

Problem Set 4

Kap676

Q1: Find course numbers for courses offered by the same department as CSC111

The screenshot shows a SQL IDE interface with a query editor and a result grid. The query is as follows:

```
97
98 • select cnum
99   from course
100  where dept in (select dept from course where cnum = 'CSC111')
101
```

The result grid displays the following data:

cnum
CSC111
CSC211
CSC228
CSC231
CSC330
CSC362
CSC424
CSC715
CSC733
NULL

Q2: Find the names of all students who have not taken CSC330

The screenshot shows a SQL IDE interface with a query editor and a result grid. The query is as follows:

```
102 • create view Q2c as
103   select section.cnum, section.secnum, student.sID
104   from section, report, student
105  where student.sID = report.snum and report.secnum = section.secnum and report.term = section.term and cnum = 'CSC330';
106 • select lastname, firstname
107   from student
108  where sID not in (select sID from Q2c);
109
```

The result grid displays the following data:

lastname	firstname
Vazquez	Jason
Belaief	Lynne
Brugman	George
Raddiffe	Paula
Springer	Marlene
Zhao	Wenwen
Belaief	Lynne
Lincoln	Abraham

Q3: Find the names of all courses taken by at least one student in the CS dept

The screenshot shows a SQL IDE interface with a query editor and a result grid. The query editor contains the following SQL code:

```
114 • create view Q3a as
115 select student.dept, student.sID, report.secnum, report.term, section.cnum, course.name
116 from student, report, section, course
117 where student.sID = report.snum and report.secnum = section.secnum and section.cnum = course.cnum and report.term = section.term
118
119 • select distinct name
120 from Q3a
121 where dept = 'CS';
```

The result grid displays the following data:

name
Topics in Information Systems
Introduction to Discrete Mathematics
Data Structures
Database Theory
Natural Language Processing
Introduction to Political Science
Introduction to Database Systems

Q4: Find the names of all professors whose salary is more than the minimum

The screenshot shows a SQL IDE interface with a query editor and a result grid. The query editor contains the following SQL code:

```
109
110 • select lastname, firstname
111 from prof
112 where salary > (select min(salary) from prof);
113
```

The result grid displays the following data:

lastname	firstname
Anderson	Tatiana
Sarvello	Nanda
Brugman	George
Domingo	Hermann
Ahmed	Mahmoud
Sager	Naomi
Hu	Jintao
Schwartz	Jack
King	Mary Ellen

Q5: Find the names of all students who never got a better grade than 'C'

The screenshot shows a SQL IDE with a query editor and a result grid. The query editor contains the following SQL code:

```
122
123 • update report set grade = 'N' where grade = '';
124
125 • create view Q5a as
126   select snum, firstname, lastname, min(grade) as best_grade from report, student
127   where report.snum = student.sID group by snum;
128
129 • select firstname, lastname from Q5a
130   where best_grade >= 'C';
```

The result grid displays the following data:

firstname	lastname
Jintao	Hu
George	Brugman
Paula	Raddcliffe
Zedong	Mao

Q6: Find the names of all professors who have taught a CS course (i.e. at least one)

The screenshot shows a SQL IDE with a query editor and a result grid. The query editor contains the following SQL code:

```
131
132 • create view Q6 as
133   select course.dept, course.cnum, secnum, lastname, firstname from course, section, prof
134   where section.cnum = course.cnum and section.pnum = prof.pID;
135
136 • select distinct lastname, firstname from Q6
137   where dept = 'CS';
```

The result grid displays the following data:

lastname	firstname
Ahmed	Mahmoud
Cassidy	Matthew
King	Mary Ellen
Sager	Naomi
Domingo	Hermann

Q7: Find the names of all professors who have taught every CS course

```
127
128 • select P.lastname, P.firstname from prof P
129 where not exists (select C.cnum from course C
130 where C.dept = 'CS' and C.cnum not in (select S.cnum from section S where S.pnum = P.pID));
131
```

Result Grid

lastname	firstname
Cassidy	Matthew

Q8: Find all students who took two courses in the same department and got a better grade in the higher level course

```
132 • create view Q8c as
133 select snum, dept, count(*) as stud_dept_course_cnt, min(level) as min_level, max(level) as max_level
134 from report, section, course
135 where report.secnum = section.secnum and report.term = section.term and section.cnum = course.cnum
136 group by snum, dept;
137 • select * from Q8c;
138
139 • create view Q8d as
140 select snum, dept, min_level, max_level
141 from Q8c
142 where stud_dept_course_cnt >= 2 and max_level != min_level;
143
144 • create view Q8e as
145 select report.snum, course.dept, course.level, report.grade
146 from report, section, course, Q8d
147 where Q8d.snum = report.snum and Q8d.dept = course.dept and report.secnum = section.secnum and report.term = section.term and
148
149 • create view Q8f as
150 select t1.snum, t1.dept, t1.level as min_level, t1.grade as minl_grade, t2.level as max_level, t2.grade as maxl_grade
151 from Q8e t1, Q8e t2
152 where t1.snum = t2.snum and t1.dept = t2.dept and t1.level < t2.level;
153
154 • select distinct firstname, lastname from student, Q8f
155 where Q8f.minl_grade > Q8f.maxl_grade and Q8f.snum = student.sID;
```

Result Grid

firstname	lastname
Mahmoud	Ahmed
Giuseppi	Verdi
Jintao	Hu

Form Editor