1η ΕΡΓΑΣΙΑ ΒΑΣΕΙΣ ΔΕΔΟΜΕΝΩΝ ΙΙ

Τμήμα Μηχανικών Πληροφορικής και Υπολογιστών

Εργαστήριο 2020-2021, Τμήμα Δευτέρας

Κος Ε. Κοσμάτος

ΟΝΟΜΑΤΕΠΩΝΥΜΟ : ΠΑΟΛΑ ΒΕΛΑΣΚΟ

ΑΜ: 161020

ΟΝΟΜΑΤΕΠΩΝΥΜΟ : ΜΑΡΓΑΡΙΤΑ ΚΟΥΜΠΟΥΡΗ

ΑΜ: 18390109

Πίνακας περιεχομένων

ΣΚΟΠΟΣ ΤΗΣ ΕΡΓΑΣΙΑΣ

Η εκπόνηση της εργαστηριακής άσκησης έχει ως σκοπό την επανάληψη των βασικών γνώσεων μας στη δημιουργία μιας Βάσης Δεδομένων. Συγκεκριμένα, η 1η εργασία εστιάζεται στο σχεδιασμό μιας βάσης δεδομένων, στη μοντελοποίηση Μοντέλο Οντοτήτων – Συσχετίσεων της, καθώς και η υλοποίηση σε κώδικα/ εντολές σε τρίτη κανονική.

ΕΙΣΑΓΩΓΗ – Εκτέλεση εργασίας

Βήμα 1

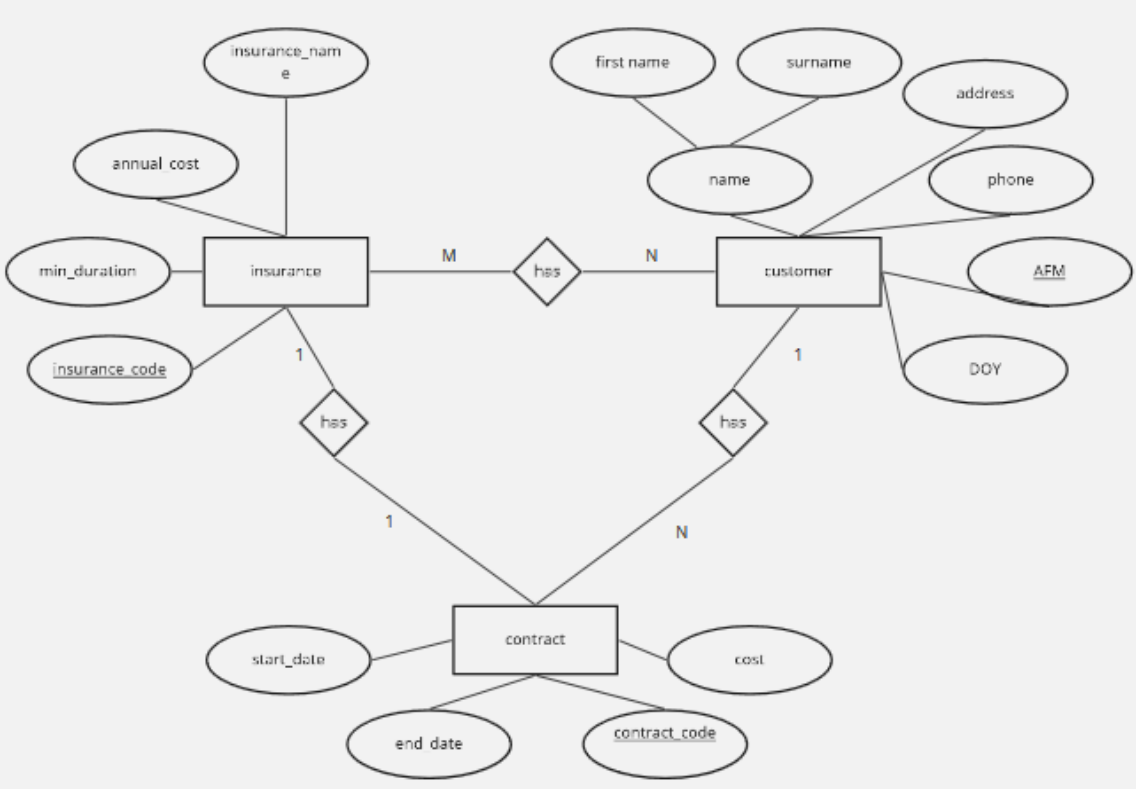
Δημιουργήστε μια ΒΔ και τους κατάλληλους πίνακες σύμφωνα με τις απαιτήσεις που περιγράφονται.

Για τη δημιουργία μιας βάσης δεδομένων, είναι απαραίτητη η πλήρη κατανόηση των απαιτήσεων και περιορισμών της.

*Ενδεικτικός γενικός πίνακας – **Overview** of General Insurance*

GENERAL INSURANCE DATA								
AFM	**name**	**surname**	**phone**	**address**	**DOY**	**insurance_name**	**contract_code**	**cost**
1542147114	Paola	Velasco	2114522704	Athens	A	Car	520	1200
1445547451	Margarita	Koumpouri	2115475668	Athens	B	Health	521	2000
1884560847	Jason	Steven	2108741262	Kavala	E	Health	516	2500
1884560847	Jason	Steven	2108741262	Kavala	E	Home	518	1800

Αρχικά δημιουργήσαμε το Μοντέλο Οντοτήτων Συσχετίσεων.



Στη συνέχεια δημιουργούμε ενδεικτικά τους πίνακες που θα περιέχει η βάση.

Η βάση θα περιέχει 3 βασικούς τύπους οντοτήτων:

- Customer
- Insurance
- Contract

CUSTOMER					
AFM	**NAME**	**SURNAME**	**PHONE**	**ADDRESS**	**DOY**
1023452569	Charlie	Hunnam	2103625956	California	A
1445525690	Henry	Cavill	2104135956	Chicago	B
1785592569	Orlando	Bloom	2103681956	Athens	C
1785527877	James	Smith	2103765556	Thessaloniki	D
1884560847	Jason	Steven	2108741262	Kavala	E
1542147114	Paola	Velasco	2114522704	Athens	A
1445547451	Margarita	Koumpouri	2115475668	Athens	B
1445477457	Ramez	Elmasri	2108544615	Arlington	C
1024782463	Shamkant	Navathe	2117941554	Michigan	D
1841204754	Maria	Papadopoulou	2109854523	Patras	A
1784585254	Kostas	Pappas	2135874572	Lamia	B
1745242426	Andreas	Dimitrios	2108564524	Volos	I
1415541574	Tatiana	Raptis	2105448542	Thessaloniki	Z
1124834578	Periklis	Megalos	2115858645	Volos	A
1486542484	Liliana	Beckham	2138524656	Chicago	C
1946923008	Henderson	Gibb	2126799446	California	C
1256452238	Alexandra	Denman	2100585464	Patras	A
1592227645	Thea	Wade	2118548646	Athens	B

INSURANCE			
INSURANCE_CODE	**INSURANCE_NAME**	**ANNUAL_COST**	**MIN_DURATION**
10	Health	500	1
20	Critical Illness	600	1
30	Home	300	3
40	Car	200	2

CONTRACT					
CONTRACT_CODE	**COST**	**START_DATE**	**END_DATE**	**AFM**	**INSURANCE_CODE**
512	11000	1/1/2000	1/1/2022	1023452569	10
513	1800	1/1/2006	1/1/2009	1445525690	20
514	900	1/1/2004	1/1/2007	**1785592569**	30
515	1000	1/1/2004	1/1/2006	**1785592569**	10
516	2500	1/1/2005	1/1/2010	**1884560847**	10
517	3000	5/3/2005	5/3/2010	**1884560847**	20
518	1800	6/3/2008	6/3/2014	**1884560847**	30
519	2000	1/9/2010	1/9/2020	**1884560847**	40
520	1200	4/6/2011	4/6/2017	1542147114	40
521	2000	9/11/2011	9/11/2015	1445547451	10
522	900	5/7/2011	5/7/2014	1445477457	30
523	1500	8/3/2012	8/3/2015	**1024782463**	10
524	1800	9/8/2012	9/8/2015	**1024782463**	20
525	900	5/9/2013	5/9/2019	1841204754	30
526	900	5/9/2013	5/9/2019	1784585254	30
527	900	10/11/2015	10/11/2018	1745242426	30
528	1200	10/12/2016	10/12/2022	1415541574	40
529	400	30/4/2017	30/4/2019	1124834578	40
530	1200	2/6/2017	2/6/2023	1486542484	40
531	1500	3/6/2017	3/6/2020	1946923008	10
532	4800	4/6/2017	4/6/2025	1256452238	20
533	4000	5/9/2018	5/9/2026	**1592227645**	10
534	4800	5/9/2018	5/9/2026	**1592227645**	20
535	1800	5/9/2018	5/9/2024	**1592227645**	30
536	1600	5/9/2018	5/9/2026	**1592227645**	40

Επιπλέον, υλοποιείται και ο πίνακας coverage ο οποίος περιέχει ποιες παροχές περιέχονται σε κάθε ασφαλιστικό προϊόν.

- Coverage

COVERAGE	
COVERAGE_CODE	**COVERAGE_NAME**
1	medicine
2	maternity
3	funeral
4	accident
5	pharmacy
6	repair
7	transplant
8	vacation cover for terminal people
9	property

Τέλος, δημιουργήσαμε και άλλους 2 πίνακες

- Insurance_coverages (συνδέει πίνακες insurance – coverage)

- Insurance_customer (συνδέει πίνακες insurance – customer)

INSURANCE COVERAGES	
INSURANCE_CODE	**COVERAGE_CODE**
10	1
10	2
10	4
20	1
20	3
30	6
30	9
40	4
40	6

INSURANCE_CUSTOMER	
INSURANCE_CODE	**AFM**
10	1023452569
20	1445525690
40	1486542484
40	1592227645
30	1784585254
10	1785592569
10	1884560847
20	1884560847
30	1884560847

Καθώς όπως παρατηρούμε και από το Μοντέλο Οντοτήτων Συσχετίσεων οι σχέσεις μεταξύ των πινάκων είναι N:M

ΥΛΟΠΟΙΗΣΗ – Εντολές

1. Πίνακες και περιορισμοί

Βήμα 2

Δημιουργήστε μια ΒΔ και τους κατάλληλους πίνακες σύμφωνα με τις απαιτήσεις που περιγράφονται.

```
DROP DATABASE IF EXISTS General_Insurance;
CREATE DATABASE General_Insurance;
USE General_Insurance;

#table customer
CREATE TABLE customer
(
    AFM int(30) not null,
    name varchar(30),
    surname varchar(30),
    address varchar(30),
    DOY varchar(4),
    phone int(10) not null,
    PRIMARY KEY(AFM)
);

#table coverage ( type of service coverage )
CREATE TABLE coverage
(
    coverage_code int not null auto_increment,
    coverage_name varchar(70),
    PRIMARY KEY (coverage_code)
);

#table insurance
CREATE TABLE insurance
(
    insurance_code int not null,
    insurance_name varchar(60),
    annual_cost int(5),
    min_duration int not null,
    PRIMARY KEY(insurance_code)
);

#table insurance_coverages
CREATE TABLE insurance_coverages
(
    insurance_code int not null,
    coverage_code int not null auto_increment,
    PRIMARY KEY (insurance_code, coverage_code),
    FOREIGN KEY (insurance_code) REFERENCES insurance
(insurance_code),
    FOREIGN KEY (coverage_code) REFERENCES coverage (coverage_code)
);

#table contract
```

```
CREATE TABLE contract
(
    contract_code int not null,
    cost int(5),
    start_date date,
    end_date date,
    AFM int(30) not null,
    insurance_code int not null,
    PRIMARY KEY (contract_code),
    FOREIGN KEY (AFM) REFERENCES customer(AFM),
    FOREIGN KEY (insurance_code) REFERENCES insurance
(insurance_code)
);

#table insurance_customer
CREATE TABLE insurance_customer
(
    insurance_code int not null,
    AFM int(30) not null,
    PRIMARY KEY (insurance_code, AFM),
    FOREIGN KEY (AFM) REFERENCES customer(AFM),
    FOREIGN KEY (insurance_code) REFERENCES insurance(insurance_code)
);


#show tables of database
show tables;

#DESCRIBE tables of General_Insurance
DESCRIBE contract;
DESCRIBE customer;
DESCRIBE insurance;
DESCRIBE coverage;
DESCRIBE insurance_coverages;

SELECT * FROM customer;
#insert into customer
INSERT INTO customer (AFM, name, surname, phone, address, DOY)
VALUES
   (1023452569, 'Charlie', 'Hunnam', 2103625956, 'California', 'A'),
   (1445525690, 'Henry', 'Cavill', 2104135956, 'Chicago', 'B'),
   (1785592569, 'Orlando', 'Bloom', 2103681956, 'Athens', 'C'),
   (1785527877, 'James', 'Smith', 2103765556, 'Thessaloniki', 'D'),
   (1884560847, 'Jason', 'Steven', 2108741262, 'Kavala', 'E'),
   (1542147114, 'Paola', 'Velasco', 2114522704, 'Athens', 'A'),
   (1445547451, 'Margarita', 'Koumpouri', 2115475668, 'Athens', 'B'),
   (1445477457, 'Ramez', 'Elmasri', 2108544615, 'Arlington', 'C'),
   (1024782463, 'Shamkant', 'Navathe', 210365956, 'Michigan', 'D'),
   (1841204754, 'Maria', 'Papadopoulou', 2117941554, 'Patras', 'A'),
   (1784585254, 'Kostas', 'Pappas', 2135874572, 'Lamia', 'B'),
   (1745242426, 'Andreas', 'Dimitrios', 2108564524, 'Volos', 'I'),
  (1415541574, 'Tatiana', 'Raptis', 2105448542, 'Thessaloniki', 'Z'),
   (1124834578, 'Periklis', 'Megalos', 2115858645, 'Volos', 'A'),
   (1486542484, 'Liliana', 'Beckham', 2138524656, 'Chicago', 'C'),
   (1946923008, 'Henderson', 'Gibb', 2126799446, 'California', 'C'),
   (1256452238, 'Alexandra', 'Denman', 2100585464, 'Patras', 'A'),
   (1592227645, 'Thea', 'Wade', 2118548646, 'Athens', 'B');

#insert into coverage
INSERT INTO coverage (coverage_code, coverage_name)
VALUES
```

```
        (1, 'medicine');

SELECT * FROM coverage;

INSERT INTO coverage (coverage_name)
VALUES
        ('maternity'),
        ('funeral'),
        ('accident'),
        ('pharmacy'),
        ('repair'),
        ('transplant'),
        ('vacation cover for terminal people'),
        ('property');

SELECT * FROM coverage;

SELECT * FROM insurance;

#insert into insurance
INSERT INTO insurance(insurance_code, insurance_name, annual_cost,
min_duration)
VALUES (10,'Health',500,1),
     (20,'Critical',600,1),
    (30,'Home',300,3),
    (40,'Car',200,2);
SELECT * FROM insurance;


SELECT * FROM insurance_coverages;

#insert into insurance_coverages
INSERT INTO insurance_coverages (insurance_code, coverage_code)
VALUES
        (10, 1),
        (10, 2),
        (10, 4),
        (20, 1),
        (20, 3),
        (30, 6),
        (30, 9),
        (40, 4),
        (40, 6);


DELETE FROM contract;
SELECT * FROM contract;

#insert into contract  DATE (YYYY-M-D)
INSERT INTO contract
(contract_code,cost,start_date,end_date,AFM,insurance_code)
VALUES
        (512, 11000, '2000-1-1', '2022-1-1', 1023452569, 10),
        (513, 1800, '2006-1-1', '2009-1-1', 1445525690, 20),
        (514, 4000, '2004-1-1', '2006-1-1', 1785592569, 30),
        (515, 900, '2004-1-1', '2010-1-1', 1785592569, 10),
        (516, 1000, '2005-1-1', '2010-1-1', 1884560847, 10),
        (517, 2500, '2005-3-5', '2014-3-5', 1884560847, 20),
        (518, 1800, '2008-3-6', '2020-3-6', 1884560847, 30),
        (519, 2000, '2011-6-4', '2017-6-4', 1884560847, 40),
        (520, 1200, '2011-6-4', '2015-6-4', 1542147114, 40),
```

```
        (521, 2000, '2011-11-9', '2014-11-9', 1445547451, 10),
        (522, 900, '2011-7-5', '2015-7-5', 1445477457, 30),
        (523, 1500, '2012-3-8', '2015-3-8', 1024782463, 10),
        (524, 1800, '2012-8-9', '2019-8-9', 1024782463, 20),
        (525, 900, '2013-9-5', '2019-9-5', 1841204754, 30),
        (526, 900, '2013-9-5', '2018-9-5', 1784585254, 30),
        (527, 900, '2015-11-10', '2022-11-10', 1745242426, 30),
        (528, 1200, '2016-12-10', '2019-12-10', 1415541574, 40),
        (529, 400, '2017-4-30', '2023-4-30', 1124834578, 40),
        (530, 1200, '2017-6-2', '2020-6-2', 1486542484, 40),
        (531, 1500, '2017-6-3', '2025-6-3', 1946923008, 10),
        (532, 4800, '2017-6-4', '2026-6-4', 1256452238, 20),
        (533, 4000, '2018-9-5', '2026-9-5', 1592227645, 10),
        (534, 4800, '2018-9-5', '2026-9-5', 1592227645, 20),
        (535, 1800, '2018-9-5', '2024-9-5', 1592227645, 30),
        (536, 1600, '2018-9-5', '2026-9-5', 1592227645, 40);

#insert into insurance_customer
INSERT INTO insurance_customer (insurance_code, AFM)
VALUES
        (10, 1023452569),
        (10, 1785592569),
        (10, 1884560847),
        (20, 1445525690),
        (20, 1884560847),
        (30, 1884560847),
        (30, 1784585254),
        (40, 1486542484),
        (40, 1592227645);

#show current contents of tables
SELECT * FROM contract;
SELECT * FROM customer;
SELECT * FROM insurance;
SELECT * FROM insurance_coverages;
SELECT * FROM insurance_customer;
```

ΑΠΟΤΕΛΕΣΜΑΤΑ

```
DROP DATABASE IF EXISTS General_Insurance;
CREATE DATABASE General_Insurance;
USE General_Insurance;
```

```
mysql> DROP DATABASE IF EXISTS General_Insurance;
Query OK, 5 rows affected (0.18 sec)

mysql> CREATE DATABASE General_Insurance;
Query OK, 1 row affected (0.01 sec)

mysql> USE General_Insurance;
Database changed
mysql>
```

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| askisi1_db         |
| general_insurance  |
| information_schema |
| mysql              |
| netprog            |
| performance_schema |
| pers_constraint    |
| pers_view          |
| sys                |
| thema              |
| trig_example       |
+--------------------+
11 rows in set (0.00 sec)
```

```
#show tables of database
SHOW tables;
```

```
mysql> #show tables of database
mysql> show tables;
+-----------------------------+
| Tables_in_general_insurance |
+-----------------------------+
| contract                    |
| coverage                    |
| customer                    |
| insurance                   |
| insurance_coverages         |
+-----------------------------+
5 rows in set (0.01 sec)

mysql>
```

```
#DESCRIBE tables of General_Insurance
DESCRIBE contract;
```

```
mysql> describe contract;
+----------------+------+------+-----+---------+-------+
| Field          | Type | Null | Key | Default | Extra |
+----------------+------+------+-----+---------+-------+
| contract_code  | int  | NO   | PRI | NULL    |       |
| cost           | int  | YES  |     | NULL    |       |
| start_date     | date | YES  |     | NULL    |       |
| end_date       | date | YES  |     | NULL    |       |
| AFM            | int  | NO   | MUL | NULL    |       |
| insurance_code | int  | NO   | MUL | NULL    |       |
+----------------+------+------+-----+---------+-------+
6 rows in set (0.01 sec)
```

```
DESCRIBE customer;
```

```
mysql> DESCRIBE customer;
+---------+-------------+------+-----+---------+-------+
| Field   | Type        | Null | Key | Default | Extra |
+---------+-------------+------+-----+---------+-------+
| AFM     | int         | NO   | PRI | NULL    |       |
| name    | varchar(30) | YES  |     | NULL    |       |
| surname | varchar(30) | YES  |     | NULL    |       |
| address | varchar(30) | YES  |     | NULL    |       |
| DOY     | varchar(4)  | YES  |     | NULL    |       |
| phone   | int         | NO   |     | NULL    |       |
+---------+-------------+------+-----+---------+-------+
6 rows in set (0.00 sec)
```

```
DESCRIBE insurance;
```

```
mysql> DESCRIBE insurance;
+----------------+-------------+------+-----+---------+-------+
| Field          | Type        | Null | Key | Default | Extra |
+----------------+-------------+------+-----+---------+-------+
| insurance_code | int         | NO   | PRI | NULL    |       |
| insurance_name | varchar(60) | YES  |     | NULL    |       |
| annual_cost    | int         | YES  |     | NULL    |       |
| min_duration   | int         | NO   |     | NULL    |       |
+----------------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

```
DESCRIBE coverage;
```

```
mysql> DESCRIBE coverage;
+---------------+-------------+------+-----+---------+----------------+
| Field         | Type        | Null | Key | Default | Extra          |
+---------------+-------------+------+-----+---------+----------------+
| coverage_code | int         | NO   | PRI | NULL    | auto_increment |
| coverage_name | varchar(70) | YES  |     | NULL    |                |
+---------------+-------------+------+-----+---------+----------------+
2 rows in set (0.00 sec)
```

```
DESCRIBE insurance_coverages;
```

```
mysql> DESCRIBE insurance_coverages;
+----------------+------+------+-----+---------+----------------+
| Field          | Type | Null | Key | Default | Extra          |
+----------------+------+------+-----+---------+----------------+
| insurance_code | int  | NO   | PRI | NULL    |                |
| coverage_code  | int  | NO   | PRI | NULL    | auto_increment |
+----------------+------+------+-----+---------+----------------+
2 rows in set (0.00 sec)
```

```
DESCRIBE insurance_customer;
```

```
mysql> DESCRIBE insurance_customer;
+----------------+------+------+-----+---------+-------+
| Field          | Type | Null | Key | Default | Extra |
+----------------+------+------+-----+---------+-------+
| insurance_code | int  | NO   | PRI | NULL    |       |
| AFM            | int  | NO   | PRI | NULL    |       |
+----------------+------+------+-----+---------+-------+
2 rows in set (0.03 sec)
```

```
#show current contents of tables
SELECT * FROM contract;
```

```
mysql> SELECT * FROM contract;
+---------------+-------+------------+------------+------------+----------------+
| contract_code | cost  | start_date | end_date   | AFM        | insurance_code |
+---------------+-------+------------+------------+------------+----------------+
|           512 | 11000 | 2000-01-01 | 2022-01-01 | 1023452569 |             10 |
|           513 |  1800 | 2006-01-01 | 2009-01-01 | 1445525690 |             20 |
|           514 |  4000 | 2004-01-01 | 2006-01-01 | 1785592569 |             30 |
|           515 |   900 | 2004-01-01 | 2010-01-01 | 1785592569 |             10 |
|           516 |  1000 | 2005-01-01 | 2010-01-01 | 1884560847 |             10 |
|           517 |  2500 | 2005-03-05 | 2014-03-05 | 1884560847 |             20 |
|           518 |  1800 | 2008-03-06 | 2020-03-06 | 1884560847 |             30 |
|           519 |  2000 | 2011-06-04 | 2017-06-04 | 1884560847 |             40 |
|           520 |  1200 | 2011-06-04 | 2015-06-04 | 1542147114 |             40 |
|           521 |  2000 | 2011-11-09 | 2014-11-09 | 1445547451 |             10 |
|           522 |   900 | 2011-07-05 | 2015-07-05 | 1445477457 |             30 |
|           523 |  1500 | 2012-03-08 | 2015-03-08 | 1024782463 |             10 |
|           524 |  1800 | 2012-08-09 | 2019-08-09 | 1024782463 |             20 |
|           525 |   900 | 2013-09-05 | 2019-09-05 | 1841204754 |             30 |
|           526 |   900 | 2013-09-05 | 2018-09-05 | 1784585254 |             30 |
|           527 |   900 | 2015-11-10 | 2022-11-10 | 1745242426 |             30 |
|           528 |  1200 | 2016-12-10 | 2019-12-10 | 1415541574 |             40 |
|           529 |   400 | 2017-04-30 | 2023-04-30 | 1124834578 |             40 |
|           530 |  1200 | 2017-06-02 | 2020-06-02 | 1486542484 |             40 |
|           531 |  1500 | 2017-06-03 | 2025-06-03 | 1946923008 |             10 |
|           532 |  4800 | 2017-06-04 | 2026-06-04 | 1256452238 |             20 |
|           533 |  4000 | 2018-09-05 | 2026-09-05 | 1592227645 |             10 |
|           534 |  4800 | 2018-09-05 | 2026-09-05 | 1592227645 |             20 |
|           535 |  1800 | 2018-09-05 | 2024-09-05 | 1592227645 |             30 |
|           536 |  1600 | 2018-09-05 | 2026-09-05 | 1592227645 |             40 |
+---------------+-------+------------+------------+------------+----------------+
```

```
SELECT * FROM customer;
```

```
mysql> SELECT * FROM customer;
+------------+-----------+--------------+--------------+------+------------+
| AFM        | name      | surname      | address      | DOY  | phone      |
+------------+-----------+--------------+--------------+------+------------+
| 1023452569 | Charlie   | Hunnam       | California   | A    | 2103625956 |
| 1024782463 | Shamkant  | Navathe      | Michigan     | D    |  210365956 |
| 1124834578 | Periklis  | Megalos      | Volos        | A    | 2115858645 |
| 1256452238 | Alexandra | Denman       | Patras       | A    | 2100585464 |
| 1415541574 | Tatiana   | Raptis       | Thessaloniki | Z    | 2105448542 |
| 1445477457 | Ramez     | Elmasri      | Arlington    | C    | 2108544615 |
| 1445525690 | Henry     | Cavill       | Chicago      | B    | 2104135956 |
| 1445547451 | Margarita | Koumpouri    | Athens       | B    | 2115475668 |
| 1486542484 | Liliana   | Beckham      | Chicago      | C    | 2138524656 |
| 1542147114 | Paola     | Velasco      | Athens       | A    | 2114522704 |
| 1592227645 | Thea      | Wade         | Athens       | B    | 2118548646 |
| 1745242426 | Andreas   | Dimitrios    | Volos        | I    | 2108564524 |
| 1784585254 | Kostas    | Pappas       | Lamia        | B    | 2135874572 |
| 1785527877 | James     | Smith        | Thessaloniki | D    | 2103765556 |
| 1785592569 | Orlando   | Bloom        | Athens       | C    | 2103681956 |
| 1841204754 | Maria     | Papadopoulou | Patras       | A    | 2117941554 |
| 1884560847 | Jason     | Steven       | Kavala       | E    | 2108741262 |
| 1946923008 | Henderson | Gibb         | California   | C    | 2126799446 |
+------------+-----------+--------------+--------------+------+------------+
18 rows in set (0.00 sec)
```

```
SELECT * FROM insurance;
```

```
mysql> SELECT * FROM insurance;
+----------------+----------------+-------------+--------------+
| insurance_code | insurance_name | annual_cost | min_duration |
+----------------+----------------+-------------+--------------+
|             10 | Health         |         500 |            1 |
|             20 | Critical       |         600 |            1 |
|             30 | Home           |         300 |            3 |
|             40 | Car            |         200 |            2 |
+----------------+----------------+-------------+--------------+
4 rows in set (0.00 sec)
```

```
SELECT * FROM insurance_coverages;
```

```
mysql> SELECT * FROM insurance_coverages;
+----------------+---------------+
| insurance_code | coverage_code |
+----------------+---------------+
|             10 |             1 |
|             20 |             1 |
|             10 |             2 |
|             20 |             3 |
|             10 |             4 |
|             40 |             4 |
|             30 |             6 |
|             40 |             6 |
|             30 |             9 |
+----------------+---------------+
9 rows in set (0.00 sec)
```

```sql
SELECT * FROM insurance_customer;
```

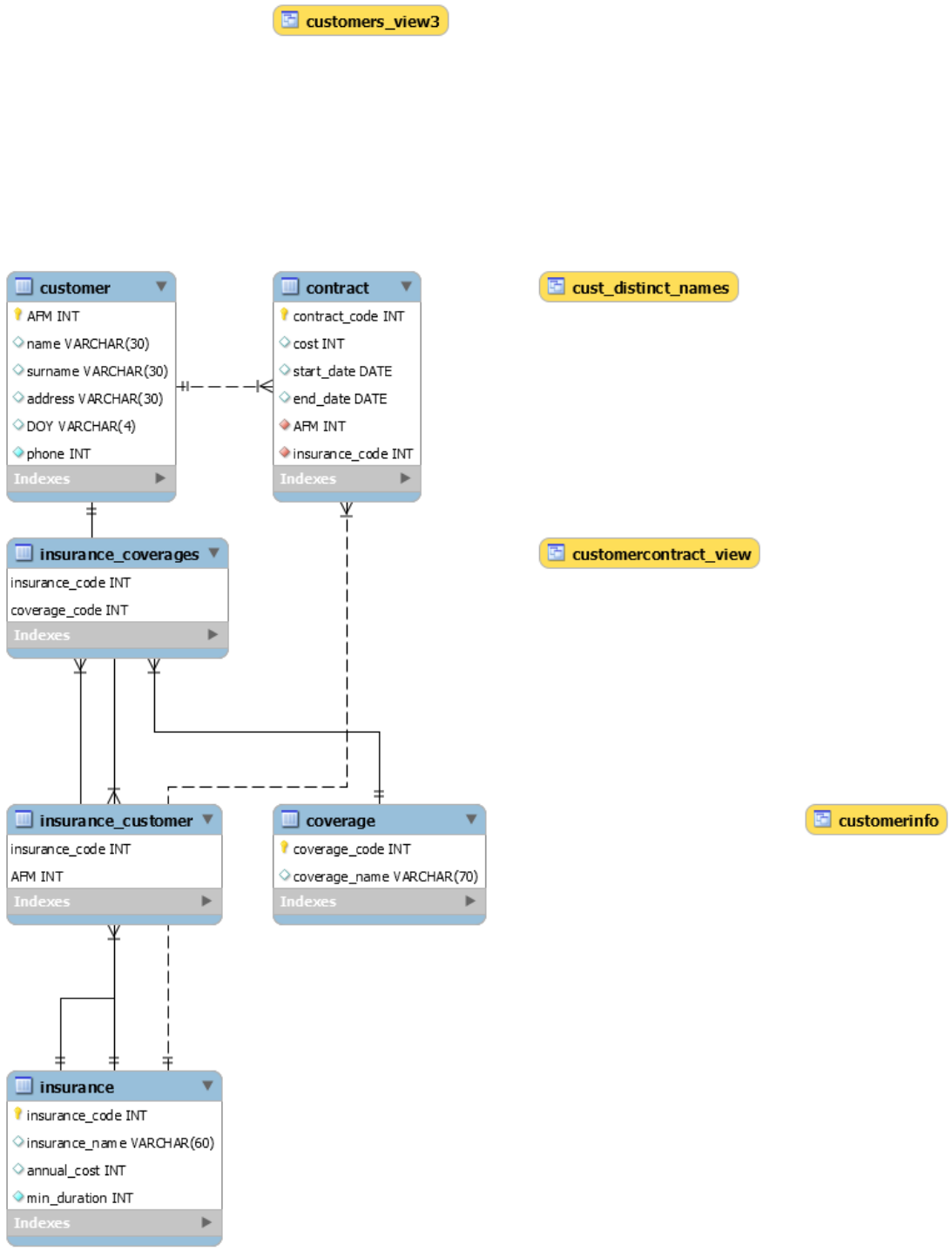
```
mysql> SELECT * FROM insurance_customer;
+----------------+------------+
| insurance_code | AFM        |
+----------------+------------+
|             10 | 1023452569 |
|             20 | 1445525690 |
|             40 | 1486542484 |
|             40 | 1592227645 |
|             30 | 1784585254 |
|             10 | 1785592569 |
|             10 | 1884560847 |
|             20 | 1884560847 |
|             30 | 1884560847 |
+----------------+------------+
9 rows in set (0.00 sec)
```

2. Διάγραμμα Οντοτήτων – Συσχετίσεων – (ER Diagram)

Βήμα 3

Χρησιμοποιείστε την εφαρμογή MySQL Workbench για να παράγετε το διάγραμμα Οντοτήτων-Συσχετίσεων (Entity-Relationship Diagram) της ΒΔ.

Για το διάγραμμα οντοτήτων – συσχετίσεων παρατίθεται η παρακάτω εικόνα:



3. Όψεις (Views)

Βήμα 4

Δημιουργήστε μια ενημερώσιμη όψη και μία μη ενημερώσιμη όψη (ελεύθερη επιλογή).

Σε αυτό το βήμα δοκιμάσαμε 3 διαφορετικές όψεις:

- Ενημερώσιμη όψη – μη ασφαλή (`customerInfo`)
- Ενημερώσιμη όψη – μη ασφαλή με υλοποίηση certain join (`customerContract_view`)
- Ενημερώσιμη όψη – ασφαλή (`customers_view3`)
- Μη ενημερώσιμη όψη (`cust_distinct_names`)

1. *Ενημερώσιμη όψη – μη ασφαλή (`customerInfo`)*

```
DROP VIEW IF EXISTS customerInfo;

CREATE VIEW customerInfo
AS SELECT name, surname, address from customer;

SELECT * FROM customerInfo;

UPDATE customerInfo SET address = "Dublin" WHERE name = "Ramez" AND
surname = "Elmasri";

SELECT * FROM customerInfo;
SELECT * FROM customer;
```

ΑΠΟΤΕΛΕΣΜΑΤΑ

```
mysql> SELECT * FROM customerInfo;
+-----------+-------------+--------------+
| name      | surname     | address      |
+-----------+-------------+--------------+
| Charlie   | Hunnam      | California   |
| Shamkant  | Navathe     | Michigan     |
| Periklis  | Megalos     | Volos        |
| Alexandra | Denman      | Patras       |
| Tatiana   | Raptis      | Thessaloniki |
| Ramez     | Elmasri     | Dublin       |
| Henry     | Cavill      | Chicago      |
| Margarita | Koumpouri   | Athens       |
| Liliana   | Beckham     | Chicago      |
| Paola     | Velasco     | Athens       |
| Thea      | Wade        | Athens       |
| Andreas   | Dimitrios   | Volos        |
| Kostas    | Pappas      | Lamia        |
| James     | Smith       | Thessaloniki |
| Orlando   | Bloom       | Athens       |
| Maria     | Papadopoulou| Patras       |
| Jason     | Steven      | Kavala       |
| Henderson | Gibb        | California   |
+-----------+-------------+--------------+
18 rows in set (0.00 sec)
```

```
mysql> SELECT * FROM customer;
+------------+-----------+-------------+-------------+------+------------+
| AFM        | name      | surname     | address     | DOY  | phone      |
+------------+-----------+-------------+-------------+------+------------+
| 1023452569 | Charlie   | Hunnam      | California  | A    | 2103625956 |
| 1024782463 | Shamkant  | Navathe     | Michigan    | D    |  210365956 |
| 1124834578 | Periklis  | Megalos     | Volos       | A    | 2115858645 |
| 1256452238 | Alexandra | Denman      | Patras      | A    | 2100585464 |
| 1415541574 | Tatiana   | Raptis      | Thessaloniki| Z    | 2105448542 |
| 1445477457 | Ramez     | Elmasri     | Dublin      | C    | 2108544615 |
| 1445525690 | Henry     | Cavill      | Chicago     | B    | 2104135956 |
| 1445547451 | Margarita | Koumpouri   | Athens      | B    | 2115475668 |
| 1486542484 | Liliana   | Beckham     | Chicago     | C    | 2138524656 |
| 1542147114 | Paola     | Velasco     | Athens      | A    | 2114522704 |
| 1592227645 | Thea      | Wade        | Athens      | B    | 2118548646 |
| 1745242426 | Andreas   | Dimitrios   | Volos       | I    | 2108564524 |
| 1784585254 | Kostas    | Pappas      | Lamia       | B    | 2135874572 |
| 1785527877 | James     | Smith       | Thessaloniki| D    | 2103765556 |
| 1785592569 | Orlando   | Bloom       | Athens      | C    | 2103681956 |
| 1841204754 | Maria     | Papadopoulou| Patras      | A    | 2117941554 |
| 1884560847 | Jason     | Steven      | Kavala      | E    | 2108741262 |
| 1946923008 | Henderson | Gibb        | California  | C    | 2126799446 |
+------------+-----------+-------------+-------------+------+------------+
18 rows in set (0.00 sec)
```

2. *Ενημερώσιμη όψη – μη ασφαλή με υλοποίηση certain join (`customerContract_view`)*

```
#updatable view - certain join
DROP VIEW IF EXISTS customerContract_view;
CREATE VIEW customerContract_view
AS SELECT customer.AFM, name, surname
FROM customer INNER JOIN contract ON customer.AFM = contract.AFM;

SELECT * FROM customerContract_view;
SELECT * FROM customer;
```

```
mysql> SELECT * FROM customerContract_view;
+------------+-----------+--------------+
| AFM        | name      | surname      |
+------------+-----------+--------------+
| 1023452569 | Charlie   | Hunnam       |
| 1024782463 | Shamkant  | Navathe      |
| 1024782463 | Shamkant  | Navathe      |
| 1124834578 | Periklis  | Megalos      |
| 1256452238 | Alexandra | Denman       |
| 1415541574 | Tatiana   | Raptis       |
| 1445477457 | Ramez     | Elmasri      |
| 1445525690 | Henry     | Cavill       |
| 1445547451 | Margarita | Koumpouri    |
| 1486542484 | Liliana   | Beckham      |
| 1542147114 | Paola     | Velasco      |
| 1592227645 | Thea      | Wade         |
| 1592227645 | Thea      | Wade         |
| 1592227645 | Thea      | Wade         |
| 1592227645 | Thea      | Wade         |
| 1745242426 | Andreas   | Dimitrios    |
| 1784585254 | Kostas    | Pappas       |
| 1785592569 | Orlando   | Bloom        |
| 1785592569 | Orlando   | Bloom        |
| 1841204754 | Maria     | Papadopoulou |
| 1884560847 | Jason     | Steven       |
| 1884560847 | Jason     | Steven       |
| 1884560847 | Jason     | Steven       |
| 1884560847 | Jason     | Steven       |
| 1946923008 | Henderson | Gibb         |
+------------+-----------+--------------+
25 rows in set (0.01 sec)
```

```
mysql> SELECT * FROM customer;
+------------+-----------+--------------+--------------+------+------------+
| AFM        | name      | surname      | address      | DOY  | phone      |
+------------+-----------+--------------+--------------+------+------------+
| 1023452569 | Charlie   | Hunnam       | California   | A    | 2103625956 |
| 1024782463 | Shamkant  | Navathe      | Michigan     | D    |  210365956 |
| 1124834578 | Periklis  | Megalos      | Volos        | A    | 2115858645 |
| 1256452238 | Alexandra | Denman       | Patras       | A    | 2100585464 |
| 1415541574 | Tatiana   | Raptis       | Thessaloniki | Z    | 2105448542 |
| 1445477457 | Ramez     | Elmasri      | Dublin       | C    | 2108544615 |
| 1445525690 | Henry     | Cavill       | Chicago      | B    | 2104135956 |
| 1445547451 | Margarita | Koumpouri    | Athens       | B    | 2115475668 |
| 1486542484 | Liliana   | Beckham      | Chicago      | C    | 2138524656 |
| 1542147114 | Paola     | Velasco      | Athens       | A    | 2114522704 |
| 1592227645 | Thea      | Wade         | Athens       | B    | 2118548646 |
| 1745242426 | Andreas   | Dimitrios    | Volos        | I    | 2108564524 |
| 1784585254 | Kostas    | Pappas       | Lamia        | B    | 2135874572 |
| 1785527877 | James     | Smith        | Thessaloniki | D    | 2103765556 |
| 1785592569 | Orlando   | Bloom        | Athens       | C    | 2103681956 |
| 1841204754 | Maria     | Papadopoulou | Patras       | A    | 2117941554 |
| 1884560847 | Jason     | Steven       | Kavala       | E    | 2108741262 |
| 1946923008 | Henderson | Gibb         | California   | C    | 2126799446 |
+------------+-----------+--------------+--------------+------+------------+
18 rows in set (0.00 sec)
```

```
UPDATE customerContract_view set name = "Stefan" WHERE AFM =
1023452569;
SELECT * FROM customerContract_view;
```

```
mysql> select * from customerContract_view;
+------------+----------+--------------+
| AFM        | name     | surname      |
+------------+----------+--------------+
| 1023452569 | Stefan   | Hunnam       |
| 1024782463 | Shamkant | Navathe      |
| 1024782463 | Shamkant | Navathe      |
| 1124834578 | Periklis | Megalos      |
| 1256452238 | Alexandra| Denman       |
| 1415541574 | Tatiana  | Raptis       |
| 1445477457 | Ramez    | Elmasri      |
| 1445525690 | Henry    | Cavill       |
| 1445547451 | Margarita| Koumpouri    |
| 1486542484 | Liliana  | Beckham      |
| 1542147114 | Paola    | Velasco      |
| 1592227645 | Thea     | Wade         |
| 1592227645 | Thea     | Wade         |
| 1592227645 | Thea     | Wade         |
| 1592227645 | Thea     | Wade         |
| 1745242426 | Andreas  | Dimitrios    |
| 1784585254 | Kostas   | Pappas       |
| 1785592569 | Orlando  | Bloom        |
| 1785592569 | Orlando  | Bloom        |
| 1841204754 | Maria    | Papadopoulou |
| 1884560847 | Jason    | Steven       |
| 1884560847 | Jason    | Steven       |
| 1884560847 | Jason    | Steven       |
| 1884560847 | Jason    | Steven       |
| 1946923008 | Henderson| Gibb         |
+------------+----------+--------------+
25 rows in set (0.00 sec)
```

3. *Ενημερώσιμη όψη – ασφαλή (customers_view3)*

```
#updatable view with check option
DROP VIEW IF EXISTS customers_view3;
CREATE VIEW customers_view3(AFM, name, surname, address, DOY, phone)
AS SELECT * FROM customer
WHERE DOY in ("A","C")
WITH CHECK OPTION;

INSERT INTO customers_view3
VALUES
    (178663326,'John','Velasco','Athens','C',2115055293);
SELECT * FROM customers_view3;
SELECT * FROM customer;
```

```
mysql> select * from customers_view3;
+------------+-------------+--------------+------------+------+------------+
| AFM        | name        | surname      | address    | DOY  | phone      |
+------------+-------------+--------------+------------+------+------------+
|  178552826 | Christopher | Velasco      | Athens     | A    | 2114055293 |
|  178663326 | John        | Velasco      | Athens     | C    | 2115055293 |
| 1023452569 | Stefan      | Hunnam       | California | A    | 2103625956 |
| 1124834578 | Periklis    | Megalos      | Volos      | A    | 2115858645 |
| 1256452238 | Alexandra   | Denman       | Patras     | A    | 2100585464 |
| 1445477457 | Ramez       | Elmasri      | Dublin     | C    | 2108544615 |
| 1486542484 | Liliana     | Beckham      | Chicago    | C    | 2138524656 |
| 1542147114 | Paola       | Velasco      | Athens     | A    | 2114522704 |
| 1785592569 | Orlando     | Bloom        | Athens     | C    | 2103681956 |
| 1841204754 | Maria       | Papadopoulou | Patras     | A    | 2117941554 |
| 1946923008 | Henderson   | Gibb         | California | C    | 2126799446 |
+------------+-------------+--------------+------------+------+------------+
11 rows in set (0.00 sec)
```

```
mysql> select * from customer;
+------------+-------------+--------------+-------------+------+------------+
| AFM        | name        | surname      | address     | DOY  | phone      |
+------------+-------------+--------------+-------------+------+------------+
|  178552826 | Christopher | Velasco      | Athens      | A    | 2114055293 |
|  178663326 | John        | Velasco      | Athens      | C    | 2115055293 |
| 1023452569 | Stefan      | Hunnam       | California  | A    | 2103625956 |
| 1024782463 | Shamkant    | Navathe      | Michigan    | D    |  210365956 |
| 1124834578 | Periklis    | Megalos      | Volos       | A    | 2115858645 |
| 1256452238 | Alexandra   | Denman       | Patras      | A    | 2100585464 |
| 1415541574 | Tatiana     | Raptis       | Thessaloniki| Z    | 2105448542 |
| 1445477457 | Ramez       | Elmasri      | Dublin      | C    | 2108544615 |
| 1445525690 | Henry       | Cavill       | Chicago     | B    | 2104135956 |
| 1445547451 | Margarita   | Koumpouri    | Athens      | B    | 2115475668 |
| 1486542484 | Liliana     | Beckham      | Chicago     | C    | 2138524656 |
| 1542147114 | Paola       | Velasco      | Athens      | A    | 2114522704 |
| 1592227645 | Thea        | Wade         | Athens      | B    | 2118548646 |
| 1745242426 | Andreas     | Dimitrios    | Volos       | I    | 2108564524 |
| 1784585254 | Kostas      | Pappas       | Lamia       | B    | 2135874572 |
| 1785527877 | James       | Smith        | Thessaloniki| D    | 2103765556 |
| 1785592569 | Orlando     | Bloom        | Athens      | C    | 2103681956 |
| 1841204754 | Maria       | Papadopoulou | Patras      | A    | 2117941554 |
| 1884560847 | Jason       | Steven       | Kavala      | E    | 2108741262 |
| 1946923008 | Henderson   | Gibb         | California  | C    | 2126799446 |
+------------+-------------+--------------+-------------+------+------------+
20 rows in set (0.00 sec)
```

Όμως εάν τρέξουμε το παρακάτω query μας βγάζει μήνυμα σφάλματος:

```
INSERT INTO customers_view3 ( AFM, name, surname, phone, address, DOY
)
VALUES (177452826,'Christopher','Velasco',2115783293,'London','L');
```

```
mysql> insert into customers_view3 ( AFM, name, surname, phone, address, DOY
    -> values (177452826,'Christopher','Velasco',2115783293,'London','L');
ERROR 1369 (HY000): CHECK OPTION failed 'general_insurance.customers_view3'
```

4. *Μη ενημερώσιμη όψη (cust_distinct_names)*

```
#non updatable view
DROP VIEW IF EXISTS cust_distinct_names;

CREATE VIEW cust_distinct_names(name)
AS SELECT DISTINCT name FROM customer ORDER BY name;

SELECT * FROM cust_distinct_names;
```

```
mysql> select * from cust_distinct_names;
+-----------+
| name      |
+-----------+
| Alexandra |
| Andreas   |
| Henderson |
| Henry     |
| James     |
| Jason     |
| Kostas    |
| Liliana   |
| Margarita |
| Maria     |
| Orlando   |
| Paola     |
| Periklis  |
| Ramez     |
| Shamkant  |
| Stefan    |
| Tatiana   |
| Thea      |
+-----------+
```

```
INSERT INTO cust_distinct_names VALUES ('Gerard');
```

```
mysql> insert into cust_distinct_names values ('Gerard');
ERROR 1471 (HY000): The target table cust_distinct_names of the INSERT is not insertable-into
```

1. Ερωτήσεις (sql queries)

Βήμα 5

1. *Παρουσιάστε τον αριθμό συμβολαίων ανά ασφαλιστικό προϊόν*

```
# Show how many contracts have been signed for each insurance
SELECT insurance_name, count(*) AS 'contracts signed'
FROM contract INNER JOIN insurance
ON contract.insurance_code = insurance.insurance_code
GROUP BY contract.insurance_code;
```

ΑΠΟΤΕΛΕΣΜΑΤΑ

	insurance_name	contracts signed
▶	Health	7
	Critical	5
	Home	7
	Car	6

1. *Παρουσιάστε τους πελάτες ταξινομημένους σύμφωνα με το συνολικό κόστος των συμβολαίων τους (από μεγαλύτερο σε μικρότερο) .*

```
# show the clients' according to the total of the contracts that they
have signed (in descending order)
SELECT DISTINCT name, surname, sum(cost) AS total
FROM customer INNER JOIN contract
ON customer.AFM = contract.AFM
GROUP BY customer.AFM
ORDER BY total DESC;
```

ΑΠΟΤΕΛΕΣΜΑΤΑ

	name	surname	total
▶	Thea	Wade	12200
	Charlie	Hunnam	11000
	Jason	Steven	7300
	Orlando	Bloom	4900
	Alexandra	Denman	4800
	Shamkant	Navathe	3300
	Margarita	Koumpouri	2000
	Henry	Cavill	1800
	Henderson	Gibb	1500
	Liliana	Beckham	1200
	Paola	Velasco	1200
	Tatiana	Raptis	1200
	Andreas	Dimitrios	900
	Kostas	Pappas	900
	Maria	Papadopoulou	900
	Ramez	Elmasri	900
	Periklis	Megalos	400

ΣΥΜΠΕΡΑΣΜΑ

Έχοντας εκπονήσει την εργασία, έχουμε καταλάβει τον τρόπο σκέψης ως προς τον οποίο πρέπει να υλοποιηθεί και να κατασκευαστεί μια βάση δεδομένων, βασισμένη σε δεδομένα και σε περιορισμούς ενός ευρύτερου πλαισίου που δίνεται.

Κατανοήσαμε τις σχέσεις ανάμεσα στις οντότητες και κατανοήσαμε βαθύτερα τη χρήση των ενημερώσιμων και μη ενημερώσιμων όψεων ως επιπλέον εργαλείο διαχείρισης της βάσης που δημιουργήσαμε.

Τέλος αξιοποιήσαμε όλες τις γνώσεις και τα εργαλεία που είχαμε διδαχθεί στις Βάσεις Δεδομένων Ι του προηγούμενου εξαμήνου.