DEM2UE Datenmodellierung und Datenbankdesign SS 2021 Übung 9

Abgabetermine: 20.5.2021, 12 Uhr
Abgabeform: nur elektronisch

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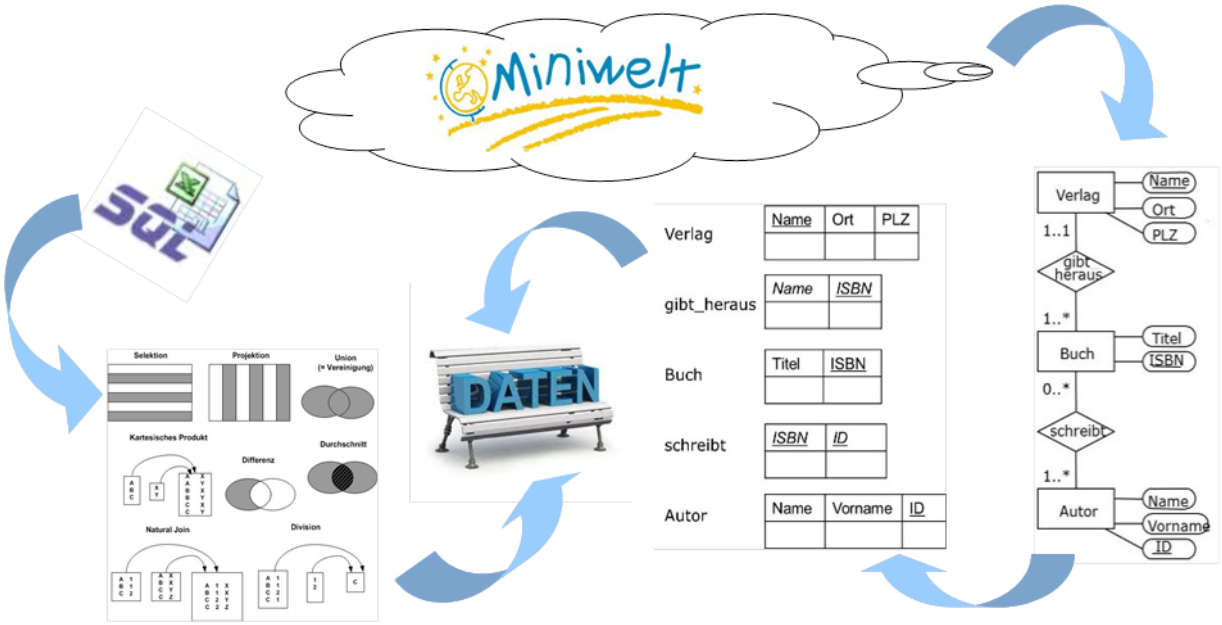
Hinweise und Richtlinien:

- Übungsausarbeitungen müssen den im Syllabus angegebenen Formatierungsrichtlinien entsprechen – Nichtbeachtung dieser Formatierungsrichtlinien führt zu Punkteabzug.
- Zusätzlich zu den allgemeinen Formatierungsrichtlinien sind für diese Übungsausarbeitung folgende zusätzlichen Richtlinien zu beachten:
  - Treffen Sie, falls notwendig, sinnvolle Annahmen und dokumentieren Sie diese nachvollziehbar in ihrer Lösung!

Ziel dieser Übung ist es, ausgewählte Bereiche der Anfragesprache SQL praktisch zu vertiefen.



AUFGABE 1)

1)

```
SELECT MAX(salary) AS "Maximum", MIN(salary) AS "Minimum", SUM(salary) as "Summe", AVG(salary)
AS "Durchschnitt"

FROM employees

WHERE job_ID = 'SA_REP';
```

	Ma...	Minimum	Summe	Durchschnitt
1	11000	7000	26600	8866,666666666666666666666666666666666667

2)

```
SELECT COUNT(*) AS "Mitarbeiteranzahl"

FROM employees

WHERE department_ID = 50;
```

	Mitarbeiteranzahl
1	5

3)

```
SELECT COUNT(*)

FROM employees

GROUP BY department_id

HAVING COUNT(*) > 3;
```

	COUNT(*)
1	5

4)

```
SELECT MAX(salary) AS "Maximum", MIN(salary) AS "Minimum", SUM(salary) as "Summe",
ROUND(AVG(salary),-3) AS "Durchschnitt"

FROM employees

GROUP BY job_ID;
```

	Maximum	Minimum	Summe	Durchschnitt
1	17000	17000	34000	17000
2	12000	12000	12000	12000
3	3500	2500	11700	3000
4	4400	4400	4400	4000
5	9000	4200	19200	6000
6	10500	10500	10500	11000
7	8300	8300	8300	8000
8	5800	5800	5800	6000
9	24000	24000	24000	24000
10	13000	13000	13000	13000
11	11000	7000	26600	9000
12	6000	6000	6000	6000

5)

```
SELECT department_id, department_name, avg(salary)
FROM employees INNER JOIN departments USING (department_id)
GROUP BY department_id, department_name
ORDER BY AVG(salary) ASC;
```

	DEPARTMENT_ID	DEPARTMENT_NAME	AVG(SALARY)
1	10	Administration	4400
2	50	Shipping	3500
3	20	Marketing	9500
4	60	IT	6400
5	110	Accounting	10150
6	80	Sales	10033,33333333333333333333333333333333
7	90	Executive	19333,33333333333333333333333333333333

6)

```
SELECT job_id, SUM(salary)
FROM employees
GROUP BY job_id
HAVING SUM(salary) > 20000;
```

	JOB_ID	SUM(SALARY)
1	AD_VP	34000
2	AD_PRES	24000
3	SA_REP	26600

7)

```
SELECT department_id, department_name, COUNT(*)
FROM employees INNER JOIN departments USING(department_id)
GROUP BY department_id, department_name
HAVING COUNT(*) > 1;
```

	DEPARTMENT_ID	DEPARTMENT_NAME	COUNT(*)
1	60	IT	3
2	80	Sales	3
3	110	Accounting	2
4	50	Shipping	5
5	90	Executive	3
6	20	Marketing	2

AUFGABE 2)

1)

```
SELECT employee_id,last_name
FROM employees
WHERE salary > (SELECT AVG(salary)
        FROM employees)
ORDER BY salary ASC;
```

	EMPLOYEE_ID	LAST_NAME
1	103	Hunold
2	149	Zlotkey
3	174	Abel
4	205	Higgins
5	201	Hartstein
6	101	Kochhar
7	102	De Haan
8	100	King

2)

a)

```
SELECT employee_id,last_name
FROM employees
WHERE salary > (SELECT AVG(salary)
        FROM employees)
AND department_id = 80
ORDER BY salary ASC;
```

	EMPLOYEE_ID	LAST_NAME
1	149	Zlotkey
2	174	Abel

b)

```
SELECT employee_id,last_name, department_id
FROM employees
WHERE salary > (SELECT AVG(salary)
        FROM employees
        WHERE salary > 5000)
ORDER BY salary ASC;
```

	EMPLOYEE_ID	LAST_NAME	DEPARTMENT_ID
1	205	Higgins	110
2	201	Hartstein	20
3	101	Kochhar	90
4	102	De Haan	90
5	100	King	90

c)

```
SELECT employee_id,last_name, department_id
FROM employees
WHERE salary > (SELECT AVG(salary)
        FROM employees
        WHERE salary > 5000)
AND department_id = 90
```

ORDER BY salary ASC;

	EMPLOYEE_ID	LAST_NAME	DEPARTMENT_ID
1	101	Kochhar	90
2	102	De Haan	90
3	100	King	90

3)

```
SELECT e.department_id,e.first_name,e.last_name
FROM employees e
WHERE 6000 <(SELECT AVG(salary)
        FROM employees
        GROUP BY department_id
        HAVING department_id = e.department_id);
```

	DEPARTMENT_ID	FIRST_NAME	LAST_NAME
1	90	Steven	King
2	90	Neena	Kochhar
3	90	Lex	De Haan
4	60	Alexander	Hunold
5	60	Bruce	Ernst
6	60	Diana	Lorentz
7	80	Eleni	Zlotkey
8	80	Ellen	Abel
9	80	Jonathon	Taylor
10	20	Michael	Hartstein
11	20	Pat	Fay
12	110	Shelley	Higgins
13	110	William	Gietz

4)

```
SELECT last_name, department_id, job_id
FROM employees e
WHERE department_id IN (SELECT department_id
            FROM departments
            WHERE location_id = 1800);
```

	LAST_NAME	DEPARTMENT_ID	JOB_ID
1	Hartstein	20	MK_MAN
2	Fay	20	MK_REP

5)

```
SELECT last_name, salary
FROM employees
WHERE manager_id IN (SELECT employee_id
                     FROM employees
                     WHERE last_name= 'Hunold' );
```

	LAST_NAME	SALARY
1	Ernst	6000
2	Lorentz	4200

6)

```
SELECT ALL last_name, job_id, salary
FROM employees
WHERE salary > (SELECT MAX(salary)
                FROM employees
                WHERE job_id = 'SA_MAN')
ORDER BY salary DESC;
```

	LAST_NAME	JOB_ID	SALARY
1	King	AD_PRES	24000
2	Kochhar	AD_VP	17000
3	De Haan	AD_VP	17000
4	Hartstein	MK_MAN	13000
5	Higgins	AC_MGR	12000
6	Abel	SA_REP	11000

7)

```
SELECT e1.last_name
FROM employees e1
WHERE NOT EXISTS (SELECT *
                  FROM employees e2
                  WHERE e2.manager_id = e1.manager_id);
```

	LAST_NAME
1	King

8)

```
SELECT e1.last_name
FROM employees e1
WHERE e1.employee_id NOT IN (SELECT manager_id
                             FROM employees);
```

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9)

```
SELECT job_id , job_title, AVG(salary)
FROM employees JOIN jobs USING ( job_id )
GROUP BY job_id, job_title
HAVING AVG(salary) = (SELECT MAX(AVG(salary))
                      FROM employees
                      GROUP BY job_id);
```

	JOB_ID	JOB_TITLE	AVG(SALARY)
1	AD_PRES	President	24000

10)

```
SELECT last_name, job_id, salary
FROM employees
WHERE job_id = (SELECT job_id
                FROM employees
                WHERE employee_id = 143);
```

	LAST_NAME	JOB_ID	SALARY
1	Rajs	ST_CLERK	3500
2	Davies	ST_CLERK	3100
3	Matos	ST_CLERK	2600
4	Vargas	ST_CLERK	2500

11)

```
SELECT e.employee_id,e.last_name
FROM employees e
WHERE 2 <= (SELECT COUNT(*)
```

FROM job_history

GROUP BY e.employee_id);

	EMPLOYEE_ID	LAST_NAME
1	100	King
2	101	Kochhar
3	102	De Haan
4	103	Hunold
5	104	Ernst
6	107	Lorentz
7	124	Mourgos
8	141	Rajs
9	142	Davies
10	143	Matos
11	144	Vargas
12	149	Zlotkey
13	174	Abel
14	176	Taylor
15	178	Grant
16	200	Whalen
17	201	Hartstein
18	202	Fay
19	205	Higgins
20	206	Gietz

12)

SELECT MIN(salary)

FROM employees;

SELECT last_name, salary, department_id

FROM employees

WHERE salary = (SELECT MIN(salary)

FROM employees);

	LAST_NAME	SALARY	DEPARTMENT_ID
1	Vargas	2500	50