIGN KEY(CNO) REFERENCES CUSTOMER(CNO)

,CONSTRAINT ORDER\_PNO\_fk FOREIGN KEY(PNO) REFERENCES PRODUCT(PNO)

CONSTRAINT ORDER\_ENO\_fk FOREIGN KEY(ENO) REFERENCES EMPLOYE(ENO)

);

Sample Constraint\_Name ([Back](#Phase1))

CONSTRAINT EMP\_SSN\_PK PRIMARY KEY(SSN),

CONSTRAINT EMP\_DNO\_FK FOREIGN KEY (DNO) REFERENCES DEPARTMENT(DNUMBER)); -- PK and FK attribute names are different

CONSTRAINT DEP\_ESSN\_NAME\_PK PRIMARY KEY(ESSN, DEPENDENT\_NAME), -- composite PK

CONSTRAINT DEP\_ESSN\_NN

CONSTRAINT employee\_sex\_CC CHECK(‘M’ OR ‘F’)

CONSTRAINT DEPTLOC\_DNUM\_IDX

CONSTRAINT PROJ\_DNUM\_IDX

ALTER\_Command ([Back](#Phase1))

ALTER TABLE EMPLOYEE ADD constraint EMP\_BRANCHNO\_FK FOREIGN KEY (BRANCH\_NO) references BRANCH (BRANCH\_NO);

ALTER TABLE Staff MODIFY (sex CHAR(1) CONSTRAINT staff\_sex\_NN NOT NULL);

ALTER TABLE Staff ADD (comments VARCHAR(50));

ALTER TABLE Staff MODIFY (comments CHAR(55));

SP\_Data\_Model ([Back](#Inclass))

Diagram

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DG\_Data\_Model ([Back](#Inclass))

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