LB-DB 3 - 14.3.2015

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2015/ LB-Datenbanksysteme

Gliederung

Agregatfunktionen
MAX(),MIN(),SUM(),AVG()

```
SELECT aggfunction(att1) FROM tab1 [WHERE ...]

SELECT MAX(salary) FROM employees

SELECT AVG(salary) FROM employees
WHERE  department_id = 100
```


GROUP BY
Gruppieren gleicher Datensätze

```
SELECT department_id,AVG(salary)
FROM employees
GROUP BY department_id
```

DEPARTMENT_ID	AVG(SALARY)
100	8600
30	4150
...	...

Sub-SELECT

```
SELECT e1.department_id,e1.first_name,e1.salary
  ,(SELECT avg(e2.salary) FROM employees e2
    WHERE e1.department_id = e2.department_id
    GROUP BY e2.department_id
    ) AS AVG_SAL
FROM employees e1
```

DEPARTMENT_ID	FIRST_NAME	SALARY	AVG_SAL
90	Steven	24000	19333.33...
90	Neena	17000	19333.33...
90	Lex	17000	19333.33...
60	Alexander		
...	...	...	...

PL/SQL

```
DECLARE
  m_salary NUMBER(6); nr_days  NUMBER(2);
  per_day  NUMBER(6,2);
BEGIN
  m_salary := 2290;
  nr_days  := 21;
  per_day := m_salary/nr_days;
  DBMS_OUTPUT.PUT_LINE
       (' per day=' ||TO_CHAR(per_day));
EXCEPTION
WHEN ZERO_DIVIDE THEN
     per_day := 0;
END;
```

stored procedure

```
CREATE PROCEDURE today_is AS
BEGIN
  DBMS_OUTPUT.PUT_LINE
  (' Today is ' || TO_CHAR(SYSDATE, ' DL ') );
END today_is;
--Aufruf durch
BEGIN
  today_is();
END;
```


stored function

```
CREATE FUNCTION worked_for (empid NUMBER)
 RETURN VARCHAR2 IS
 years INT;
BEGIN
 SELECT round((sysdate-hire_date )/365)
 INTO years FROM employees
 WHERE employee_id = empid;
 RETURN (' worked for approx. '
 || years ||' years');
END worked_for;
```

Anwendung

```
SELECT hire_date,worked_for(employee_id)
FROM employees
ORDER BY hire_date
```


Trigger

```
CREATE OR REPLACE TRIGGER audit_sal
AFTER UPDATE OF salary
ON employees FOR EACH ROW
BEGIN
INSERT INTO emp_audit VALUES
( :OLD.employee_id, SYSDATE,
  :NEW.salary, :OLD.salary );
END;
```

sequence

```
CREATE SEQUENCE new_employees_seq
START WITH 1000 INCREMENT BY 1;

INSERT INTO employees
(employee_id,first_name,
last_name,email,hire_date,job_id)
VALUES
(new_employees_seq.nextval,
' a',' b',' c',' 14-mar-2015',' SA_MAN')
```


CREATE INDEX

```
CREATE [UNIQUE] INDEX <index_name>
ON <table_name>
(<field_name>{<field_name>})
```

Beispiel

```
CREATE UNIQUE INDEX emp_mgr_id_ix
ON employees
(employee_id)
```


Übung 3 LB-DB 14.3.2015

- Schreiben Sie eine Funktion dif_to_avg(employee_id), die die Abweichung des Gehalts des Mitarbeiters vom Durchschnitt ermittelt.
- Formulieren Sie 3 Abfrage auf Basis des HR Schemas. In diesen Abfragen müssen die Konstrukte GROUP BY, HAVING, MAX zumindest einmal vorkommen. Beschreiben Sie die Abfrage und zeigen Sie das Ergebnis.