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Homework #3

Prin Info Databases

10/31/19

1. **Create Table**​ students( sid int,), age int, name varchar(50), gpa float,​ **Primary Key**​ (sid) );

**Create Table** ​courses( cid enum(’198:11’,’ ’198:112’,’ 640:151’,...), deptid enum(’math’, ’music’,‘CS’,...), name varchar(50), ​**Primary Key**​ (cid) );

**Create Table** ​professors( ssn int, phone varchar(50), address varchar(50), name varchar(50),deptid enum(’math’, ’music’,‘CS’,...), ​**Primary Key** ​(ssn) );

**Create Table** ​enrollm( sid int, cid enum(’198:11’,’ ’198:112’,’ 640:151’,...), sections int, grades enum(‘A’,’B’,’C’,’D’,’F’), **Primary Key**​ (sid, cid), ​**Foreign Key**​(sid) ​ **References**​ students(sid), ​**Foreign Key** (​ cid) **References** ​courses(cid), ​ **Foreign Key**​ ( cid, sections) **References** ​teaches(cid, sections) );

**Create Table** ​teaches( cid enum(’198:11’,’ ’198:112’,’ 640:151’,...), section int, ssn int,

**Primary Key** (cid, sections), ​**Foreign Key**​(cid) ​**References** ​ courses(cid),​ **Foreign Key**​ (ssn) **References** ​professors(ssn) );​

1. **Select**​ p.names **From** ​p.professors

**Where** p.deptid = ‘CS’;​

1. **Select** ​s.sid

**From**​ enrollm e, courses c, students s

**Where**​ s.sid = e.sid ​**And**​ e.cid = c.cid ​**And** ​c.deptid = ‘CS’;

1. **Select** ​p.ssn, p.name

**From** ​professors p

**Where**​ p.deptid = ‘CS’ ​**And** ​p.ssn ​**Not In**

**(Select** ​p.ssn, ​**From** ​professors p, teaches t, courses c, ​**Where** ​p.ssn = t.ssn ​**And** ​t.cid = c.cid **And**​ c.deptid = ‘CS’ );​

1. **Select Count**​(\*),​ **From**​ courses c, ​**Group by**​ c.deptid;

1. **Select** ​c.deptid, ​**Count**​(\*) Courses, ​**From** courses c, ​​**Group By**​ c.deptid, ​**Having**​ Courses > 10;

1. **Select Distinct** s.name, ​**From**​ students s​

**Inner Join** ​teaches t ​**On**​ e.cid=t.cid

**Inner Join** ​enrollm e ​**On**​ s.sid=e.sid

**Inner Join**​ professors p​ **On**​ p.ssn=t.ssn

**Where**​ p.name​ **Like**​ 'M%'

1. **Select**​ c.deptid, ​**Count**​(e.sid)<30 ​**AS** ​small, ​**Count**​(e.sid)>=30​ **And Count**​(e.sid)<80 ​**As** medium,​ **Count**​(e.sid)>=80 AS large

**From** enroll e, courses c, ​ ​**Where**​ e.cid = c.cid, ​**Group By**​ e.sections, c.cid;

1. **Create Temporary Table** ​Depts

**Select**​ c.deptid, ​**Count**​(e.sid)<30 small, ​**Count**​(e.sid)>=30 **And Count**​(e.sid)<80 medium, **Count**​ ​(e.sid)>=80 large

**From** enroll e, courses c, **Where** ​ e.cid = c.cid, ​ **Group By**​ e.sections, c.cid;​

**Select Distinct** ​p.name

**From** ​professors p

**Where** ​p.deptid IN (

**Select**​ p.deptid

**From**​ professors p

**Group By**​ p.deptid

**Having Count**(​ p.ssn) > 20 )

**And** p.deptid IN (​

**Select** ​d.deptid

**From** ​Depts d

**Where** ​d.large > (d.small + d.medium) );

1. **Create Temporary Table**​ Fails

**Select**​ sid, ​**From** enroll e, students s​ **Where** ​ s.sid = e.sid and e.grades ​ **I** ​ (‘D’, ‘F’);​

**Create Temporary Table**​ AllEnrolledStudents

**Select** ​sid, ​**From** enroll e, students s, **Where**​ s.sid = e.sid;​

**Select** ​c.cid, ​**Count**​(Fails.sid) / **Count**​ ​(AllEnrolledStudents.sid)

\* 100 FailedPercent ​**From** ​ enroll e, courses c, Fails, AllEnrolledStudent,​ **Where**

c.cid = e.cid, ​**Group By** ​c.cid;

1. **Select Max(**​FailedStudentPercentage)

**From** ​(​ **Select** ​p.name, ​**Count**​(e.sid)

StudentCount, (​**Count**(​ ​**Distinct**​ sid) ​**From** ​e ​**Where** e.grades = 'F' OR e.grades = ‘D’) TotalFailedStudent,

(TotalFailedStudent/StudentCount)\*100 ​**As**

FailedStudentPercentage

**From**​ enroll e ​**Inner Join** ​courses c ​**On** ​e.cid = c.cid **Inner Join** ​professors p on p.deptid = c.deptid

**Where** ​ e.grades ​ **In**​ (​ ‘D’, ‘F’)

**Group By**​ c.deptid );

1. **Select** ​e.cid, (​**Count**​(e.sid)/(​**Count**​(​**Distinct** ​sid)​ **From** enrollment)) \* 100 AS Average

**From**​ enroll e, ​**Where** e.grades ​ ​**In** ​(‘D’, ‘F’), ​**Group By**​ e.cid;

1. **Select** e.sections​

**From** ​ enroll e, courses c

**Where** ​e.grades IN('D','F')

**Group By**​ e.sections

**Having Count**​(e.grades) > ( **Select Avg**(​ sections)

**From** ​enrollm );

1. **Create Temporary Table** ​T1

**Select Distinct**​ e.sid, c.dept, e.sections, **If**(​ e.grades IN (‘A’), 1, 0) NumA,

**If**​(e.grades IN (‘B’), 1, 0) NumB,

**If**​(e.grades IN (‘C’), 1, 0) NumC,

**If**​(e.grades IN (‘D’), 1, 0) NumD,

**If**​(e.grades IN (‘F’), 1, 0) NumF

**From**​ enrollment e, courses c;

**Select** ​c.deptid,

(SUM(T1.NumA)/(​**Select Count**​(s.sid)) as A%,

(SUM(T1.NumB)/(​**Select Count(**​s.sid)) as B%,

(SUM(T1.NumC)/(**Select Count**​ (​ s.sid)) as C%,

(SUM(T1.NumD)/(​**Select Count**​(s.sid)) as D%,

(SUM(T1.NumF)/(​**Select Count**​(s.sid)) as F%

**From**​ T1 inner join courses c ​**On**​ c.cid = e.cid, students s;