

Trabalho Base de Dados 2019

--3(a)

insert into modelo values ('Renault', 'Renault Espace', '7', '7');

insert into taxi values ('Renault Espace', '2015', '123098', '22-AA-22');

insert into modelo values ('Mercedes', 'Mercedes CLK', '7', '9');

insert into taxi values ('Mercedes CLK', '2014', '234554', '21-AA-22');

insert into modelo values ('Honda', 'Honda Civic', '5', '5');

insert into taxi values ('Honda Civic', '2012', '89764', '20-AA-22');

insert into modelo values ('Mercedes', 'Mercedes-benz classe S', '5', '6.5');

insert into taxi values ('Mercedes-benz classe S', '2015', '79744', '19-AA-22');

--3(b)

insert into motorista values ('Manuel Duarte', 'L-123', '14/1/76', '1234');

insert into telefone values ('1234', '266262626');

insert into telefone values ('1234', '939393939');

insert into motorista values ('Fernando Nobre', 'L-124', '14/1/77', '1235');

insert into telefone values ('1235', '266262627');

insert into telefone values ('1235', '939393940');

insert into motorista values ('Anibal Silva', 'L-125', '14/1/78', '1236');

insert into telefone values ('1236', '266262628');

insert into telefone values ('1236', '939393941');

insert into motorista values ('Francisco Lopes', 'L-126', '14/1/79', '1237');

insert into telefone values ('1237', '266262629');

--3(c)

insert into cliente values ('Jose Silva', 'Rua Antonio Silva 23', '7100-434 Evora', '600700800900');

insert into cliente values ('Francisco Passos', 'Rua Manuel Passos 12', '7000-131 Evora', '600700800901');

insert into cliente values ('Pedro Sousa', 'Rua Joaquim Sousa 21', '7500-313 Evora', '600700800902');

--3(d)

insert into pedido values ('600700800900', 'Rua Silva Pais 33', '7120-212 Evora', '2/1/2016 9:00', '19-AA-22', '2/1/2016 8:43');

--3(e)

insert into turno values ('2/1/2016 8:00', '2/1/2016 9:00', '79744', '79944', '19-AA-22', '1234');

insert into turno values ('2/1/2016 8:00', '2/1/2016 17:00', '89764', '89964', '20-AA-22', '1235');

insert into turno values ('3/1/2016 8:00', '3/1/2016 17:00', '234554', '234954', '21-AA-22', '1236');

insert into turno values ('3/1/2016', '3/1/2016', '123098', '123498', '22-AA-22', '1237');

--3(f)

insert into servico values ('2/1/2016 8:12', '2/1/2016 8:32', '12', '5.25', '19-AA-22', '0.75', '0.76');

insert into servico values ('2/1/2016 8:43', '2/1/2016 8:52', '7', '3.25', '19-AA-22', '0.78', '0.79');

insert into servico values ('2/1/2016 8:53', '2/1/2016 9:59', '98', '53.25', '19-AA-22', '0.79', '0.83');

insert into servico values ('2/1/2016 10:13', '2/1/2016 10:29', '18', '19.25', '19-AA-22', '0.85', '0.87');

insert into servico values ('2/1/2016 11:10', '2/1/2016 11:39', '23', '22.25', '19-AA-22', '0.89', '0.92');

insert into servico values ('2/1/2016 12:00', '2/1/2016 13:39', '21', '42.25', '19-AA-22', '0.93', '0.96');

insert into servico values ('2/1/2016 15:20', '2/1/2016 15:39', '9', '12.25', '19-AA-22', '0.97', '0.99');

5

a)

```
select matricula
from modelo, taxi
where modelo.modelo = taxi.modelo and
marca like 'Mercedes';
```

b)

```
select nome
from motorista, turno, taxi, modelo
where motorista.Nbi = turno.Nbi
and turno.matricula = taxi.matricula
and taxi.modelo = modelo.modelo
```

and modelo.marca like 'Mercedes';

c)

```
select distinct telefone
from cliente,pedido,servico,turno,telefone
where pedido.matricula = servico.matricula
and servico.matricula = turno.matricula
and turno.Nbi = telefone.Nbi
and cliente.nif like '600700800900';
```

d)

```
select taxi.modelo
from motorista, turno, taxi
where motorista.nome like 'Anibal Silva'
and motorista.Nbi = turno.Nbi
and turno.matricula = taxi.matricula;
```

e)

```
select nome
from motorista
except
select motorista.nome
from pedido,cliente,servico,turno,motorista
where cliente.nome like 'Jose Silva'
and cliente.Nif = pedido.Nif
and pedido.matricula = servico.matricula
and servico.matricula = turno.matricula
and turno.Nbi = motorista.Nbi;
```

f)
select nome
from motorista
except
select motorista.nome
from motorista,turno,taxi,modelo
where modelo.marca like 'Mercedes'
and modelo.modelo = taxi.modelo
and taxi.matricula = turno.matricula
and turno.Nbi = motorista.Nbi;

5 a)

$$\pi_{matricula} \left(\sigma \left(\begin{array}{l} \text{modelo} \times \text{taxi} \\ \text{modelo.modelo} = \text{taxi.modelo} \wedge \text{marca} = \text{Mercedes} \end{array} \right) \right)$$

b)

$$\pi_{matricula} \left(\sigma \left(\begin{array}{l} \text{motorista} \times \text{turno} \times \text{taxi} \times \text{modelo} \\ \text{motorista.Nbi} = \text{turno.Nbi} \wedge \text{turno.matricula} = \text{taxi.matricula} \wedge \\ \text{taxi.modelo} = \text{modelo.modelo} \wedge \text{modelo.marca} = \text{Mercedes} \end{array} \right) \right)$$

c)

$$\pi_{telefone} \left(\sigma \left(\begin{array}{l} \text{cliente} \times \text{pedido} \times \text{servico} \times \text{turno} \times \text{telefone} \\ \text{pedido.matricula} = \text{servico.matricula} \wedge \text{servico.matricula} = \text{turno.matricula} \wedge \\ \text{turno.Nbi} = \text{telefone.Nbi} \wedge \text{cliente.nif} = 600700800900 \end{array} \right) \right)$$

d)

$$\pi_{taxi.modelo} \left(\sigma \left(\begin{array}{l} \text{motorista} \times \text{turno} \times \text{taxi} \\ \text{motorista.nome} = \text{Anibal Silva} \wedge \text{motorista.Nbi} = \text{turno.Nbi} \wedge \\ \text{turno.matricula} = \text{taxi.matricula} \end{array} \right) \right)$$

e)

$$\pi_{nome} \left(\sigma \left(\text{motorista} \right) \right) - \pi_{motorista.nome} \left(\sigma \left(\begin{array}{l} \text{pedido} \times \text{cliente} \times \text{servico} \times \text{turno} \times \text{motorista} \\ \text{cliente.nome} = \text{Jose Silva} \wedge \text{cliente.Nif} = \text{pedido.Nif} \wedge \\ \text{pedido.matricula} = \text{servico.matricula} \wedge \\ \text{servico.matricula} = \text{turno.matricula} \wedge \\ \text{turno.Nbi} = \text{motorista.Nbi} \end{array} \right) \right)$$

f)

$$\pi_{\text{nome}} \left(\sigma(\text{motorista}) \right) - \pi_{\text{motorista.nome}} \left(\begin{array}{l} \sigma(\text{motorista} \times \text{turno} \times \text{taxi} \times \text{modelo}) \\ \text{modelo.marca} = \text{Mercedes} \wedge \\ \text{modelo.modelo} = \text{taxi.modelo} \wedge \\ \text{taxi.matricula} = \text{turno.matricula} \wedge \\ \text{turno.kbi} = \text{motorista.kbi} \end{array} \right)$$