Announcements

- New Gradiance assignment deadline Wednesday, Oct 10
- Please read FAQs for assignments
Select-From-Where Statements

SELECT desired attributes
FROM one or more tables
WHERE condition about tuples of the tables
Exercise

- Consider database

  Product(name, price, category)

- Output
  - each product name with its price in cents
  - Also mark the products with price >10$ and category=‘beverage’ as ‘expensive’ and others as ‘reasonable’
Solution

- `SELECT name, price*100, 'expensive'
  FROM Product
  WHERE price >10 AND category = 'beverage'

- `UNION`

- `SELECT name, price*100, 'reasonable'
  FROM Product
  WHERE price <=10 OR category <> 'beverage'`
Multirelation queries

- Consider database schema
  employee( employee-name, street, city)
  works( employee-name, company-name, salary)
  company( company-name, city)
  manages( employee-name, manager-name)
Exercise 1 (3-way join)

- Find all employees who live in the same cities as the companies for which they work

```sql
SELECT employee-name
FROM employee, works
WHERE employee.employee-name = works.employee-name AND works.company-name = company.company-name AND employee.city = company.city
```
Exercise 2

- Find all employees in the database who live on the same city and streets as their manager.

- SELECT `e1.employee-name`
- FROM `employee e1,employee e2, manages`
- WHERE
  `e1.employee-name = manages.employee-name` AND
  `e2.employee-name = manages.manager-name` AND
  `e1.street = e2.street` AND `e1.city = e2.city`
Exercise 3

Find all employees who earn more than average salary of all employees of their company

```
SELECT employee-name
FROM works w1,
    (SELECT AVG(salary) AS avg-salary, company-name
    FROM works
    GROUP BY company-name) w2
WHERE w1.company-name = w2.company-name AND
w1.salary > w2.avg-salary
```
Exercise 4

- Find those companies whose employees earn a higher salary, on average than the average salary at First Bank Corporation.

```sql
SELECT company-name
FROM works
GROUP BY company-name
HAVING AVG(salary) >
(SELECT AVG(salary)
 FROM works
 GROUP BY company-name
 HAVING company-name = 'First Bank Corporation')
```
Exercise 5

Assume that the companies may be located in several cities. Find all the companies located in every city in which Small Bank corporation is located.

```
SELECT company-name
FROM(
    SELECT c1.company-name,c1.city
    FROM company c1, company c2
    WHERE c1.city=c2.city AND c2.company-name = 'Small Bank Corporation'
) R
GROUP BY company-name
HAVING COUNT(DISTINCT city) = (SELECT COUNT(DISTINCT city)
    FROM company
    GROUP BY company.company-name
    HAVING company-name = 'Small Bank Corporation')
```
Exercise 6

- Find all employees who earn more than each employee of ‘Small Bank Corporation’

Select employee-name
From employee
Where employee-name NOT IN (  
  SELECT employee-name  
  FROM works w1,works w2  
  WHERE w1.salary < w2.salary AND w2.company-name = ‘Small Bank Corporation’  
)
Exercise 6 (contd..)

- Find all employees who earn more than each employee of ‘Small Bank Corporation’

Select employee-name
From employee
Where name NOT IN (SELECT employee-name
FROM works w1, (SELECT salary
FROM works
WHERE company-name='Small Bank Corporation') w2
WHERE w1.salary < w2.salary
)
Find all employees who earn more than each employee of ‘Small Bank Corporation’

Select employee-name
From works
Where salary > ( 
  SELECT MAX(salary)
  FROM works
  GROUP BY company-name
  HAVING company-name = ‘Small Bank Corporation’
)
Questions?