Information Systems and Databases

Group 34

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November 9, 2018

Creating the database

Inside the creation of the tables which contain foreign keys, it was introduced *on delete cascade on update cascade*. From this, every time the table containing the respective primary keys is changed or some deletions are performed, the corresponding foreign keys within other tables will be changed accordingly.

When the attribute's type is *timestamp*, *mySql* introduce an extra definition related to a possible update. When an update is demanded, it updates the attribute with the current timestamp. As this behaviour is not desired, this definition was disabled.

```
1  SET FOREIGN_KEY_CHECKS = 0; /*para n o ter de apagar as tabelas na ordem
       inversa da escrita*/
2  DROP TABLE IF EXISTS person;
3  DROP TABLE IF EXISTS phone_number;
4  DROP TABLE IF EXISTS client;
5  DROP TABLE IF EXISTS veterinary;
6  DROP TABLE IF EXISTS assistant;
7  DROP TABLE IF EXISTS species;
8  DROP TABLE IF EXISTS generalization_species;
9  DROP TABLE IF EXISTS animal;
10 DROP TABLE IF EXISTS consult;
11 DROP TABLE IF EXISTS participation;
12 DROP TABLE IF EXISTS diagnosis_code;
13 DROP TABLE IF EXISTS consult_diagnosis;
14 DROP TABLE IF EXISTS medication;
15 DROP TABLE IF EXISTS prescription;
16 DROP TABLE IF EXISTS indicator;
17 DROP TABLE IF EXISTS _procedure;
18 DROP TABLE IF EXISTS performed;
19 DROP TABLE IF EXISTS radiography;
20 DROP TABLE IF EXISTS test_procedure;
21 DROP TABLE IF EXISTS produced_indicator;
22 SET FOREIGN_KEY_CHECKS = 1;
23
24 CREATE TABLE person(
25          VAT INTEGER,
26          name CHAR(100) NOT NULL,
27          address_street CHAR(100) NOT NULL,
28          address_city CHAR(50) NOT NULL,
29          address_zip CHAR(15) NOT NULL,
30          PRIMARY KEY(VAT)
31 );
32
33 /*METER CONSTRAINT*/
34 CREATE TABLE phone_number(
```

```
35          VAT INTEGER,
36          phone CHAR(15), /*to be extensible to different kinds of phone
                structures*/
37          PRIMARY KEY(VAT, phone),
38          FOREIGN KEY(VAT) REFERENCES person(VAT) ON DELETE CASCADE ON UPDATE
                CASCADE
39  );
40
41  CREATE TABLE client(
42          VAT INTEGER,
43          PRIMARY KEY(VAT),
44          FOREIGN KEY(VAT) REFERENCES person(VAT) ON DELETE CASCADE ON UPDATE
                CASCADE
45  );
46
47  CREATE TABLE veterinary(
48          VAT INTEGER,
49          specialization CHAR(50) NOT NULL,
50          bio TEXT NOT NULL,
51          PRIMARY KEY(VAT),
52          FOREIGN KEY(VAT) REFERENCES person(VAT) ON DELETE CASCADE ON UPDATE
                CASCADE
53  );
54
55  CREATE TABLE assistant(
56          VAT INTEGER,
57          PRIMARY KEY(VAT),
58          FOREIGN KEY(VAT) REFERENCES person(VAT) ON DELETE CASCADE ON UPDATE
                CASCADE
59  );
60
61  CREATE TABLE species(
62          name CHAR(50),
63          desc_ TEXT NOT NULL,
64          PRIMARY KEY(name)
65  );
66
67  CREATE TABLE generalization_species(
68          name1 CHAR(50),
69          name2 CHAR(50) NOT NULL,
70          PRIMARY KEY(name1),
71          FOREIGN KEY(name1) REFERENCES species(name) ON DELETE CASCADE ON
                UPDATE CASCADE,
```

```
72          FOREIGN KEY(name2) REFERENCES species(name) ON DELETE CASCADE ON
                UPDATE CASCADE
73  );
74
75  CREATE TABLE animal(
76          name CHAR(50),
77          VAT INTEGER,
78          species_name CHAR(50) NOT NULL,
79          colour CHAR(20) NOT NULL,
80          gender CHAR(20) NOT NULL,
81          birth_year year,
82          age INTEGER,
83          PRIMARY KEY(name,VAT),
84          FOREIGN KEY(VAT) REFERENCES client(VAT) ON DELETE CASCADE ON UPDATE
                CASCADE,
85          FOREIGN KEY(species_name) REFERENCES species(name) ON DELETE CASCADE
                ON UPDATE CASCADE
86  );
87
88  CREATE TABLE consult(
89          name CHAR(50),
90          VAT_owner INTEGER,
91          date_timestamp TIMESTAMP NOT NULL DEFAULT CURRENT_TIMESTAMP,
92          s TEXT,
93          o TEXT,
94          a TEXT,
95          p TEXT,
96          VAT_client INTEGER NOT NULL,
97          VAT_vet INTEGER NOT NULL,
98          weight NUMERIC(5,2) NOT NULL,
99          PRIMARY KEY(name,VAT_owner,date_timestamp),
100         FOREIGN KEY(name,VAT_owner) REFERENCES animal(name,VAT) ON DELETE
                CASCADE ON UPDATE CASCADE,
101         FOREIGN KEY(VAT_client) REFERENCES client(VAT) ON DELETE CASCADE ON
                UPDATE CASCADE,
102         FOREIGN KEY(VAT_vet) REFERENCES veterinary(VAT) ON DELETE CASCADE ON
                UPDATE CASCADE
103 );
104
105 CREATE TABLE participation(
106         name CHAR(50),
107         VAT_owner INTEGER,
108         date_timestamp TIMESTAMP NOT NULL DEFAULT CURRENT_TIMESTAMP,
```

```
109         VAT_assistant INTEGER,
110         PRIMARY KEY(name,VAT_owner,date_timestamp,VAT_assistant),
111         FOREIGN KEY(name,VAT_owner,date_timestamp) REFERENCES consult(name,
                VAT_owner,date_timestamp) ON DELETE CASCADE ON UPDATE CASCADE,
112         FOREIGN KEY(VAT_assistant) REFERENCES assistant(VAT) ON DELETE CASCADE
                ON UPDATE CASCADE
113 );
114
115 CREATE TABLE diagnosis_code(
116         code CHAR(5), /*It was chosen a CHAR instead of integer so that the
                zeros before the number were also printed*/
117         name CHAR(100),
118         PRIMARY KEY (code)
119 );
120
121 CREATE TABLE consult_diagnosis(
122         code CHAR(5),
123         name CHAR(50),
124         VAT_owner INTEGER,
125         date_timestamp TIMESTAMP NOT NULL DEFAULT CURRENT_TIMESTAMP,
126         PRIMARY KEY(code,name,VAT_owner,date_timestamp),
127         FOREIGN KEY(code) REFERENCES diagnosis_code(code) ON DELETE CASCADE ON
                UPDATE CASCADE,
128         FOREIGN KEY(name,VAT_owner,date_timestamp) REFERENCES consult(name,
                VAT_owner,date_timestamp) ON DELETE CASCADE ON UPDATE CASCADE
129 );
130
131 CREATE TABLE medication(
132     name CHAR(20),
133     lab CHAR(20),
134     dosage CHAR(100),
135     PRIMARY KEY(name, lab, dosage)
136 );
137
138 CREATE TABLE prescription(
139     code CHAR(5),
140     name CHAR(50),
141     VAT_owner INTEGER,
142     date_timestamp TIMESTAMP NOT NULL DEFAULT CURRENT_TIMESTAMP,
143     name_med CHAR(20) NOT NULL,
144     lab CHAR(20) NOT NULL,
145     dosage CHAR(100) NOT NULL,
146     regime CHAR(100) NOT NULL,
```

```
147     PRIMARY KEY(code, name, VAT_owner, date_timestamp, name_med, lab, dosage),
148     FOREIGN KEY(code, name, VAT_owner, date_timestamp) REFERENCES
            consult_diagnosis(code,name,VAT_owner,date_timestamp) ON DELETE
            CASCADE ON UPDATE CASCADE,
149     FOREIGN KEY(name_med,lab,dosage) REFERENCES medication(name, lab, dosage)
            ON DELETE CASCADE ON UPDATE CASCADE
150 );
151
152 CREATE TABLE indicator(
153     name CHAR(30),
154     reference_value NUMERIC(5, 2) NOT NULL, /*to allow float numbers*/
155     units CHAR(20) NOT NULL,
156     description TEXT NOT NULL,
157     PRIMARY KEY(name)
158 );
159
160 CREATE TABLE _procedure(
161     name CHAR(50),
162         VAT_owner INTEGER,
163         date_timestamp TIMESTAMP NOT NULL DEFAULT CURRENT_TIMESTAMP,
164         num INTEGER,
165         description TEXT NOT NULL,
166         PRIMARY KEY(name, VAT_owner, date_timestamp, num),
167         FOREIGN KEY(name, VAT_owner, date_timestamp) REFERENCES consult(name,
                VAT_owner,date_timestamp) ON DELETE CASCADE ON UPDATE CASCADE
168 );
169
170 CREATE TABLE performed(
171     name CHAR(50),
172         VAT_owner INTEGER,
173         date_timestamp TIMESTAMP NOT NULL DEFAULT CURRENT_TIMESTAMP,
174         num INTEGER,
175         VAT_assistant INTEGER,
176         PRIMARY KEY(name, VAT_owner, date_timestamp, num, VAT_assistant),
177         FOREIGN KEY(name, VAT_owner, date_timestamp, num) REFERENCES
                _procedure(name,VAT_owner,date_timestamp,num) ON DELETE CASCADE ON
                UPDATE CASCADE,
178         FOREIGN KEY(VAT_assistant) REFERENCES assistant(VAT) ON DELETE CASCADE
                ON UPDATE CASCADE
179 );
180
181 CREATE TABLE radiography(
182     name CHAR(50),
```

```
183     VAT_owner INTEGER,
184     date_timestamp TIMESTAMP NOT NULL DEFAULT CURRENT_TIMESTAMP,
185     num INTEGER,
186     file CHAR(100) NOT NULL,
187     PRIMARY KEY(name,VAT_owner,date_timestamp,num),
188     FOREIGN KEY (name,VAT_owner,date_timestamp,num) REFERENCES _procedure(name
            , VAT_owner, date_timestamp, num) ON DELETE CASCADE ON UPDATE CASCADE
189 );
190
191 CREATE TABLE test_procedure(
192     name CHAR(50),
193     VAT_owner INTEGER,
194     date_timestamp TIMESTAMP NOT NULL DEFAULT CURRENT_TIMESTAMP,
195     num INTEGER,
196     type CHAR(5) NOT NULL,
197     CONSTRAINT type_RI CHECK(type='blood' OR type='urine'),
198     PRIMARY KEY(name,VAT_owner,date_timestamp,num),
199     FOREIGN KEY (name,VAT_owner,date_timestamp,num) REFERENCES _procedure(name
            , VAT_owner, date_timestamp, num) ON DELETE CASCADE ON UPDATE CASCADE
200 );
201
202 CREATE TABLE produced_indicator(
203     name CHAR(50),
204     VAT_owner INTEGER,
205     date_timestamp TIMESTAMP NOT NULL DEFAULT CURRENT_TIMESTAMP,
206     num INTEGER,
207     indicator_name CHAR(30),
208     value NUMERIC(5, 2) NOT NULL,
209     PRIMARY KEY(name,VAT_owner,date_timestamp,num, indicator_name),
210     FOREIGN KEY (name,VAT_owner,date_timestamp,num) REFERENCES test_procedure(
            name, VAT_owner, date_timestamp, num) ON DELETE CASCADE ON UPDATE
            CASCADE
211 );
```

Populating the database

Filling the table with meaningful examples for each entity, in order to test the desired queries.

```
/*person                                    VAT       |       Name       |
    Address_street |    Address_city | zip_code */
INSERT INTO person VALUES(12345678,'Maria Repolho','Rua da Batata, n  29','
    Rebalba','2650-852');
INSERT INTO person VALUES(12032014,'Jacinto Leite','Avenida Vasco da Gama, 
    lote 82,3F','Porto','9536-820');
INSERT INTO person VALUES(85202652,'Albertina Souza','Rua do escritor, n  
    85,8D','Bobadela','6320-652');
INSERT INTO person VALUES(96520520,'Penelope Franco','Praceta Ui Ui, n 8','
    Amadora','8274-653');
INSERT INTO person VALUES(85264856,'John Smith','Rua Alvares Cabral, lote 56',
    'Cascais','9525-903');
INSERT INTO person VALUES(35263686,'Maria Albertina', 'Praceta Ui Ui, n 8','
    Amadora','8274-653');
INSERT INTO person VALUES(98585856,'John Smith','Rua das Conchas, n 8, 1 E ',
    'Lisboa','2500-132');
INSERT INTO person VALUES(65856663,'John Smith','Praceta da manteiga, lote 3, 
    5 D ', 'Castanheira do Ribatejo','8641-068');
INSERT INTO person VALUES(69630596,'Sara Pimpalho','Rua 25 de Abril, n  74',
    'Grandola','2504-974');
INSERT INTO person VALUES(78526209,'Rui Espinola','Avenida Brasil, n  24, 11
     F', 'Tomar','9853-208');
INSERT INTO person VALUES(45620852,'Renata Amorim','Rua da Serafina, n  14',
    'Picard es','8524-520');
INSERT INTO person VALUES(63065186,'Liliana Santos','Rua das Flores, n  32','
    Carregado','2580-410');
INSERT INTO person VALUES(53250530,'M rio Fernandes','Rua D. Afonso Henriques
    , n  6, 2 E ','Leiria','5320-632');
INSERT INTO person VALUES(63520543,'Jo o Serra','Avenida S o Paulo, n 5','
    Guimar es','6304-863');
INSERT INTO person VALUES(54609438,'Manuel Quintas','Rua dos queijos, n 42','
    Seia','6270-789');

/*phone_number                                VAT     |    phone */
INSERT INTO phone_number VALUES(12345678,'912345670');
INSERT INTO phone_number VALUES(12032014,'269358742');
INSERT INTO phone_number VALUES(85202652,'210524896');
INSERT INTO phone_number VALUES(96520520,'936210875');
INSERT INTO phone_number VALUES(85264856,'263596307');
INSERT INTO phone_number VALUES(35263686,'965423580');
```

```
25 INSERT INTO phone_number VALUES(98585856,'918520856');
26 INSERT INTO phone_number VALUES(65856663,'920520648');
27 INSERT INTO phone_number VALUES(69630596,'251068266');
28 INSERT INTO phone_number VALUES(78526209,'270352066');
29 INSERT INTO phone_number VALUES(45620852,'930536378');
30 INSERT INTO phone_number VALUES(63065186,'918206630');
31 INSERT INTO phone_number VALUES(53250530,'+63220185206');
32 INSERT INTO phone_number VALUES(63520543,'963025225');
33 INSERT INTO phone_number VALUES(54609438,'936723009');
34
35 /*client                                    VAT */
36 INSERT INTO client VALUES(12345678);
37 INSERT INTO client VALUES(96520520);
38 INSERT INTO client VALUES(35263686);
39 INSERT INTO client VALUES(98585856);
40 INSERT INTO client VALUES(65856663);
41 INSERT INTO client VALUES(69630596);
42 INSERT INTO client VALUES(78526209);
43 INSERT INTO client VALUES(45620852);
44 INSERT INTO client VALUES(54609438);
45 INSERT INTO client VALUES(53250530);
46
47 /*veterinary                                VAT     | specializaion | bio*/
48 INSERT INTO veterinary VALUES(85264856,'Cirurgia','Especializa o em
       Cirurgia na Faculdade de Cl nica Veterin ria de Lisboa. Natural de
       Londres mas h 10 anos em Portugal.');
49 INSERT INTO veterinary VALUES(12032014,'Patologia Cl nica','Especializa o
       em Patologia Cl nica na Faculdade de Cl nica Veterin ria de Lisboa.
       Casado, pai de 5. Muito carinho com os animais');
50
51 /*assistant                              VAT */
52 INSERT INTO assistant VALUES(85202652);
53 INSERT INTO assistant VALUES(63065186);
54 INSERT INTO assistant VALUES(53250530);
55 INSERT INTO assistant VALUES(63520543);
56
57 /*species                                  name     | desc  */
58 INSERT INTO species VALUES('Mammal','Animais que d o de amamentar s crias')
       ;
59
60 INSERT INTO species VALUES('Cat','Animal peludo.');
61 INSERT INTO species VALUES('Pig','O porco dom stico(nome cient fico: Sus
       scrofa domesticus), ou simplesmente porco,  um mam fero bunodonte n o-
```

```
    ruminante, da fam lia dos suidae.');
62          /*Birds*/
63 INSERT INTO species VALUES('Bird', 'Coisa que potencialmente voa.');
64 INSERT INTO species VALUES('Parrot Bird','Ave falante');
65 INSERT INTO species VALUES('Canary Bird',' um p ssaro.');
66 INSERT INTO species VALUES('Eagle','Ave de rapina com vis o tima ');
67 INSERT INTO species VALUES('Peacock','Ave colorida e vaidosa');
68 INSERT INTO species VALUES('Mockingbird','Ave de dimens o muito pequena');
69 INSERT INTO species VALUES('Dog','O c o (nome cient fico: Canis lupus
    familiaris),[1] no Brasil tamb m chamado de cachorro, um mam fero
    carn voro da fam lia dos can deos, subesp cie do lobo, e talvez o mais
    antigo animal domesticado pelo ser humano.');
70          /*c o*/
71 INSERT INTO species VALUES('Afghan Hound','O porte altivo e sua silhueta ao
    mesmo tempo forte e flex vel.');
72 INSERT INTO species VALUES('Affenpinscher','Esse pequeno c o de pelos
    r gidos, de trote muito curto e de grandes olhos redondos, possui uma
    express o simiesca caracter stica.');
73 INSERT INTO species VALUES('Airedale Terrier','Pelagem dura, densa e aramada,
    mas n o t o longa. Ativo, musculoso, gil e de movimentos r pidos e
    precisos. Sempre atento a tudo ao seu redor.');
74 INSERT INTO species VALUES('Akita','O Akita uma grande e poderosa ra a de
    c o, com uma presen a nobre e intimidante.');
75 INSERT INTO species VALUES('American Staffordshire Terrier','C o forte, de
    andar muito gil .');
76 INSERT INTO species VALUES('Basenji','C o bem musculoso, com andar nobre,
    gracioso como o de uma gazela.');
77 INSERT INTO species VALUES('Basset Hound','O Basset Hound um c o sempre
    bem humorado. Muito tranquilo, mas sempre vigilante se torna um bom c o
    de guarda. Amig vel com outros animais e com crian as tamb m. N o
    gosta de ficar sozinho.');
78 INSERT INTO species VALUES('Beagle','Pequeno, compacto e resistente, Beagles
    s o companheiros ativos para crian as e adultos. S o alegres e
    divertidos, mas tamb m podem ser teimosos.');
79 INSERT INTO species VALUES('Beagle Harrier','Como um tipico c o de ca a —
    sempre trabalham em grupo—o gentil Harrier extrovertido e simp tico,
    nunca agressivo com outros c es.');
80 INSERT INTO species VALUES('Bearded Collie','Bearded Collie c o de muita
    inteligencia, sem nenhum sinal de nervosismo ou agressividade. Muito
    peludo e conhecido por pular demais e alto.');
81 INSERT INTO species VALUES('Bedlington Terrier','Bem humorado, tendo uma
    natureza afetuosa, digna, n o t mido ou agressivo. Calmo em repouso,
    mas cheio de coragem quando excitado.');
```

```
82 INSERT INTO species VALUES('Bichon Fris ','Bichons s o ativos e famosos
    pelos "Bichon Blitz" ou "Bichon Buzz," surtos imprevis veis de energia
    que causam frenesi e fazem os c es usarem o quintal ou mesmo a casa como
    uma pista de corrida , latindo , saltando pulando dentro e fora de m veis.'
    );
83 INSERT INTO species VALUES('Bloodhound','Particularmente ligado a seu dono.
    Tolerante com seus companheiros de canil e outros animais dom sticos.
    antes de tudo reservado e obstinado.  sens vel tanto aos elogios quanto
     s corre  es. Jamais agressivo. Sua voz  muito grave, mas ele n o
    um ladrador.');
84 INSERT INTO species VALUES('Bobtail','D cil e de temperamento est vel.
    Corajoso, fiel e confi vel; n o  de forma alguma t mido ou agressivo
    se n o for provocado.');
85 INSERT INTO species VALUES('Australian Cattle Dog','C o de tamanho m dio
    forte , sem ser pesado.');
86 INSERT INTO species VALUES('Bernese Mountain Dog','Confi vel , atencioso ,
    vigilante , corajoso diante de situa  es do cotidiano; am vel e fiel
    para com a fam lia; seguro de si e pac fico com estranhos; de
    temperamento moderado e d cil.');
87 INSERT INTO species VALUES('Border Collie','Muito simplesmente , o Border
    Collie  muito din mico. Sua personalidade  caracteristicamente alerta
    , energico , trabalhador e inteligente. Ele aprende r pido  t o r pido
    que  s vezes  dif cil ter desafios novos para ele.');
88 INSERT INTO species VALUES('Border Terrier','Esse Terrier tem o corpo um tanto
    alto e a cabe a peculiar , com grandes olhos muito expressivos.');
89 INSERT INTO species VALUES('Borzoi','Possui um olhar penetrante , capaz de
    enxergar muito longe. Sua rea  o  impetuosa. C o grande , de aspecto
    aristocr tico e grande harmonia de formas e movimentos. N o
    barulhento e , como todo galgo ,  um velocista nato');
90 INSERT INTO species VALUES('Boston Terrier','Adora brincar e passear , mas
    preciso cuidado durante os exerc cios f sicos , pois n o tolera
    atividades intensas nem temperaturas extremas. Pac fico , esse antigo
    combatente muito ativo , tornou-se um animal de companhia muito apreciado.'
    );
91 INSERT INTO species VALUES('Boxer','O Boxer  muito inteligente e brincalh o
    , Leva muito a s rio seu papel como c o de guarda.  um excelente
    companheiro e cuida da sua fam lia com muito zelo.');
92 INSERT INTO species VALUES('French Bulldog','Frenchies s o conhecidos por sua
     aten  o tranquila. Eles seguem seus tutores por toda casa , sem fazer
    incomodar em nada. Quando eles querem a sua aten  o , eles v o
    carinhosamente cutucar voc  com a pata.');
93 INSERT INTO species VALUES('English Bulldog','C o de pelo curto , com o corpo
    muito perto do ch o e pesado para seu tamanho');
```

```
94 INSERT INTO species VALUES('Bull␣Terrier','Fortemente␣estruturado␣e␣bem␣
       proporcional,␣esse␣c o␣ativo␣move-se␣com␣largas␣passadas,␣com␣um␣ritmo␣
       regular␣que␣lhe␣ ␣pr prio.');
95 INSERT INTO species VALUES('Bulmastife','C o␣fortemente␣estruturado␣mas␣
       harmonioso.␣passa␣a␣impress o␣de␣grande␣for a,␣sem␣ser␣pesado.');
96 INSERT INTO species VALUES('Cairn␣Terrier','Sua␣impress o␣geral␣ ␣a␣de␣um␣
       Terrier␣r stico,␣s lido,␣ gil ␣e␣cheio␣de␣ardor.');
97 INSERT INTO species VALUES('Cane␣Corso','Um␣excelente␣guardi o␣muito␣apegado␣
       ao␣dono.');
98 INSERT INTO species VALUES('Portuguese␣Water␣Dog','Tem␣a␣express o␣dura␣e␣um␣
       olhar␣penetrante␣e␣atento.␣Possui␣grande␣poder␣visual␣e␣apreci vel␣
       sensibilidade␣olfativa.␣Nadador␣e␣mergulhador␣ex mio␣e␣resistente,␣ ␣o␣
       companheiro␣insepar vel␣do␣pescador,␣a␣quem␣presta␣in meros␣servi os,␣
       n o␣s ␣pescando,␣mas␣tamb m␣guardando␣e␣defendendo␣seu␣barco.');
99 INSERT INTO species VALUES('Estrela␣Mountain␣Dog','A␣intelig ncia,␣lealdade␣e
       ␣beleza␣do␣C o␣da␣Serra␣da␣Estrela␣fazem␣dele,␣para␣al m␣de␣um␣c o␣de␣
       guarda␣de␣excel ncia,␣um␣ ptimo ␣c o␣de␣fam lia.');
100 INSERT INTO species VALUES('Chinese␣Crested␣Dog','Ele␣ ␣um␣excelente␣
       companheiro␣e␣ ␣extremamente␣inteligente.␣ ␣pequeno,␣gracioso,␣esbelto␣e
       ␣ativo.␣Praticamente␣n o␣tem␣pelos.');
101 INSERT INTO species VALUES('Cavalier␣King␣Charles␣Spaniel','O␣Cavalier␣King␣
       Charles␣Spaniel␣ ␣pequeno,␣amoroso␣e␣brincalh o.␣O␣t pico␣Cavalier␣
       est ␣sempre␣feliz,␣confiante␣e␣descontra do,␣um␣amigo␣para␣todos␣que␣
       encontra.␣Fiel␣ ␣sua␣heran a␣como␣"c es␣de␣cachecol,"␣Cavaliers␣gostam␣
       de␣estar␣em␣uma␣colo.');
102 INSERT INTO species VALUES('Chesapeake␣Bay␣Retriever','O␣Chesapeake␣Bay␣
       Retriever␣ ␣um␣c o␣grande␣e␣elegante,␣de␣belas␣propor es.');
103 INSERT INTO species VALUES('Chihuahua','O␣Chihuahua␣ ␣muito␣atento␣e␣um␣vigia
       ␣barulhento␣no␣caso␣de␣qualquer␣intrus o␣no␣seu␣territ rio,␣real␣ou␣
       imaginado.');
104 INSERT INTO species VALUES('Chow␣Chow','Apesar␣de␣sua␣carranca,␣um␣bom␣Chow␣
       nunca␣deve␣ser␣agressivo␣.␣Ele␣ ␣independente␣e␣digno,␣normalmente␣se␣
       apega␣a␣uma␣unica␣pessoa.');
105 INSERT INTO species VALUES('American␣Cocker␣Spaniel','Ele␣ ␣afetuoso,␣
       carinhoso␣e␣gosta␣de␣participar␣de␣atividades␣familiares.␣Est ␣disposto␣
       para␣fazer␣qualquer␣tipo␣de␣exerc cio␣ou␣uma␣r pida␣caminhada.');
106 INSERT INTO species VALUES('English␣Cocker␣Spaniel','O␣Cocker␣Ingl s␣ ␣
       descrito␣como␣alegre␣e␣carinhoso␣com␣uma␣disposi o␣constante.␣Ele␣ ␣
       brincalh o,␣trein vel,␣e␣amig vel␣para␣com␣as␣pessoas␣(embora␣ s ␣vezes
       ␣reservado␣com␣estranhos)␣e␣outros␣c es.');
107
108 /*generalization_species                                    name1| name2*/
109 INSERT INTO generalization_species VALUES('Pig','Mammal');
```

```
110 INSERT INTO generalization_species VALUES('Cat','Mammal');
111 INSERT INTO generalization_species VALUES('Dog','Mammal');
112 INSERT INTO generalization_species VALUES('Mockingbird','Bird');
113 INSERT INTO generalization_species VALUES('Peacock','Bird');
114 INSERT INTO generalization_species VALUES('Eagle','Bird');
115 INSERT INTO generalization_species VALUES('Parrot Bird','Bird');
116 INSERT INTO generalization_species VALUES('Canary Bird','Bird');
117 INSERT INTO generalization_species VALUES('Afghan Hound','Dog');
118 INSERT INTO generalization_species VALUES('Affenpinscher','Dog');
119 INSERT INTO generalization_species VALUES('Airedale Terrier','Dog');
120 INSERT INTO generalization_species VALUES('Akita','Dog');
121 INSERT INTO generalization_species VALUES('American Staffordshire Terrier','
        Dog');
122 INSERT INTO generalization_species VALUES('Basenji','Dog');
123 INSERT INTO generalization_species VALUES('Basset Hound','Dog');
124 INSERT INTO generalization_species VALUES('Beagle','Dog');
125 INSERT INTO generalization_species VALUES('Beagle Harrier','Dog');
126 INSERT INTO generalization_species VALUES('Bearded Collie','Dog');
127 INSERT INTO generalization_species VALUES('Bedlington Terrier','Dog');
128 INSERT INTO generalization_species VALUES('Bichon Fris  ','Dog');
129 INSERT INTO generalization_species VALUES('Bloodhound','Dog');
130 INSERT INTO generalization_species VALUES('Bobtail','Dog');
131 INSERT INTO generalization_species VALUES('Australian Cattle Dog','Dog');
132 INSERT INTO generalization_species VALUES('Bernese Mountain Dog','Dog');
133 INSERT INTO generalization_species VALUES('Border Collie','Dog');
134 INSERT INTO generalization_species VALUES('Border Terrier','Dog');
135 INSERT INTO generalization_species VALUES('Borzoi','Dog');
136 INSERT INTO generalization_species VALUES('Boston Terrier','Dog');
137 INSERT INTO generalization_species VALUES('Boxer','Dog');
138 INSERT INTO generalization_species VALUES('French Bulldog','Dog');
139 INSERT INTO generalization_species VALUES('English Bulldog','Dog');
140 INSERT INTO generalization_species VALUES('Bull Terrier','Dog');
141 INSERT INTO generalization_species VALUES('Bulmastife','Dog');
142 INSERT INTO generalization_species VALUES('Cairn Terrier','Dog');
143 INSERT INTO generalization_species VALUES('Cane Corso','Dog');
144 INSERT INTO generalization_species VALUES('Portuguese Water Dog','Dog');
145 INSERT INTO generalization_species VALUES('Estrela Mountain Dog', 'Dog');
146 INSERT INTO generalization_species VALUES('Chinese Crested Dog','Dog');
147 INSERT INTO generalization_species VALUES('Cavalier King Charles Spaniel','Dog
        ');
148 INSERT INTO generalization_species VALUES('Chesapeake Bay Retriever','Dog');
149 INSERT INTO generalization_species VALUES('Chihuahua','Dog');
150 INSERT INTO generalization_species VALUES('Chow Chow','Dog');
```

```
151 INSERT INTO generalization_species VALUES('American Cocker Spaniel','Dog');
152 INSERT INTO generalization_species VALUES('English Cocker Spaniel','Dog');
153
154 /*animal                              name |    VAT   |species_name|colour|gender|
      birth_year|age */
155 INSERT INTO animal VALUES('Bobi',12345678,'Boxer','Brown','Male','2013',NULL);
156 INSERT INTO animal VALUES('Luna',12345678,'Chinese Crested Dog','White','
      Female','2015',NULL);
157 INSERT INTO animal VALUES('Pala',96520520,'Bobtail','Dark','Female','2016',
      NULL);
158 INSERT INTO animal VALUES('Onit rio',96520520,'Basset Hound','Brown','Male','
      2013',NULL);
159 INSERT INTO animal VALUES('PiuPiu',35263686,'Mockingbird','Yellow','Male','
      2018',NULL);
160 INSERT INTO animal VALUES('FalaFala',69630596,'Parrot Bird','Red','Female','
      2011',NULL);
161 INSERT INTO animal VALUES('Rapina',45620852,'Eagle','Brown','Female','2014',
      NULL);
162 INSERT INTO animal VALUES('Malandro',69630596,'Parrot Bird','Yellow','Male','
      2013',NULL);
163 INSERT INTO animal VALUES('Miau',45620852,'Cat','Dark','Male','2015',NULL);
164 INSERT INTO animal VALUES('Bobi',65856663,'Boston Terrier','Orange','Female','
      2017',NULL);
165 INSERT INTO animal VALUES('Riscas',45620852,'Boston Terrier','Brown','Male','
      2016',NULL);
166 INSERT INTO animal VALUES('Peggy',53250530,'Pig','Pink','Female','2015',NULL);
167 INSERT INTO animal VALUES('Papinhas',54609438,'Estrela Mountain Dog','Brown','
      Male','2018',NULL);
168 INSERT INTO animal VALUES('Iris',54609438,'Peacock','Green','Female','2007',
      NULL);
169 INSERT INTO animal VALUES('Matumbe',54609438,'Canary Bird','Yellow','Male','
      2009',NULL);
170
171 /*consult

                    name | VAT_owner | date_timestamp | s | o | a | p |
      VAT_client | VAT_vet | weight*/
172 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight)
      VALUES('Bobi',12345678,'2018-09-18 18:00:01',12345678,12032014,'27');
173 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight)
      VALUES('Luna',12345678,'2018-09-18 15:52:56',12345678,12032014,'4.5');
174 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight)
      VALUES('Luna',12345678,'2018-10-18 09:25:58',12345678,12032014,'4.9');
```

```
175 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight)
      VALUES('Pala',96520520,'2018-11-01 12:46:38',96520520,85264856,'30');
176 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight,o)
       VALUES('Onit rio',96520520,'2018-11-01 17:06:54',35263686,85264856,'32',
      'This dog is obese. Give him less food.');
177 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight,o)
       VALUES('Onit rio',96520520,'2018-10-01 15:24:54',35263686,12032014,'31.2
      ','This dog is obese. Give him less food.');
178 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight)
      VALUES('Onit rio',96520520,'2018-10-20 17:39:54',35263686,12032014,'30.5'
      );
179 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight,o)
       VALUES('Miau',45620852,'2016-02-06 14:50:30',65856663,85264856,'39','Take
      into account obesity.');
180 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight)
      VALUES('PiuPiu',35263686,'2018-05-15 16:35:15',35263686,12032014,'3');
181 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight,s,
      o,a,p) VALUES('PiuPiu',35263686,'2018-08-01 12:45:02',69630596,12032014,'6
      ','There is excess of weight','Piupiu is obese and has a Potassium issue
      in the blood analysis','Has low obesity and Insect Bites','Give him
      desparasis - once a month');
182 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight)
      VALUES('Rapina',45620852,'2017-03-20 15:18:15',45620852,12032014,'20');
183 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight)
      VALUES('FalaFala',69630596,'2015-12-21 25:12:00',69630596,85264856,'12');
184 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight,s)
       VALUES('Miau',45620852,'2017-06-15 16:25:16',45620852,85264856,'30', '
      Good loss of weight');
185 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight)
      VALUES('Bobi',65856663,'2018-09-11 18:16:24',65856663,12032014,'15');
186 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight)
      VALUES('Malandro',69630596,'2015-06-16 15:16:17',69630596,85264856,'16');
187 INSERT into consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight)
      VALUES('Riscas',45620852,'2016-05-15 16:32:12',45620852,85264856,'15');
188 INSERT into consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight)
      VALUES('Pala',96520520,'2018-08-10 15:15:15',35263686,12032014,'16');
189 INSERT INTO consult(name,VAT_owner,date_timestamp,VAT_client,VAT_vet,weight)
      VALUES('Peggy',53250530,'2018-05-20 20:15:16',45620852,12032014,'13');
190
191 /*participation                                    name | VAT_owner |
      date_timestamp | VAT_assistant*/
192 INSERT INTO participation VALUES('Bobi',12345678,'2018-09-18 18:00:01'
      ,85202652);
```

```
193 INSERT INTO participation VALUES('Miau',45620852,'2017-06-15 16:25:16'
      ,85202652);
194 INSERT INTO participation VALUES('Onit rio',96520520,'2018-10-20 17:39:54'
      ,85202652);
195 INSERT INTO participation VALUES('Bobi',65856663,'2018-09-11 18:16:24'
      ,85202652);
196 INSERT INTO participation VALUES('Malandro',69630596,'2015-06-16 15:16:17'
      ,85202652);
197 INSERT INTO participation VALUES('Malandro',69630596,'2015-06-16 15:16:17'
      ,63065186);
198 INSERT INTO participation VALUES('Rapina',45620852,'2017-03-20 15:18:15'
      ,85202652);
199
200 /*diagnosis_code*/
201 INSERT INTO diagnosis_code VALUES('00002','Anal Gland Disease');
202 INSERT INTO diagnosis_code VALUES('00008','Breast Cancer');
203 INSERT INTO diagnosis_code VALUES('00009','Bronchitis');
204 INSERT INTO diagnosis_code VALUES('00010','Cancer');
205 INSERT INTO diagnosis_code VALUES('00011','Canine Influenza Virus');
206 INSERT INTO diagnosis_code VALUES('00012','Cherry Eye');
207 INSERT INTO diagnosis_code VALUES('00015','Demodectic Mange');
208 INSERT INTO diagnosis_code VALUES('00016','Dental Disease');
209 INSERT INTO diagnosis_code VALUES('00017','Depression');
210 INSERT INTO diagnosis_code VALUES('00018','Diabetes Mellitus (Sugar Diabetes)'
      );
211 INSERT INTO diagnosis_code VALUES('00019','Diarrhea');
212 INSERT INTO diagnosis_code VALUES('00020','Distemper');
213 INSERT INTO diagnosis_code VALUES('00021','Dry Eye');
214 INSERT INTO diagnosis_code VALUES('00023','Ear Hematoma');
215 INSERT INTO diagnosis_code VALUES('00025','Ear Infection - Middle');
216 INSERT INTO diagnosis_code VALUES('00027','Ehrlichiosis');
217 INSERT INTO diagnosis_code VALUES('00028','Elbow Dysplasia');
218 INSERT INTO diagnosis_code VALUES('00029','Enteritis');
219 INSERT INTO diagnosis_code VALUES('00032','Esophagus - Enlarged');
220 INSERT INTO diagnosis_code VALUES('00033','Eye Infection');
221 INSERT INTO diagnosis_code VALUES('00034','Eyelid Conditions');
222 INSERT INTO diagnosis_code VALUES('00035','Fecal impaction');
223 INSERT INTO diagnosis_code VALUES('00036','Flea Allergy');
224 INSERT INTO diagnosis_code VALUES('00037','Folliculitis');
225 INSERT INTO diagnosis_code VALUES('00045','Heartworm Infestation');
226 INSERT INTO diagnosis_code VALUES('00050','Hookworm Infestation');
227 INSERT INTO diagnosis_code VALUES('00051','Hot Spots (Acute Moist Dermatitis)'
      );
```

```
228 INSERT INTO diagnosis_code VALUES('00052','Hypoglycemia');
229 INSERT INTO diagnosis_code VALUES('00059','kidney failure');
230 INSERT INTO diagnosis_code VALUES('00060','Laryngeal Paralysis');
231 INSERT INTO diagnosis_code VALUES('00061','Laryngitis');
232 INSERT INTO diagnosis_code VALUES('00062','Leukemia');
233 INSERT INTO diagnosis_code VALUES('00063','Lick Granuloma');
234 INSERT INTO diagnosis_code VALUES('00054','Lipoma');
235 INSERT INTO diagnosis_code VALUES('00055','Liver Disease');
236 INSERT INTO diagnosis_code VALUES('00056','Lyme Disease');
237 INSERT INTO diagnosis_code VALUES('00065','Lymphoma');
238 INSERT INTO diagnosis_code VALUES('09002','Obesity');
239
240 /*consult_diagnosis                    code | name | VAT_owner | date_timestamp
      */
241 INSERT INTO consult_diagnosis VALUES('00016','Bobi',12345678,'2018-09-18
      18:00:01');
242 INSERT INTO consult_diagnosis VALUES('00051','Onit rio',96520520,'2018-10-01
      15:24:54');
243 INSERT INTO consult_diagnosis VALUES('09002','Miau',45620852,'2016-02-06
      14:50:30');
244 INSERT INTO consult_diagnosis VALUES('09002','Onit rio',96520520,'2018-10-01
      15:24:54');
245 INSERT INTO consult_diagnosis VALUES('00059','PiuPiu',35263686,'2018-08-01
      12:45:02');
246 INSERT INTO consult_diagnosis VALUES('09002','PiuPiu',35263686,'2018-08-01
      12:45:02');
247 INSERT INTO consult_diagnosis VALUES('00062','Bobi',65856663,'2018-09-11
      18:16:24');
248 INSERT INTO consult_diagnosis VALUES('00045','PiuPiu',35263686,'2018-08-01
      12:45:02');
249 INSERT INTO consult_diagnosis VALUES('00056','PiuPiu',35263686,'2018-08-01
      12:45:02');
250 INSERT INTO consult_diagnosis VALUES('00054','Luna',12345678,'2018-09-18
      15:52:56');
251 INSERT INTO consult_diagnosis VALUES('00028','Rapina',45620852,'2017-03-20
      15:18:15');
252 INSERT INTO consult_diagnosis VALUES('00060','Riscas',45620852,'2016-05-15
      16:32:12');
253 INSERT into consult_diagnosis VALUEs('00002','Pala',96520520,'2018-08-10
      15:15:15');
254 INSERT INTO consult_diagnosis VALUES('00060','Bobi',65856663,'2018-09-11
      18:16:24');
255
```

```
256 /*medication                                    name | lab | dosage */
257 INSERT INTO medication VALUES('levicim','emagricon','5 comprimidos de 20 mg');
258 INSERT INTO medication VALUES('benouron','SLS','20 comprimidos de 500 mg');
259 INSERT INTO medication VALUES('laxil','intestiniti','10 capsulas de 100 mL');
260 INSERT INTO medication VALUES('benouron','SLS','20 comprimidos de 250 mg');
261 INSERT INTO medication VALUES('CliniDent','Bayer','5 biscoitos');
262 INSERT INTO medication VALUES('PelFri','SAY','1 frasco de 1 L');
263 INSERT INTO medication VALUES('Brufen','JAOS','20 comprimidos de 26g');
264 INSERT INTO medication VALUES('Figaro','Figo','1 frasco de 0.5L');
265 INSERT INTO medication VALUES('RiLimp','BIW','1 pomada de 250 mL');
266 INSERT INTO medication VALUES('Desparasis','TiraBicho','3 Capsulas de 20 mL');
267 INSERT INTO medication VALUES('Bracite','Novosso','25 comprimidos de 150 mg');
268
269 /*prescription                    code | name | VAT_owner | date_timestamp |
        name_med | lab | dosage | regime */
270 INSERT INTO prescription VALUES('00016','Bobi',12345678,'2018-09-18 18:00:01',
        'CliniDent','Bayer','5 biscoitos','Dar 1 por dia');
271 INSERT INTO prescription VALUES('00016','Bobi',12345678,'2018-09-18 18:00:01',
        'benouron','SLS','20 comprimidos de 250 mg','1 comprimido de 8 em 8 horas'
        );
272 INSERT INTO prescription VALUES('09002','Miau',45620852,'2016-02-06 14:50:30',
        'levicim','emagricon','5 comprimidos de 20 mg','1 comprimido por dia');
273 INSERT INTO prescription VALUES('09002','Miau',45620852,'2016-02-06 14:50:30',
        'laxil','intestiniti','10 capsulas de 100 mL','1 comprimido por dia');
274 INSERT INTO prescription VALUES('09002','Onit rio',96520520,'2018-10-01
        15:24:54','levicim','emagricon','5 comprimidos de 20 mg','2 comprimido por
        dia');
275 INSERT INTO prescription VALUES('09002','Onit rio',96520520,'2018-10-01
        15:24:54','laxil','intestiniti','10 capsulas de 100 mL','1 comprimido por
        dia');
276 INSERT INTO prescription VALUES('09002','PiuPiu',35263686,'2018-08-01 12:45:02
        ','levicim','emagricon','5 comprimidos de 20 mg','0.5 comprimido por dia')
        ;
277 INSERT INTO prescription VALUES('09002','PiuPiu',35263686,'2018-08-01 12:45:02
        ','laxil','intestiniti','10 capsulas de 100 mL','0.5 comprimido por dia');
278 INSERT INTO prescription VALUES('00045','PiuPiu',35263686,'2018-08-01 12:45:02
        ','Desparasis','TiraBicho','3 Capsulas de 20 mL','1 capsula por m s');
279 INSERT INTO prescription VALUES('00028','Rapina',45620852,'2017-03-20 15:18:15
        ','Bracite','Novosso','25 comprimidos de 150 mg','1 comprimido por dia');
280 INSERT INTO prescription VALUES('00028','Rapina',45620852,'2017-03-20 15:18:15
        ','Brufen','JAOS','20 comprimidos de 26g','1 comprimido de 8 em 8 horas');
281 INSERT INTO prescription VALUES('00028','Rapina',45620852,'2017-03-20 15:18:15
        ','benouron','SLS','20 comprimidos de 250 mg','1 comprimido por dia');
```

```
282 INSERT INTO prescription VALUES('00028','Rapina',45620852,'2017-03-20 15:18:15
    ','benouron','SLS','20 comprimidos de 500 mg','1 comprimido por dia');
283
284 /*indicator                                    name | reference_value |
    units | description */
285 INSERT INTO indicator VALUES('Blood-Sodium',320,'milligrams','Medido em mg/dL'
    );
286 INSERT INTO indicator VALUES('Blood-Potassium',17.5,'milligrams','Medido em mg
    /dL');
287 INSERT INTO indicator VALUES('Blood-Chloride',355,'milligrams','Medido em mg/
    dL');
288 INSERT INTO indicator VALUES('Blood-Ionized Calcium',4.4,'milligrams','Medido
    em mg/dL');
289 INSERT INTO indicator VALUES('Blood-Total Calcium',9,'milligrams','Medido em
    mg/dL');
290 INSERT INTO indicator VALUES('Blood-Total Serum Iron',100,'micrograms','Medido
    em ug/dL');
291 INSERT INTO indicator VALUES('Blood-Magnesium',2,'milligrams','Medido em mg/dL
    ');
292 INSERT INTO indicator VALUES('Blood-cholesterol',140,'milligrams','Medido em
    mg/dL');
293 INSERT INTO indicator VALUES('Urine-Potassium',60,'millimole','Medido em mmol
    /24h');
294 INSERT INTO indicator VALUES('Urine-Protein',10,'milligrams','Medido em mg/dL'
    );
295 INSERT INTO indicator VALUES('Urine-Urea',16,'grams','Medido em g/24h');
296 INSERT INTO indicator VALUES('Urine-Uric Acid',400,'milligrams','Medido em mg
    /24h');
297 INSERT INTO indicator VALUES('Urine-pH',6,'pH','Sem unidade');
298 INSERT INTO indicator VALUES('creatinine level',0.5,'milligrams','Medido em mg
    /24h');
299
300 /*_procedure                                  name | VAT_owner | date_timestamp |
    num | description */
301 INSERT INTO _procedure VALUES('PiuPiu',35263686,'2018-08-01 12:45:02',1042,'
    Kidney transplant');
302 INSERT INTO _procedure VALUES('PiuPiu',35263686,'2018-08-01 12:45:02',8256,'
    Blood test');
303 INSERT INTO _procedure VALUES('Luna',12345678,'2018-09-18 15:52:56',6136,'
    Blood test');
304 INSERT INTO _procedure VALUES('Rapina',45620852,'2017-03-20 15:18:15',2903,'
    Elbow X-ray');
```

```
305 INSERT INTO _procedure VALUES('Rapina',45620852,'2017-03-20 15:18:15',1892,'
    Elbow joint operation');
306
307 /*test_procedure                                    name | VAT_owner |
    date_timestamp | num | type */
308 INSERT INTO test_procedure VALUES('Luna',12345678,'2018-09-18 15:52:56',6136,'
    blood');
309 INSERT INTO test_procedure VALUES('PiuPiu',35263686,'2018-08-01 12:45:02'
    ,8256,'blood');
310
311 /*radiography                                  name | VAT_owner | date_timestamp |
     num | file */
312 INSERT INTO radiography VALUES('Rapina',45620852,'2017-03-20 15:18:15',2903,'/
    Users/Vet/Documents/RapinaElbow.xray');
313
314 /*produced_indicator                           name | VAT_owner | date_timestamp |
    num | indicator_name | value */
315 INSERT INTO produced_indicator VALUES('Luna',12345678,'2018-09-18 15:52:56'
    ,6136,'Blood-Sodium',322);
316 INSERT INTO produced_indicator VALUES('Luna',12345678,'2018-09-18 15:52:56'
    ,6136,'Blood-Total Serum Iron',150);
317 INSERT INTO produced_indicator VALUES('Luna',12345678,'2018-09-18 15:52:56'
    ,6136,'Blood-Ionized Calcium',4.4);
318 INSERT INTO produced_indicator VALUES('PiuPiu',35263686,'2018-08-01 12:45:02'
    ,8256,'creatinine level',1.1);
319
320 /*performed                                        name | VAT_owner |
    date_timestamp | num | VAT_assistant */
321 INSERT INTO performed VALUES('Rapina',45620852,'2017-03-20 15:18:15'
    ,2903,85202652);
```

Queries

1.

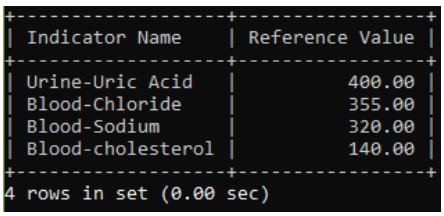
```
1  SELECT C.name AS 'Animal Name', O.name AS 'Owner Name', A.species_name AS '
       Animal Species', year(current_date)-birth_year AS 'Animal Age'
2  FROM consult AS C ,animal AS A, client NATURAL JOIN person AS O
3  WHERE C.VAT_owner = A.VAT
4  AND C.name = A.name
5  AND O.VAT = C.VAT_owner
6  AND VAT_vet IN (
7          SELECT VAT
8          FROM veterinary NATURAL JOIN person
9          WHERE name = 'John Smith'
10 )
11 GROUP BY C.name,C.VAT_owner;
```

```
+-------------+-----------------+----------------+------------+
| Animal Name | Owner Name      | Animal Species | Animal Age |
+-------------+-----------------+----------------+------------+
| FalaFala    | Sara Pimpalho   | Parrot Bird    |          7 |
| Malandro    | Sara Pimpalho   | Parrot Bird    |          5 |
| Miau        | Renata Amorim   | Cat            |          3 |
| Onitório    | Penelope Franco | Basset Hound   |          5 |
| Pala        | Penelope Franco | Bobtail        |          2 |
| Riscas      | Renata Amorim   | Boston Terrier |          2 |
+-------------+-----------------+----------------+------------+
6 rows in set (0.00 sec)
```

Figure 1: Result of the first query.

2.

```
1  SELECT name AS 'Indicator Name', reference_value AS 'Reference Value'
2  FROM indicator
3  WHERE units = 'milligrams'
4  GROUP BY reference_value
5  HAVING reference_value > 100
6  ORDER BY reference_value DESC;
```



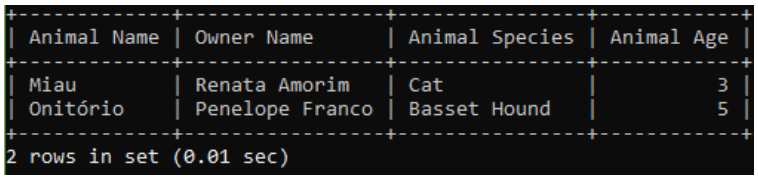
Indicator Name	Reference Value
Urine-Uric Acid	400.00
Blood-Chloride	355.00
Blood-Sodium	320.00
Blood-cholesterol	140.00

4 rows in set (0.00 sec)

Figure 2: Result of the second query.

3.

```
1  SELECT consult.name AS 'Animal Name', person.name AS 'Owner Name', animal.
       species_name AS 'Animal Species', year(current_date)-birth_year AS 'Animal
       Age'
2  FROM consult
3  INNER JOIN animal ON consult.name = animal.name
4  INNER JOIN client ON animal.VAT = client.VAT
5  INNER JOIN person ON client.VAT = person.VAT
6  WHERE o LIKE '%obesity%' OR o LIKE '%obese%'
7  AND weight > 30
8  AND (consult.name, VAT_owner, date_timestamp) IN
9  (SELECT consult.name, VAT_owner,max(date_timestamp)
10 FROM consult
11 GROUP BY consult.name,consult.VAT_owner);
```



Animal Name	Owner Name	Animal Species	Animal Age
Miau	Renata Amorim	Cat	3
Onitório	Penelope Franco	Basset Hound	5

2 rows in set (0.01 sec)

Figure 3: Result of the third query.

4.

```
1  SELECT name AS 'Client Name', VAT AS 'Client VAT', concat(address_street,', ',
       address_zip,' - ',address_city) AS 'Client Address'
2  FROM person
3  WHERE VAT IN(
4          SELECT VAT
5          FROM client
6          WHERE VAT NOT IN(
7          SELECT VAT
8          FROM animal));
```

Client Name	Client VAT	Client Address
Rui Espinola	78526209	Avenida Brasil, nº 24, 11º F, 9853-208 - Tomar
John Smith	98585856	Rua das Conchas, nº8, 1ºE, 2500-132 - Lisboa

2 rows in set (0.00 sec)

Figure 4: Result of the fourth query.

5.

```
1 SELECT diagnosis_code.name AS 'Diagnosis', COUNT(DISTINCT name_med) AS '
      Distinct_Medication'
2 FROM diagnosis_code LEFT OUTER JOIN prescription USING(code)
3 GROUP BY code
4 ORDER BY COUNT(DISTINCT name_med);
```

Diagnosis	Distinct Medication
Anal Gland Disease	0
Bronchitis	0
Canine Influenza Virus	0
Demodectic Mange	0
Depression	0
Diarrhea	0
Dry Eye	0
Ear Infection - Middle	0
Esophagus - Enlarged	0
Eyelid Conditions	0
Flea Allergy	0
Hot Spots (Acute Moist Dermatitis)	0
Lipoma	0
Lyme Disease	0
Laryngeal Paralysis	0
Leukemia	0
Lymphoma	0
Breast Cancer	0
Cancer	0
Cherry Eye	0
Diabetes Mellitus (Sugar Diabetes)	0
Distemper	0
Ear Hematoma	0
Ehrlichiosis	0
Enteritis	0
Eye Infection	0
Fecal impaction	0
Folliculitis	0
Hookworm Infestation	0
Hypoglycemia	0
Liver Disease	0
kidney failure	0
Laryngitis	0
Lick Granuloma	0
Heartworm Infestation	1
Dental Disease	2
Obesity	2
Elbow Dysplasia	3

38 rows in set (0.00 sec)

Figure 5: Result of the fifth query.

6.

For each one of the requested average numbers, the count of the occurrences was performed separately. As all the different selects have three common primary keys, it was used an union to combined all the four individual tables. Using the union operator, this combination becomes more robust since, for instance, there could be consults which have procedures but don't have diagnostics.

```
1  SELECT AVG(count_assistants) AS 'Average num of assistants', AVG(
       count_procedures) AS 'Average num of procedures', AVG(count_diagnosis_code
       ) AS 'Average num of diagnosis codes', AVG(count_prescriptions) AS '
       Average num of prescriptions'
2  FROM
3          ((SELECT consult.name, consult.VAT_owner, consult.date_timestamp,
               COUNT(participation.VAT_assistant) AS count_assistants, NULL AS
               count_procedures, NULL AS count_diagnosis_code, NULL AS
               count_prescriptions
4          FROM consult NATURAL LEFT OUTER JOIN participation
5          WHERE YEAR(date_timestamp) = '2017'
6          GROUP BY consult.name, consult.VAT_owner, consult.date_timestamp)
               UNION
7          (SELECT consult.name, consult.VAT_owner, consult.date_timestamp, NULL
               AS count_assistants, COUNT(_procedure.num) AS count_procedures,
               NULL AS count_diagnosis_code, NULL AS count_prescriptions
8          FROM consult NATURAL LEFT OUTER JOIN _procedure
9          WHERE YEAR(consult.date_timestamp) = '2017'
10         GROUP BY consult.name, consult.VAT_owner, consult.date_timestamp)
               UNION
11         (SELECT consult.name, consult.VAT_owner, consult.date_timestamp, NULL
               AS count_assistants, NULL AS count_procedures, COUNT(
               consult_diagnosis.code) AS count_diagnosis_code, NULL AS
               count_prescriptions
12         FROM consult NATURAL LEFT OUTER JOIN consult_diagnosis
13         WHERE YEAR(consult.date_timestamp) = '2017'
14         GROUP BY consult.name, consult.VAT_owner, consult.date_timestamp)
               UNION
15         (SELECT consult.name, consult.VAT_owner, consult.date_timestamp, NULL
               AS count_assistants, NULL AS count_procedures, NULL AS
               count_diagnosis_code, COUNT(prescription.name_med) AS
               count_prescriptions
16         FROM consult NATURAL LEFT OUTER JOIN prescription
17         WHERE YEAR(consult.date_timestamp) = '2017'
18         GROUP BY consult.name, consult.VAT_owner, consult.date_timestamp)) AS
               counts_table;
```

Average num of assistants	Average num of procedures	Average num of diagnosis codes	Average num of prescriptions
1.0000	1.0000	0.5000	2.0000

1 row in set (0.00 sec)

Figure 6: Result of the sixth query.

7.

In this query, table_aux counts the pairs (species, diseases) for sub-species of dogs, presenting the outputs in descending order of the counts. This table is then grouped by species. Since it's in a counts descending order and the *group by* selects the first line of the table for each species, the outputs correspond to the most frequent disease for sub-species of dog.

```
1  SELECT species_name AS 'Animal Species', code AS 'Diagnosis Code', ct AS '
       Diagnosis Count'
2  FROM (
3  SELECT species_name, code, COUNT(code) ct
4  FROM animal NATURAL JOIN consult_diagnosis
5  WHERE species_name IN(
6           SELECT name1
7           FROM generalization_species
8           WHERE name2 = 'Dog'
9  )
10 GROUP BY species_name, code
11 ORDER BY ct  DESC) AS table_aux
12 GROUP BY species_name;
```

Animal Species	Diagnosis Code	Diagnosis Count
Basset Hound	00051	1
Bobtail	00002	1
Boston Terrier	00060	2
Boxer	00016	1
Chinese Crested Dog	00054	1

5 rows in set (0.00 sec)

Figure 7: Result of the seventh query.

8.

```
1  SELECT DISTINCT name AS 'Person Name', VAT AS 'Person VAT'
2  FROM ((SELECT person.name, person.VAT
3           FROM client INNER JOIN consult
4           ON client.VAT = consult.VAT_owner
```

```
5           INNER JOIN person
6           ON person.VAT = client.VAT)
7           UNION
8           (SELECT person.name, person.VAT
9           FROM client INNER JOIN consult
10          ON client.VAT = consult.VAT_client
11          INNER JOIN person
12          ON person.VAT = client.VAT)) AS clients_table
13  NATURAL JOIN ((SELECT person.VAT
14          FROM assistant INNER JOIN person
15          ON person.VAT = assistant.VAT)
16          UNION
17          (SELECT person.VAT
18          FROM veterinary INNER JOIN person
19          ON person.VAT = veterinary.VAT)) AS staff_table;
```

```
+------------------+------------+
| Person Name      | Person VAT |
+------------------+------------+
| Mário Fernandes  |   53250530 |
+------------------+------------+
1 row in set (0.00 sec)
```

Figure 8: Result of the eighth query.

9.

```
1  SELECT name AS 'Client Name', concat(address_street,', ',address_zip,' - ',
       address_city) AS 'Client Address'
2  FROM (SELECT person.name, person.VAT, address_city, address_street,
       address_zip, species_name
3           FROM person INNER JOIN animal
4           ON person.VAT = animal.VAT) AS pet_owner_table
5  GROUP BY name, address_city, address_zip
6  HAVING COUNT(species_name) = COUNT(CASE WHEN species_name LIKE "%bird%" THEN 1
       END);
```

```
+-----------------+-----------------------------------------------+
| Client Name     | Client Address                                |
+-----------------+-----------------------------------------------+
| Maria Albertina | Praceta Ui Ui, nº8, 8274-653 - Amadora        |
| Sara Pimpalho   | Rua 25 de Abril, nº 74, 2504-974 - Grandola   |
+-----------------+-----------------------------------------------+
2 rows in set (0.00 sec)
```

Figure 9: Result of the nineth query.

Indexes

B+ trees are a good index structure for this project, as not only does it scale well with an increase of data, unlike an hash index, but it also allows for efficient search in range of values, due to its tree-like architecture. This is useful in cases such as in query 2, where it searches for reference values above 100.

1.

The first query requires a predicate where it is checked if the veterinary name corresponds to *John Smith*. Thus having an index to the attribute name of the table person will increase the access's speed to verify this predicate.

```
1 CREATE INDEX people_names_idx
2 ON person(name)
3 USING BTREE
```

2.

In the second query there are two conditions imposed to the indicator. For this reason, using a composite search key will make the access process more efficient than using separate single indexes for units and reference_value.

```
1 CREATE INDEX units_idx
2 ON indicator(units, reference_value)
3 USING BTREE
```

Changing the database

1.

The results of the first change are presented in Figure 10 and 11. By looking to the row corresponding to *John Smith*, one can see that the street and city was modified.

```
1 UPDATE person, client
2 SET address_street = 'Rua Girofl ,n 4', address_city = 'Leiria'
3 WHERE person.VAT = client.VAT
4 AND name = 'John Smith';
```

VAT	name	address_street	address_city	address_zip	VAT
65856663	John Smith	Praceta da manteiga, lote 3, 5ºD	Castanheira do Ribatejo	8641-068	65856663
98585856	John Smith	Rua das Conchas, nº8, 1ºE	Lisboa	2500-132	98585856

Figure 10: Content of the table *person* before performing the desired modifications.

VAT	name	address_street	address_city	address_zip	VAT
65856663	John Smith	Rua Giroflé, nº4	Leiria	8641-068	65856663
98585856	John Smith	Rua Giroflé, nº4	Leiria	2500-132	98585856

Figure 11: Content of the table *person* after performing the desired modifications.

2.

Figure 12 shows the examples of indicators used in blood tests, measured in milligrams, before any update is applied. After applying the SQL code shown bellow, it's possible to see in figure 13 that the 10% increase was correctly calculated.

```
1 UPDATE indicator AS i, test_procedure AS tp, produced_indicator AS pri
2 SET reference_value = reference_value*1.1
3 WHERE type = 'blood'
4 AND units = 'milligrams'
5 AND pri.indicator_name = i.name
6 AND tp.name = pri.name
7 AND tp.VAT_owner = pri.VAT_owner
8 AND tp.date_timestamp = pri.date_timestamp
9 AND tp.num = pri.num;
```

3.

Since we're using *ON DELETE CASCADE* on the creation of the entities that reference the clients, such as the animal and the consult entities, by deleting a client, every child table will automatically be deleted. This

```
+-----------------+
| reference_value |
+-----------------+
|            4.40 |
|          320.00 |
|            0.50 |
+-----------------+
```

Figure 12: Values of blood tests measured in milligrams, before the update.

```
+-----------------+
| reference_value |
+-----------------+
|            4.84 |
|          352.00 |
|            0.55 |
+-----------------+
```

Figure 13: Values of blood tests measured in milligrams, after the update.

way, to delete all the records associated to client John Smith, we only need to search for it in the *person* table and only call *DELETE* on this instance.

In Figure 14, we can see all the records associated to client John Smith, while in Figure 15 demonstrates the deletion of all the records, since the same queries now return empty sets.

```
1 DELETE FROM person
2 WHERE name = 'John␣Smith'
3 AND person.VAT IN (
4         SELECT client.VAT
5         FROM client);
```

```
MySQL [ist181579]> SELECT name FROM person WHERE name='John Smith';
SELE+------------+
| name       |
+------------+
| John Smith |
| John Smith |
| John Smith |
+------------+
3 rows in set (0.01 sec)

MySQL [ist181579]> SELECT animal.VAT FROM animal INNER JOIN person USING(VAT) WHERE person.name = 'John Smith';
+----------+
| VAT      |
+----------+
| 65856663 |
+----------+
1 row in set (0.00 sec)

MySQL [ist181579]> SELECT VAT_owner FROM consult INNER JOIN person ON VAT_owner = VAT WHERE person.name = 'John Smith';
+-----------+
| VAT_owner |
+-----------+
|  65856663 |
+-----------+
1 row in set (0.00 sec)

MySQL [ist181579]> SELECT VAT_owner FROM consult INNER JOIN person ON VAT_client = VAT WHERE person.name = 'John Smith';
+-----------+
| VAT_owner |
+-----------+
|  65856663 |
|  45620852 |
+-----------+
2 rows in set (0.00 sec)
```

Figure 14: All records associated to client John Smith.

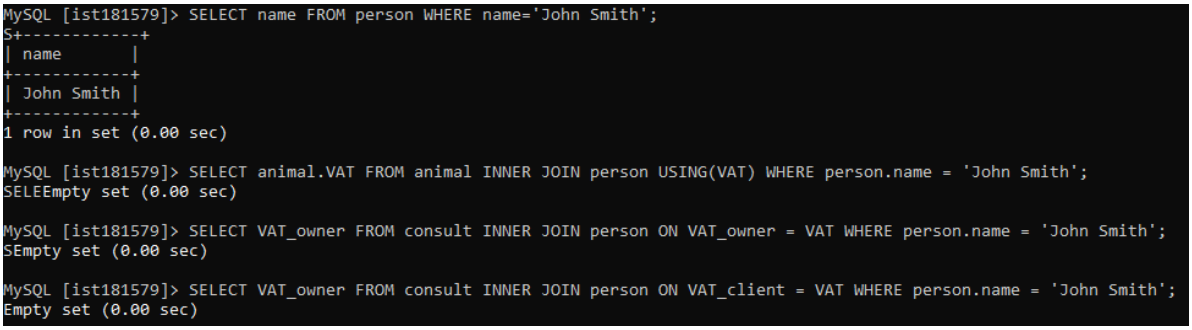


Figure 15: Empty results when searching for records associated to client John Smith, after running the delete command.

4.

As shown in Figure 16, initially there's one animal named PiuPiu which as a diagnosis of *kidney failure* and *creatinine levels* above 1.0. Because of this diagnosis and blood test values, this animal is our target of the diagnosis update. In Figure 17, we can see that PiuPiu's diagnosis was effectively changed to *end-stage renal disease*.

```
1  INSERT INTO diagnosis_code
2  VALUES ('01008','end-stage renal disease');
3
4  UPDATE consult_diagnosis AS cd, diagnosis_code AS dc
5  SET cd.code = '01008'
6  WHERE dc.name = 'kidney failure'
7  AND dc.code = cd.code
8  AND (cd.name, cd.VAT_owner, cd.date_timestamp) IN (
9          SELECT name, VAT_owner, date_timestamp
10         FROM  test_procedure NATURAL JOIN produced_indicator
11         WHERE type = 'blood'
12         AND indicator_name = 'creatinine level'
13         AND value > 1.0
14 )
```

```
MySQL [ist181579]> select *
    -> from consult_diagnosis as cd, diagnosis_code as dc
    -> where dc.name = 'kidney failure'
    -> and cd.code = dc.code
    -> and (cd.name, cd.VAT_owner, cd.date_timestamp) in(
    -> select name, VAT_owner, date_timestamp
    -> from  test_procedure natural join produced_indicator
    -> where type = 'blood'
    -> and indicator_name = 'creatinine level'
    -> and value > 1.0
    -> );
+-------+--------+-----------+---------------------+-------+----------------+
| code  | name   | VAT_owner | date_timestamp      | code  | name           |
+-------+--------+-----------+---------------------+-------+----------------+
| 00059 | PiuPiu |  35263686 | 2018-08-01 12:45:02 | 00059 | kidney failure |
+-------+--------+-----------+---------------------+-------+----------------+
1 row in set (0.00 sec)
```

Figure 16: Data of the animal with diagnosis to be updated.

```
MySQL [ist181579]> select *
    -> from consult_diagnosis as cd, diagnosis_code as dc
    -> WHERE dc.name = 'kidney failure'
    -> and cd.code = dc.code
    -> and (cd.name, cd.VAT_owner, cd.date_timestamp) in(
    -> select name, VAT_owner, date_timestamp
    -> from  test_procedure natural join produced_indicator
    -> WHERE type = 'blood'
    -> and indicator_name = 'creatinine level'
    -> and value > 1.0
    -> );
Empty set (0.00 sec)

MySQL [ist181579]> select *
    -> from consult_diagnosis as cd, diagnosis_code as dc
    -> WHERE dc.name = 'end-stage renal disease'
    -> and cd.code = dc.code
    -> and (cd.name, cd.VAT_owner, cd.date_timestamp) in(
    -> select name, VAT_owner, date_timestamp
    -> from  test_procedure natural join produced_indicator
    -> WHERE type = 'blood'
    -> and indicator_name = 'creatinine level'
    -> and value > 1.0
    -> );
+-------+--------+-----------+---------------------+-------+------------------------+
| code  | name   | VAT_owner | date_timestamp      | code  | name                   |
+-------+--------+-----------+---------------------+-------+------------------------+
| 01008 | PiuPiu |  35263686 | 2018-08-01 12:45:02 | 01008 | end-stage renal disease |
+-------+--------+-----------+---------------------+-------+------------------------+
1 row in set (0.00 sec)
```

Figure 17: Data of the animal that had serious kidney failure, after having the diagnosis updated.

Views

dim_date

```
1 CREATE VIEW dim_date AS
2 SELECT date_timestamp, DAY(date_timestamp) AS day, MONTH(date_timestamp) AS
      month, YEAR(date_timestamp) AS year
3 FROM consult;
```

date_timestamp	day	month	year
2018-09-18 18:00:01	18	9	2018
2018-09-18 15:52:56	18	9	2018
2018-10-18 09:25:58	18	10	2018
2018-10-01 15:24:54	1	10	2018
2018-10-20 17:39:54	20	10	2018
2018-11-01 17:06:54	1	11	2018
2018-05-15 16:35:15	15	5	2018
2017-06-15 16:25:16	15	6	2017
2017-03-20 15:18:15	20	3	2017
2016-05-15 16:32:12	15	5	2016
2018-09-11 18:16:24	11	9	2018
2016-02-06 14:50:30	6	2	2016
0000-00-00 00:00:00	0	0	0
2015-06-16 15:16:17	16	6	2015
2018-08-01 12:45:02	1	8	2018
2018-08-10 15:15:15	10	8	2018
2018-05-20 20:15:16	20	5	2018
2018-11-01 12:46:38	1	11	2018

Figure 18: Result after creating the *dim_date* view.

dim_animal

Since the age attribute is not calculated inside the database, one can use this view to calculate and present it to the user.

```
1 CREATE VIEW dim_animal AS
2 SELECT name AS animal_name, VAT AS animal_vat, species_name AS species, YEAR(
      CURRENT_DATE)-birth_year AS age
3 FROM animal;
```

animal_name	animal_vat	species	age
Bobi	12345678	Boxer	5
Bobi	65856663	Boston Terrier	1
FalaFala	69630596	Parrot Bird	7
Iris	54609438	Peacock	11
Luna	12345678	Chinese Crested Dog	3
Malandro	69630596	Parrot Bird	5
Matumbe	54609438	Canary Bird	9
Miau	45620852	Cat	3
Onitório	96520520	Basset Hound	5
Pala	96520520	Bobtail	2
Papinhas	54609438	Estrela Mountain Dog	0
Peggy	53250530	Pig	3
PiuPiu	35263686	Mockingbird	0
Rapina	45620852	Eagle	4
Riscas	45620852	Boston Terrier	2

Figure 19: Result after creating the *dim_name* view.

facts_consults

Considering that, in the veterinary consults, animals that go through a procedure don't always have a prescription and vice versa, we considered that, for the *facts_consults* view, there should be a full outer join between a table containing information of each animal's procedure and a table containing information of each animal's prescription. A full outer join allows to merge this information, without ignoring the cases when one or the other doesn't have a value for a given set of joining variables. By "joining variables", we mean the columns used to join the tables. However, since MySQL doesn't support full outer join operations, we have to use a workaround, such as doing a union of the table of the procedures data with a table of the prescriptions data, with both tables being created with the same number and name of columns, even if some columns are full of nulls.

Also, as MySQL doesn't allow subqueries in the creation of views, an intermediate view *union_table_view* is created, containing all the tables from the previously mentioned union, which the *facts_consults* view will than call on the *FROM* part of the query. As such, facts_consults filters the columns of *union_table_view*, groups them by consult and counts the number of procedures and descriptions.

```
1  -- Intermediate view
2  CREATE VIEW union_table_view AS
3  (SELECT animal_name, animal_vat, dim_date.date_timestamp AS timestamp, species
       , num, description, NULL AS code, NULL AS name_med, NULL AS lab, NULL AS
       dosage, NULL AS regime
4      FROM dim_animal LEFT OUTER JOIN _procedure
5      ON dim_animal.animal_name = _procedure.name AND dim_animal.animal_vat =
           _procedure.VAT_owner
6      LEFT OUTER JOIN dim_date
7      ON dim_date.date_timestamp = _procedure.date_timestamp
8      WHERE dim_date.date_timestamp IS NOT NULL)
9  UNION
10     (SELECT animal_name, animal_vat, dim_date.date_timestamp AS timestamp,
           species, NULL AS num, NULL AS description, code, name_med, lab, dosage
           , regime
11     FROM dim_animal LEFT OUTER JOIN prescription
12     ON dim_animal.animal_name = prescription.name AND dim_animal.animal_vat =
           prescription.VAT_owner
13     LEFT OUTER JOIN dim_date
14     ON dim_date.date_timestamp = prescription.date_timestamp
15     WHERE dim_date.date_timestamp IS NOT NULL);
16
17 CREATE VIEW facts_consults AS
18 SELECT animal_name AS name, animal_vat AS VAT, timestamp, COUNT(num) AS
       num_procedures, COUNT(DISTINCT name_med, lab, dosage) AS num_medications
19 FROM union_table_view
20 GROUP BY name, VAT, timestamp;
```

```
MySQL [ist181715]> -- Intermediate view
MySQL [ist181715]> CREATE VIEW union_table_view AS
    -> (SELECT animal_name, animal_vat, dim_date.date_timestamp AS timestamp, species, num, description, NULL AS code, NULL AS name_med, NULL AS lab, NULL AS dosage, NULL AS regime
    ->     FROM dim_animal LEFT OUTER JOIN _procedure
    ->     ON dim_animal.animal_name = _procedure.name AND dim_animal.animal_vat = _procedure.VAT_owner
    ->     LEFT OUTER JOIN dim_date
    ->     ON dim_date.date_timestamp = _procedure.date_timestamp
    ->     WHERE dim_date.date_timestamp IS NOT NULL)
    -> UNION
    ->     (SELECT animal_name, animal_vat, dim_date.date_timestamp AS timestamp, species, NULL AS num, NULL AS description, code, name_med, lab, dosage, regime
    ->     FROM dim_animal LEFT OUTER JOIN prescription
    ->     ON dim_animal.animal_name = prescription.name AND dim_animal.animal_vat = prescription.VAT_owner
    ->     LEFT OUTER JOIN dim_date
    ->     ON dim_date.date_timestamp = prescription.date_timestamp
    ->     WHERE dim_date.date_timestamp IS NOT NULL);
Query OK, 0 rows affected (0.01 sec)

MySQL [ist181715]> SELECT * FROM union_table_view;
```

animal_name	animal_vat	timestamp	species	num	description	code	name_med	lab	dosage	regime
Luna	12345678	2018-09-18 15:52:56	Chinese Crested Dog	6136	Blood test	NULL	NULL	NULL	NULL	NULL
PiuPiu	35263686	2018-08-01 12:45:02	Mockingbird	1042	Kidney transplant	NULL	NULL	NULL	NULL	NULL
PiuPiu	35263686	2018-08-01 12:45:02	Mockingbird	8256	Blood test	NULL	NULL	NULL	NULL	NULL
Rapina	45620852	2017-03-20 15:18:15	Eagle	1892	Elbow joint operation	NULL	NULL	NULL	NULL	NULL
Rapina	45620852	2017-03-20 15:18:15	Eagle	2903	Elbow X-ray	NULL	NULL	NULL	NULL	NULL
Bobi	12345678	2018-09-18 18:00:01	Boxer	NULL	NULL	00016	benouron	SLS	20 comprimidos de 250 mg	1 comprimido de 8 em 8 horas
Bobi	12345678	2018-09-18 18:00:01	Boxer	NULL	NULL	00016	CliniDent	Bayer	5 biscoitos	Dar 1 por dia
Miau	45620852	2016-02-06 14:50:30	Cat	NULL	NULL	09002	laxil	intestiniti	10 capsulas de 100 mL	1 comprimido por dia
Miau	45620852	2016-02-06 14:50:30	Cat	NULL	NULL	09002	levicim	emagricon	5 comprimidos de 20 mg	1 comprimido por dia
Onitório	96520520	2018-10-01 15:24:54	Basset Hound	NULL	NULL	09002	laxil	intestiniti	10 capsulas de 100 mL	1 comprimido por dia
Onitório	96520520	2018-10-01 15:24:54	Basset Hound	NULL	NULL	09002	levicim	emagricon	5 comprimidos de 20 mg	2 comprimido por dia
PiuPiu	35263686	2018-08-01 12:45:02	Mockingbird	NULL	NULL	00045	Desparasis	TiraBicho	3 Capsulas de 20 mL	1 capsula por mês
PiuPiu	35263686	2018-08-01 12:45:02	Mockingbird	NULL	NULL	09002	laxil	intestiniti	10 capsulas de 100 mL	0.5 comprimido por dia
PiuPiu	35263686	2018-08-01 12:45:02	Mockingbird	NULL	NULL	09002	levicim	emagricon	5 comprimidos de 20 mg	0.5 comprimido por dia
Rapina	45620852	2017-03-20 15:18:15	Eagle	NULL	NULL	00028	benouron	SLS	20 comprimidos de 250 mg	1 comprimido por dia
Rapina	45620852	2017-03-20 15:18:15	Eagle	NULL	NULL	00028	benouron	SLS	20 comprimidos de 500 mg	1 comprimido por dia
Rapina	45620852	2017-03-20 15:18:15	Eagle	NULL	NULL	00028	Bracite	Novosso	25 comprimidos de 150 mg	1 comprimido por dia
Rapina	45620852	2017-03-20 15:18:15	Eagle	NULL	NULL	00028	Brufen	JAOS	20 comprimidos de 26g	1 comprimido de 8 em 8 horas

18 rows in set (0.00 sec)

Figure 20: Data from the intermediate view *union_table_view*.

```
MySQL [ist181715]> SELECT * FROM facts_consults;
```

name	VAT	timestamp	num_procedures	num_medications
Bobi	12345678	2018-09-18 18:00:01	0	2
Luna	12345678	2018-09-18 15:52:56	1	0
Miau	45620852	2016-02-06 14:50:30	0	2
Onitório	96520520	2018-10-01 15:24:54	0	2
PiuPiu	35263686	2018-08-01 12:45:02	2	3
Rapina	45620852	2017-03-20 15:18:15	2	4

6 rows in set (0.00 sec)

Figure 21: Result after creating the *facts_consults* view.