

ΠΑΝΕΠΙΣΤΗΜΙΟ ΔΥΤΙΚΗΣ ΑΤΤΙΚΗΣ

Τμήμα Μηχανικών Πληροφορικής και Υπολογιστών



Μάθημα : Βάσεις Δεδομένων 1

Φοιτητής : Αριστοτελής Σιφάκης ice20390213

Καθηγητής Εργαστηρίου : Παυλίδης Θεοδόσιος

ΑΣΚΗΣΗ 2

New Personnel Database

1. Δημιουργία βάσης new_personnel

```
mysql> DROP DATABASE IF EXISTS new_personnel_20390213;
```

```
Query OK, 4 rows affected (0.06 sec)
```

```
-----  
mysql> CREATE DATABASE new_personnel_20390213;
```

```
Query OK, 1 row affected (0.01 sec)
```

```
-----  
mysql> USE new_personnel_20390213;
```

```
Database changed
```

```
-----  
mysql> CREATE TABLE DEPT(  
    -> DEPTNO INT(2) NOT NULL,  
    -> DNAME VARCHAR(14),  
    -> LOC VARCHAR(14),  
    -> PRIMARY KEY(DEPTNO)  
    -> );
```

```
Query OK, 0 rows affected, 1 warning (0.05 sec)
```

```
-----  
mysql> CREATE TABLE EMP(  
    -> EMPNO INT(4) NOT NULL, ENAME VARCHAR(10), JOB VARCHAR(25),  
    -> HIREDATE DATE, MGR INT(4), SAL FLOAT(7,2), COMM FLOAT(7,2),  
    -> DEPTNO INT(2),  
    -> PRIMARY KEY(EMPNO),  
    -> FOREIGN KEY(DEPTNO) REFERENCES DEPT(DEPTNO)  
    -> );
```

Query OK, 0 rows affected, 5 warnings (0.06 sec)

```
-----  
mysql> CREATE TABLE PROJ(PROJNO INT(3) NOT NULL,  
-> PNAME VARCHAR(15),  
-> BUDGET FLOAT(12,2),  
-> PRIMARY KEY(PROJNO));
```

Query OK, 0 rows affected, 2 warnings (0.03 sec)

```
-----  
mysql>CREATE TABLE ASSIGN(EMPNO INT(4) NOT NULL,  
PROJNO INT(3) NOT NULL, PTIME INT(3),  
PRIMARY KEY(EMPNO, PROJNO),  
FOREIGN KEY(EMPNO) REFERENCES EMP(EMPNO),  
FOREIGN KEY(PROJNO) REFERENCES PROJ(PROJNO));
```

Query OK, 0 rows affected, 3 warnings (0.06 sec)

```
-----  
mysql> DESCRIBE DEPT;
```

Field	Type	Null	Key	Default	Extra
DEPTNO	int	NO	PRI	NULL	
DNAME	varchar(14)	YES		NULL	
LOC	varchar(14)	YES		NULL	

3 rows in set (0.03 sec)

```
-----
```

```
mysql> DESCRIBE EMP;
```

Field	Type	Null	Key	Default	Extra
EMPNO	int	NO	PRI	NULL	
ENAME	varchar(10)	YES		NULL	
JOB	varchar(25)	YES		NULL	
HIREDATE	date	YES		NULL	
MGR	int	YES		NULL	
SAL	float(7,2)	YES		NULL	
COMM	float(7,2)	YES		NULL	
DEPTNO	int	YES	MUL	NULL	

```
8 rows in set (0.00 sec)
```

```
mysql> DESCRIBE PROJ;
```

Field	Type	Null	Key	Default	Extra
PROJNO	int	NO	PRI	NULL	
PNAME	varchar(15)	YES		NULL	
BUDGET	float(12,2)	YES		NULL	

```
3 rows in set (0.00 sec)
```

```
mysql> DESCRIBE ASSIGN;
```

```
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| EMPNO | int  | NO   | PRI | NULL    |       |
| PROJNO | int  | NO   | PRI | NULL    |       |
| PTIME  | int  | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
```

```
3 rows in set (0.00 sec)
```

```
-----
mysql> INSERT INTO DEPT VALUES(10, 'ACCOUNTING', 'NEW YORK');
```

```
Query OK, 1 row affected (0.01 sec)
```

```
-----
mysql> INSERT INTO DEPT VALUES(20, 'RESEARCH', 'DALLAS');
```

```
Query OK, 1 row affected (0.00 sec)
```

```
-----
mysql> INSERT INTO DEPT VALUES(30, 'SALES', 'CHICAGO');
```

```
Query OK, 1 row affected (0.00 sec)
```

```
-----
mysql> INSERT INTO DEPT VALUES(40, 'OPERATIONS', 'BOSTON');
```

```
Query OK, 1 row affected (0.01 sec)
```

```
-----
mysql> INSERT INTO EMP VALUES(10, 'CODD', 'ANALYST', '1989-01-01', 15,
3000, NULL, 10);
```

```
Query OK, 1 row affected (0.01 sec)
```

```
-----
mysql> INSERT INTO EMP VALUES(15, 'ELMASRI', 'ANALYST', '1995-05-09', 15,
1200, 150, 10);
```

```
Query OK, 1 row affected (0.02 sec)
```

```
mysql> INSERT INTO EMP VALUES(20, 'NAVATHE', 'SALESMAN', '1977-07-07', 20,
2000, NULL, 20);
```

```
Query OK, 1 row affected (0.00 sec)
```

```
-----
mysql> INSERT INTO EMP VALUES(30, 'DATE', 'PROGRAMMER', '2004-05-04', 15,
1800, 200, 10);
```

```
Query OK, 1 row affected (0.02 sec)
```

```
-----
mysql> INSERT INTO PROJ VALUES(100, 'PAYROLL', 100000);
```

```
Query OK, 1 row affected (0.01 sec)
```

```
-----
mysql> INSERT INTO PROJ VALUES(200, 'PERSONNEL', 200000);
```

```
Query OK, 1 row affected (0.00 sec)
```

```
-----
mysql> INSERT INTO PROJ VALUES(300, 'SALES', 150000);
```

```
Query OK, 1 row affected (0.01 sec)
```

```
-----
mysql> INSERT INTO ASSIGN VALUES(10, 100, 40);
```

```
Query OK, 1 row affected (0.01 sec)
```

```
-----
mysql> INSERT INTO ASSIGN VALUES(10, 200, 60);
```

```
Query OK, 1 row affected (0.01 sec)
```

```
-----
mysql> INSERT INTO ASSIGN VALUES(15, 100, 100);
```

```
Query OK, 1 row affected (0.00 sec)
```

```
-----
mysql> INSERT INTO ASSIGN VALUES(20, 200, 100);
```

```
Query OK, 1 row affected (0.00 sec)
```

```
-----
mysql> INSERT INTO ASSIGN VALUES(30, 100, 100);
```

```
Query OK, 1 row affected (0.01 sec)
```

```
-----
```

```
mysql> SELECT * FROM DEPT;
```

```
+-----+-----+-----+
| DEPTNO | DNAME      | LOC      |
+-----+-----+-----+
|      10 | ACCOUNTING | NEW YORK |
|      20 | RESEARCH   | DALLAS   |
|      30 | SALES      | CHICAGO  |
|      40 | OPERATIONS | BOSTON   |
+-----+-----+-----+
```

```
4 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM EMP;
```

```
+-----+-----+-----+-----+-----+-----+-----+
-----+
| EMPNO | ENAME      | JOB          | HIREDATE   | MGR  | SAL      | COMM      |
DEPTNO |
+-----+-----+-----+-----+-----+-----+-----+
-----+
|      10 | Codd      | ANALYST      | 1989-01-01 | 15   | 3000.00  | NULL      |
10 |
|      15 | Elmasri   | ANALYST      | 1995-05-09 | 15   | 1200.00  | 150.00    |
10 |
|      20 | Navathe   | SALESMAN     | 1977-07-07 | 20   | 2000.00  | NULL      |
20 |
|      30 | Date      | PROGRAMMER   | 2004-05-04 | 15   | 1800.00  | 200.00    |
10 |
+-----+-----+-----+-----+-----+-----+-----+
-----+
```

```
4 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM PROJ;
```

```
+-----+-----+-----+
| PROJNO | PNAME      | BUDGET    |
+-----+-----+-----+
|    100 | PAYROLL    | 100000.00 |
|    200 | PERSONNEL  | 200000.00 |
|    300 | SALES      | 150000.00 |
+-----+-----+-----+
```

```
3 rows in set (0.00 sec)
```

```
-----
mysql> SELECT * FROM ASSIGN;
```

```
+-----+-----+-----+
| EMPNO | PROJNO | PTIME |
+-----+-----+-----+
|    10 |    100 |    40 |
|    10 |    200 |    60 |
|    15 |    100 |   100 |
|    20 |    200 |   100 |
|    30 |    100 |   100 |
+-----+-----+-----+
```

```
5 rows in set (0.00 sec)
```

```
-----
```


2. Ασκήσεις εργαστηρίου

Δηλώσεις select

```
mysql> SELECT * FROM DEPT;
```

```
+-----+-----+-----+
| DEPTNO | DNAME      | LOC      |
+-----+-----+-----+
|      10 | ACCOUNTING | NEW YORK |
|      20 | RESEARCH   | DALLAS   |
|      30 | SALES      | CHICAGO  |
|      40 | OPERATIONS | BOSTON   |
+-----+-----+-----+
```

```
4 rows in set (0.00 sec)
```

```
-----
mysql> mysql> SELECT ENAME, SAL/(25*8) "ΩΡΙΑΙΑ ΑΜΟΙΒΗ"
```

```
-> , SAL+IFNULL(COMM,0)
```

```
-> "ΣΥΝΟΛΟ ΑΠΟΔΟΧΩΝ" FROM EMP;
```

```
+-----+-----+-----+
| ENAME   | ΩΡΙΑΙΑ ΑΜΟΙΒΗ          | ΣΥΝΟΛΟ ΑΠΟΔΟΧΩΝ          |
+-----+-----+-----+
| CODD    | 15.000000 | 3000.00 |
| ELMASRI | 6.000000  | 1350.00 |
| NAVATHE | 10.000000 | 2000.00 |
| DATE    | 9.000000  | 2000.00 |
+-----+-----+-----+
```

```
4 rows in set (0.01 sec)
```

```
mysql> SELECT CONCAT(EMPNO, ' ', ENAME) "ΚΩΔΙΚΟΣ & ΟΝΟΜΑ" FROM EMP;
```

```
+-----+
| ΚΩΔΙΚΟΣ & ΟΝΟΜΑ          |
+-----+
| 10 Codd                   |
| 15 Elmasri                |
| 20 Navathe                |
| 30 Date                   |
+-----+
```

```
4 rows in set (0.01 sec)
```

Τελεστής DISTINCT

```
mysql> SELECT DISTINCT JOB FROM EMP;
```

```
+-----+
| JOB          |
+-----+
| ANALYST      |
| SALESMAN     |
| PROGRAMMER   |
+-----+
```

```
3 rows in set (0.00 sec)
```

```
mysql> SELECT DISTINCT JOB, DEPTNO FROM EMP;
```

```
+-----+-----+
| JOB          | DEPTNO |
+-----+-----+
| ANALYST      | 10     |
| SALESMAN     | 20     |
| PROGRAMMER   | 10     |
+-----+-----+
```

```
3 rows in set (0.00 sec)
```

Όρος εισαγωγής συνθηκών WHERE

```
mysql> SELECT DNAME "ΟΝΟΜΑ ΤΜΗΜΑΤΟΣ", LOC "ΕΔΡΑ"  
-> FROM DEPT  
-> WHERE LOC = 'NEW YORK';
```

```
+-----+-----+  
| ΟΝΟΜΑ ΤΜΗΜΑΤΟΣ | ΕΔΡΑ |  
+-----+-----+  
| ACCOUNTING      | NEW YORK |  
+-----+-----+  
1 row in set (0.01 sec) 1 row in set (0.00 sec)
```

```
mysql> SELECT *  
-> FROM EMP  
-> WHERE DEPTNO=10;
```

```
+-----+-----+-----+-----+-----+-----+-----+  
| EMPNO | ENAME | JOB      | HIREDATE | MGR | SAL      | COMM | DEPTNO |  
+-----+-----+-----+-----+-----+-----+-----+  
| 10 | CODD | ANALYST | 1989-01-01 | 15 | 3000.00 | NULL | 10 |  
+-----+-----+-----+-----+-----+-----+-----+  
| 15 | ELMASRI | ANALYST | 1995-05-02 | 15 | 1200.00 | 150.00 | 10 |  
+-----+-----+-----+-----+-----+-----+-----+  
| 30 | DATE | PROGRAMMER | 2004-05-04 | 15 | 1800.00 | 200.00 | 10 |
```

```
mysql> SELECT ENAME, EMPNO, DEPTNO  
-> FROM EMP  
-> WHERE JOB = 'ANALYST';
```

```
+-----+-----+-----+  
| ENAME | EMPNO | DEPTNO |  
+-----+-----+-----+  
| CODD | 10 | 10 |  
| ELMASRI | 15 | 10 |  
+-----+-----+-----+  
2 rows in set (0.00 sec)
```

```
mysql> SELECT DNAME,DEPTNO
-> FROM DEPT
-> WHERE DEPTNO >=20;
```

DNAME	DEPTNO
RESEARCH	20
SALES	30
OPERATIONS	40

3 rows in set (0.01 sec)

```
mysql> SELECT ENAME,SAL,COMM
-> FROM EMP
-> WHERE COMM>SAL/10;
```

ENAME	SAL	COMM
ELMASRI	1200.00	150.00
DATE	1800.00	200.00

2 rows in set (0.00 sec)

Ενδεικτική αναφορά έτοιμων συναρτήσεων

```
mysql> SELECT current_date();
```

current_date()
2022-06-05

1 row in set (0.01 sec)

```
mysql> SELECT now();
```

now()
2022-06-05 08:10:01

1 row in set (0.01 sec)

mysql> SELECT DATEDIFF(current_date(), HIREDATE), ENAME FROM EMP;

DATEDIFF(current_date(), HIREDATE)	ENAME
12208	CODD
9889	ELMASRI
16404	NAVATHE
6606	DATE

4 rows in set (0.01 sec)

mysql> SELECT SAL+COMM "ΧΩΡΙΣ ΔΙΑΣΦΑΛΙΣΗ",
-> SAL+ IFNULL(COMM,0) "ΜΕ ΔΙΑΣΦΑΛΙΣΗ"
-> FROM EMP;

ΧΩΡΙΣ ΔΙΑΣΦΑΛΙΣΗ	ΜΕ ΔΙΑΣΦΑΛΙΣΗ
NULL	3000.00
1350.00	1350.00
NULL	2000.00
2000.00	2000.00

4 rows in set (0.00 sec)

Λογικοί τελεστές

mysql> SELECT ENAME "ΟΝΟΜΑ", SAL "ΜΙΣΘΟΣ", COMM "ΠΡΟΜΗΘΕΙΑ"
-> FROM EMP
-> WHERE JOB = 'SALESMAN' AND ((SAL > 1300) OR (COMM > SAL/10));

ΟΝΟΜΑ	ΜΙΣΘΟΣ	ΠΡΟΜΗΘΕΙΑ
NAVATHE	2000.00	NULL

1 row in set (0.01 sec)

```
mysql> SELECT ENAME "ΟΝΟΜΑ", SAL "ΜΙΣΘΟΣ", COMM "ΠΡΟΜΗΘΕΙΑ"
-> FROM EMP
-> WHERE JOB = 'SALESMAN' AND SAL BETWEEN 1800 AND 2000;
```

ΟΝΟΜΑ	ΜΙΣΘΟΣ	ΠΡΟΜΗΘΕΙΑ
NAVATHE	2000.00	NULL

1 row in set (0.00 sec)

Συνθήκες σε αλφαριθμητικά πεδία

```
mysql> SELECT ENAME, JOB FROM EMP
-> WHERE (ENAME >= 'C' AND ENAME < 'F' )
-> AND JOB = 'ANALYST';
```

ENAME	JOB
CODD	ANALYST
ELMASRI	ANALYST

2 rows in set (0.00 sec)

```
mysql> SELECT ENAME, JOB FROM EMP
-> WHERE (substr(ENAME,1,1) IN ('C', 'D', 'E'))
-> AND JOB = 'ANALYST';
```

ENAME	JOB
CODD	ANALYST
ELMASRI	ANALYST

2 rows in set (0.01 sec)

Συνθήκες σε αλφαριθμητικά πεδία

```
mysql> SELECT ENAME, JOB FROM EMP  
      -> WHERE ENAME LIKE 'CODD';
```

```
  +-----+-----+  
  | ENAME | JOB      |  
  +-----+-----+  
  | CODD  | ANALYST  |  
  +-----+-----+  
1 row in set (0.01 sec)
```

```
mysql> SELECT ENAME, JOB FROM EMP  
      -> WHERE ENAME LIKE 'C%';
```

```
  +-----+-----+  
  | ENAME | JOB      |  
  +-----+-----+  
  | CODD  | ANALYST  |  
  +-----+-----+  
1 row in set (0.00 sec)
```

```
mysql> SELECT ENAME, JOB FROM EMP  
      -> WHERE ENAME LIKE '%TE';
```

```
  +-----+-----+  
  | ENAME | JOB      |  
  +-----+-----+  
  | DATE  | PROGRAMMER |  
  +-----+-----+  
1 row in set (0.00 sec)
```

```
mysql> SELECT ENAME, JOB FROM EMP  
      -> WHERE ENAME LIKE '%D%';
```

```
  +-----+-----+  
  | ENAME | JOB      |  
  +-----+-----+  
  | CODD  | ANALYST  |  
  | DATE  | PROGRAMMER |  
  +-----+-----+  
2 rows in set (0.00 sec)
```

```
mysql> SELECT DISTINCT JOB FROM EMP
      -> WHERE JOB LIKE 'A%';
```

```
+-----+
| JOB    |
+-----+
| ANALYST |
+-----+
```

1 row in set (0.00 sec)

Συνθήκες σε αλφαριθμητικά πεδία

```
mysql> SELECT ENAME, JOB FROM EMP
      -> WHERE ENAME LIKE '_A%S';
```

Empty set (0.00 sec)

```
mysql> SELECT ENAME, JOB FROM EMP
      -> WHERE HIREDATE LIKE '____-05-__';
```

```
+-----+-----+
| ENAME  | JOB          |
+-----+-----+
| ELMASRI | ANALYST      |
| DATE   | PROGRAMMER   |
+-----+-----+
```

2 rows in set (0.00 sec)

BACKUP

```
mysqldump -u aristotelis -p personnel_20390213 > personnel_dump.sql;
```

```
restore database personnel_20390213 from disk =
```

```
PATH\personnel_dump.sql;
```


3. Ερωτήματα

1.

```
mysql> SELECT ENAME, SAL "ΜΙΣΘΟΣ", COMM "ΠΡΟΜΗΘΕΙΑ",  
CONCAT(FORMAT(IFNULL(COMM/SAL * 100, 0), 2), " %") "ΠΟΣΟΣΤΟ" FROM EMP;
```

ENAME	ΜΙΣΘΟΣ	ΠΡΟΜΗΘΕΙΑ	ΠΟΣΟΣΤΟ
CODD	3000.00	NULL	0.00 %
ELMASRI	1200.00	150.00	12.50 %
NAVATHE	2000.00	NULL	0.00 %
DATE	1800.00	200.00	11.11 %

4 rows in set (0.00 sec)

2.

```
mysql> SELECT ENAME "ΕΠΩΝΥΜΟ" ,ifnull(comm,0)+sal "ΜΗΝΙΑΙΕΙΣ ΑΠΟΔΟΧΕΣ"  
,concat(timestampdiff(year,hiredate,'2022-06-05')," έτη") as "ΠΡΟΥΠΗΡΕΣΙΑ"  
-> FROM EMP  
-> where timestampdiff(year,hiredate,'2022-06-05')>20;
```

ΕΠΩΝΥΜΟ	ΜΗΝΙΑΙΕΙΣ ΑΠΟΔΟΧΕΣ	ΠΡΟΥΠΗΡΕΣΙΑ
CODD	3000.00	33 έτη
ELMASRI	1350.00	27 έτη
NAVATHE	2000.00	44 έτη

3 rows in set (0.00 sec)

3.

```
mysql> SELECT ENAME "ΕΠΩΝΥΜΟ",JOB "ΘΕΣΗ",HIREDATE "ΠΡΟΣΛΗΨΗ" FROM EMP  
WHERE DAY(HIREDATE)<6 AND (JOB='ANALYST' OR JOB='SALESMAN');
```

ΕΠΩΝΥΜΟ	ΘΕΣΗ	ΠΡΟΣΛΗΨΗ
CODD	ANALYST	1989-01-01

1 row in set (0.04 sec)

4.

```
mysql> SELECT ENAME FROM EMP WHERE JOB IN (SELECT JOB FROM EMP WHERE DEPTNO=10);
```

ENAME
CODD
ELMASRI
DATE

3 rows in set (0.02 sec)

5.

```
mysql> SELECT ENAME "ΕΠΩΝΥΜΟ" ,CONCAT( MAX(IFNULL(COMM,0)+SAL), " €")  
"ΣΥΝΟΛΙΚΕΣ ΜΗΝΙΑΙΕΣ ΑΠΟΔΟΧΕΣ" FROM EMP,DEPT WHERE EMP.DEPTNO=DEPT.DEPTNO  
GROUP BY DNAME;
```

ΕΠΩΝΥΜΟ	ΣΥΝΟΛΙΚΕΣ ΜΗΝΙΑΙΕΣ ΑΠΟΔΟΧΕΣ
CODD	3000.00 €
NAVATHE	2000.00 €

2 rows in set (0.00 sec)

6.

```
mysql> SELECT ENAME "ΕΠΩΝΥΜΟ",SAL "ΜΙΣΘΟΣ" FROM EMP,DEPT WHERE  
DEPT.DEPTNO=EMP.DEPTNO AND DNAME='ACCOUNTING' HAVING SAL< (SELECT MAX(SAL)  
FROM EMP,DEPT WHERE DEPT.DEPTNO=EMP.DEPTNO AND DNAME='RESEARCH');
```

ΕΠΩΝΥΜΟ	ΜΙΣΘΟΣ
ELMASRI	1200.00
DATE	1800.00

2 rows in set (0.00 sec)