Answers

Notes on Joins.2.4.20

(markdown converted at https://md2pdf.netlify.com/)

1. List last names of all professors in alphabetic order (lname).

```
select lname
from professor
order by lname asc

#to get no duplicates, use
select distinct lname
...
```

2. List names of all professors who work on DNA (fname, lname).

```
select fname,lname
from professor
where research like '%DNA%'

#or
select fname,lname
from professor
where research REGEXP 'DNA'
```

3. For each project sponsored by the NIH list the PI (prid, pid, lname, fname).

```
select prid, pid, lname, fname
from project join professor using(pid)
where sponsor like '%NIH%'

#or
...
where sponsor = 'NIH'
```

4. For each professor in the computer science and biology departments, list the professor name, department name, and appointment percentage (lname, fname, dname, percentage).

```
select lname, fname, dname, percentage
from Department join Appointment using(did) join Professor using(pid)
where dname in ('Biology','Computer Science')

#or
...
where dname = 'bioLogY' or dname = 'cOMOPUTER sCIENCE'

#Note all string matching is case *insensitive*
```

5. List the project budgets over $100,000 for each department broken down as follows: department name, professor id, and budget (dname, pid, dept budget). A grant budget goes to a department if the PI is appointed in the department. The department share of the budget is calculated as budget* percentage/100.

```
#this uses a formatted formula for one of the output fields
select dname,pid,concat('$', format(budget*percentage/100,2))
```

```
from Department join Appointment using(did) join Project using(pid)
where budget*percentage/100>=100000
```

6. List all professors who are CoPIs on a project (lname, fname, prid, sponsor).

```
select lname, fname, prid, sponsor
from professor join copi using(pid) join project using(prid)
```

7. List all professors who are PIs on at least two grants (lname, fname).

```
select distinct lname, fname
from Project p join Project q using(pid) join Professor using(pid)
where p.prid<>q.prid

#or, using the count() aggregate function,
#and the 'group by' and 'having' clauses
select pid, lname, fname, prid, count(*)
from Professor join Project using(pid)
group by pid
having count(*) >= 2
```

Using professors database on bioed

```
#ssh to bioed
ssh <yourbuid>@bioed.bu.edu
```

```
#log onto mysql
mysql -u <mysqlid> -p
Enter password: <yourmysqlpassword>

#choose professors
mysql> show databases;
mysql> use Professors;
mysql> show tables;

mysql> exit;
```