Islamic Unverirsty of Gaza

Computer Engineering

ADB Course

Oracle Project (Part 1)

Asma Radi   220064487

Rafeef Sadiq   220061310

24/11/2010

Islamic University of Gaza
Faculty of Engineering
Computer Department

Advanced DataBase ECOM 5354
Instructor: Eng. Husam Alzaq
T.A: Eng. Mohammad A. El Hindi
T.A: Eng. Doaa KH. Abu Jabal

Oracle Project (Part 1)

Create new (college Database) by using the SQL statements. Confirm that the new Objects were added to the database. Create the syntax in the command file, and then execute the command file to create the Database.

Tables:

Table: Teachers

Column	Type	Null?	Constraint
ID	Number	No	Primary key
First Name	Varchar(30)	No	
Last Name	Varchar(30)	No	


```
SQL   Output   Statistics
CREATE TABLE Teachers(
ID INT NOT NULL PRIMARY KEY,
FIRSTNAME Varchar(30) NOT NULL,
LASTNAME Varchar(30) NOT NULL
)
```

```
SQL   Output   Statistics
select * from teachers;
```

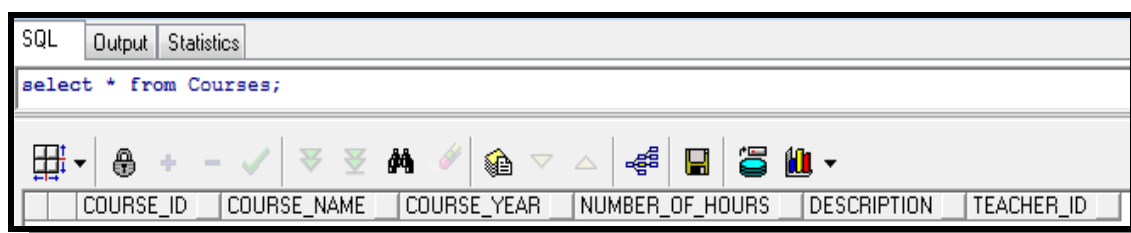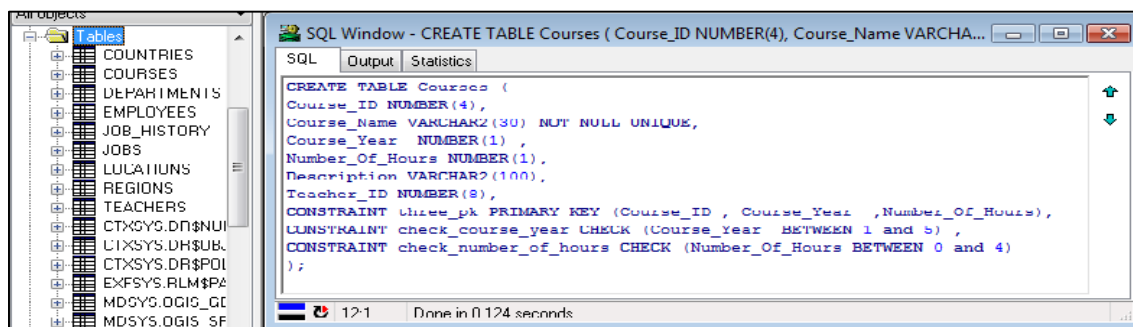| ID	FIRSTNAME	LASTNAME

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Table: Courses

Column	Type	Null?	Constraint
Course Id	Number	No	Primary key
Course Name	Varchar(30)	No	unique
Course Year	Number	No	Primary key, between 1 and 5
Number of hours	Number	No	Primary key, Between 0 and 4
Description	Varchar(100)	Yes	
Teacher Id	Number	Yes	

```
CREATE TABLE Courses (
Course_ID NUMBER(4),
Course_Name VARCHAR2(30) NOT NULL UNIQUE,
Course_Year  NUMBER(1) ,
Number_Of_Hours NUMBER(1),
Description VARCHAR2(100),
Teacher_ID NUMBER(9),
CONSTRAINT three_pk PRIMARY KEY (Course_ID , Course_Year  ,Number_Of_Hours),
CONSTRAINT check_course_year CHECK (Course_Year  BETWEEN 1 and 5) ,
CONSTRAINT check_number_of_hours CHECK (Number_Of_Hours BETWEEN 0 and 4)
);
```

```
select * from Courses;
```

COURSE_ID	COURSE_NAME	COURSE_YEAR	NUMBER_OF_HOURS	DESCRIPTION	TEACHER_ID

Table: Students

Column	Type	Null?	Constraint
Id	Number	No	Primary key
First Name	Varchar(30)	No	
Last Name	Varchar(30)	No	
Course Id	Varchar(30)	No	Foreign key
Course Year			Foreign key
Number of hours			Foreign key
grade	Number	yes	Between 40 and 100

SQL | Output | Statistics

```
CREATE TABLE Students(
Id INT  NOT NULL PRIMARY KEY,
FIRST_Name Varchar(30) NOT NULL ,
LAST_NAME VARCHAR(30) NOT NULL,
COURSE_ID VARCHAR(30) NOT NULL ,
COURSE_YEAR  INT NOT NULL check (Course_Year >1 and Course_Year < 5)
Number_of_hours INT ,
GRADE INT NOT NULL check (GRADE > 40 and GRADE < 100)
)
```

SQL | Output | Statistics

```
ALTER TABLE Students
ADD CONSTRAINT fk_CourseId
FOREIGN KEY(Id)REFERENCES Courses(Course_Id)
ADD CONSTRAINT fk_CourseYear
FOREIGN KEY(Course_Year)REFERENCES Courses(Course_Year)
ADD CONSTRAINT fk_CourseHours
FOREIGN KEY(Number_of_hours)REFERENCES Courses(Number_of_hours)
```

```
select * from Students;
```

ID	FIRST_NAME	LAST_NAME	COURSE_ID	COURSE_YEAR	NUMBER_OF_HOURS	GRADE

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Views:

View: Teacher_Courses

Teacher Name	Course code	Course Name	Course description


```
CREATE VIEW Teacher_Courses
AS SELECT First_Name ||' '|| Last_Name AS "Teacher Name",
         SUBSTR(Course_Year ,1,1) || SUBSTR(Number_Of_Hours,1,1) || SUBSTR(Course_ID,1,1) AS "Course Code" ,
         Course_Name, Description
FROM Teachers, Courses;
```

View: Student_Courses

Student Name	Teacher Name	Course code	Course Name	Course description	grade


```
CREATE VIEW Student_Courses
AS SELECT Students.First_Name ||' '|| Students.Last_Name AS " Student Name",
         Teachers.First_Name ||' '|| Teachers.Last_Name AS "Teacher Name",
         SUBSTR(Courses.Course_Year ,1,1) || SUBSTR(Courses.Number_Of_Hours,1,1) ||
         SUBSTR(Courses.Course_ID,1,1) AS "Course Code" ,
         Courses.Course_Name, Courses.Description, Grade
FROM Students, Teachers ,Courses
WITH READ ONLY ;
```

View: Teacher_Course_Students

Teacher Name	Course code	Student Number	Student Name	grade


```
CREATE VIEW Teacher_Course_Students
AS SELECT Teachers.First_Name ||' '|| Teachers.Last_Name AS "Teacher Name",
         SUBSTR(Courses.Course_Year ,1,1) || SUBSTR(Courses.Number_Of_Hours,1,1)
         || SUBSTR(Courses.Course_ID,1,1) AS "Course Code" ,
         Students.ID , Students.First_Name ||' '|| Students.Last_Name AS "Student Name", Grade
         FROM Teachers, Students, Courses;
```

Index:

1- create an index on
   table: courses

   column: Teacher_id

```
SQL Window - CREATE INDEX TECHER_ID_idx ON Courses(Teacher_Id);
SQL  | Output | Statistics
CREATE INDEX TECHER_ID_idx
ON    Courses(Teacher_Id);
```

2- create an index on
   table: student (columns: Course_id, course_year, Number of hours)

```
SQL Window - CREATE INDEX STUDENT_INFO_INDX ON STUDENTS(
SQL  | Output | Statistics
CREATE INDEX STUDENT_INFO_INDX
ON   STUDENTS(COURSE_ID,COURSE_YEAR,NUMBER_OF_HOURS);
```

Sequence:

1- create a sequence
   to generate
   teacher_id 1-20

```
SQL Window - CREATE SEQUENCE TEACHERS_ID STA
SQL  Output | Statistics
CREATE SEQUENCE TEACHERS_ID
                 START WITH 1
                 MAXVALUE 20
```

2- create a sequence to generate student_id 1-300

```
SQL Window - CREATE SEQUENCE STUDENT
SQL  | Output | Statistics
CREATE SEQUENCE STUDENT_ID
                 START WITH 1
                 MAXVALUE 300
```
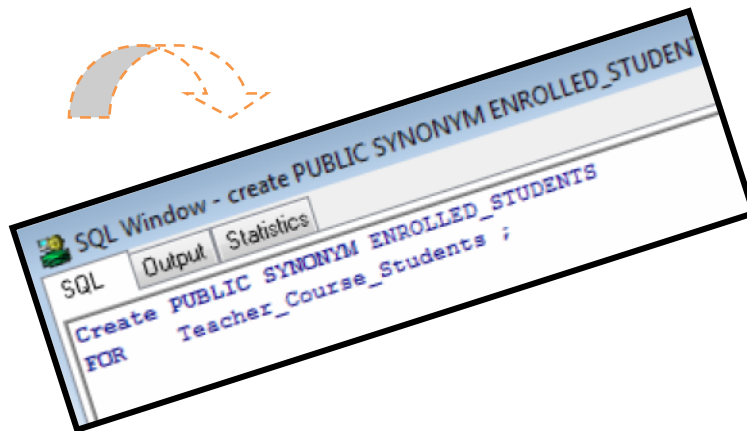
Synonym:

Create a public synonym to the view Teacher_Course_Students name it Enrolled_students.

Comment:

In this part of project we create new database that have many tables (Teacher, Student and Courses). And we create some view to reuse in other require and make some constraint on them.

We create database by create new user (in oracle when create new user it make scheme directed and this scheme equal create database in SQL.