SQL:

1) Select FIO, FineType, FineDate
From Drivers as D Join Fines as F
on (D.DriverId = F.DriverId)

2) Select FineId
From Drivers as D Join Fines as F
on (D.DriverId = F.DriverId)
Where D.FIO = '...')

3) Select Distinct CarId, COUNT(DriverId)
From Cars as C Left Join DC on (C.CarId = DC.CarId)
Group by CarId

Рел. ал.:

1) (Drivers Join Fines)[FIO, FineType, Amount]
2) (Drivers Join (Fines Where FIO='...'))[FineId]
3) (Summarize (Cars Left Join DC) Per DC.CarId
Add Count(DriverId) as cnt)[CarId, cnt]

Исч. корт.:

Range of CX is Cars
Range of DX is Drivers
Range of FX is Fines
Range of DCX is DC

1) DX.FIO, FX.FineType, FX.Amount where exists
DX(DX.DriverId = FX.DriverId)

2) FX.FineId where exists DX(DX.DriverId=
=FX.DriverId and DX.FIO='...')

$\{AB\}^+ = \{A, B, D\}$

$AB \to D$

---

1) Select D.FIO, C.Model
From D Join DC on (D.DriverId = DC.DriverId) as T
Join C on (T.CarId = C.CarId)

((D Join DC) Join C)[Fio, Model]

D.FIO, C.Model where exists DCX(D.DriverId=
= DC.DriverId and DC.CarId = C.CarId)

2) Select distinct DriverId
From D Join F on (D.DriverId = F.DriverId)
where Amount > 1000

(D Join (F where Amount > 1000))[DriverId]

DX.DriverId where exists FX(DX.DriverId = F.DriverId
and FX.Amount > 1000)

3) Select DriverId
From D Join F on (D.DriverId = F.DriverI
...

Where Date = (select Min(date)
from F)

((Summarize F Per F Add
min(Date) as first_date)[Did] join D)

[Fio, Did]

DX. DriverId, DX.FIO Where exists FX(
FX.Date = min(FX.Date) and FX.DriverId =
= DX.DriverId)

Образец билета.

№2

	A	A,B,C,D,E,F
A→BC	A,B,C	A,B,C,D,E,F
AC→DE	A,B,C,D,E	A,B,C,D,E,F
D→F	A,B,C,D,E,F	A,B,C,D,E,F
E→AB	A,B,C,D,E,F	A,B,C,D,E,F

Ответ:
$\{A\}^+ = \{A,B,C,D,E,F\}$;

№1

SQL:

1) Select COUNT(ID)
From Tourists as T Join Cities as C
on (T.CityID = C.CityID
and C.Name = 'Moscow')

2) ST(SID, TID) - таблица-связка для Sights и Tourists;
Select Distinct T.ID, T.FirstName, T.LastName, T.Age,
T.CityID
From Tourists as T Join ST on (T.ID = ST.TID)
Join Sights as S on (SID = S.ID)
Join (Select ID
From Cities
Where Name = 'Paris' as C
On (S.CityID = C.ID)

3) Select S.Name, COUNT(ST.TID)
From ~~Tourists as T Join~~ ST ~~on (T.ID = ST.TID)~~
Right Join Sights as S on (ST.SID = S.ID)
Group by S.Name

Реляционная алгебра:

1) (Summarize
(Tourists Join(Cities Where Name='Moscow'))

Per Tourists
Add Count(ID) as count)[count]

2) ((Tourists ~~Rename ID as TID~~) Join ST)
Join (Sights ~~Rename ID as SID~~)) Join (Cities
where Name='Paris'))[TID, FirstName, LastName,
Age, CityID]

3) (Summarize (ST Right Join Sights)
Per Sights

Add Count(TID) as count)[Name, count]

Исчисление кортежей:

Range of TX IS T
Range of SX IS S
Range of CX IS C
Range of STX IS ST

1) Count(TX where exists CX(TX.CityID=CX.CityID
and CX.Name='Moscow'))

2) TX.ID where exists STX(exists SX(
exists CX(TX.ID=STX.TID and STX.SID=
=SX.ID and CX.Name='Paris')))

3) SX.Name, (COUNT(STX where SX.ID = STX.SID) as count

Билет №4 v1

1)

```
Select DriverLicense, FineType, FineDate
From Drivers as D Join Fines as F
        on (D.ID = F.DriverID)
(Drivers Join Fines)[DL, FT, FD]

Range of DX IS Drivers
Range of FX IS Fines
(DX.DL, FX.FT, FX.Date) where
    (DX.DriverID = FX.DriverID
```

2)

```
Select Cars.Model
From Cars Join DC on (Cars.ID = DC.CarID)
        Join Drivers on (Drivers.ID = DC.DriverID
                and Driver.Phone Like '%5')
((Cars Join DC) Join (Drivers where (Phone Like '%5')))
    [Model]

Range of CX IS Cars
Range of DX IS Drivers where (Phone like '%5')
Range of DCX IS DC
(CX.Model) where exists DCX (DCX.CarID = CX.ID
    and exists DX (DCX.DriverID = DX.ID))
```

3) Select Distinct DriverID
From DC
Group by DriverID
Having Count(CarID) ≥ 2

((Summarize DC Per DC{DriverID}
ADD (COUNT(CarID) as count) where count ≥ 2)
{DriverID}

Range of DCX IS DC
Range of DX IS D
DX.DriverID where count(DCX where
DCX.DriverID = DX.DriverID) ≥ 2

	A,E	A,B,C,D,E,H (N2)
A→BC	A,B,C,E	A,B,C,D,E,H
AC→D	A,B,C,D,E	A,B,C,D,E,H
EB→AD	A,B,C,D,E	A,B,C,D,E,H
E→H	A,B,C,D,E,H	A,B,C,D,E,H

Ответ: $\{AE\}^+ = \{A,B,C,D,E,H\}$;

$\{A\}^+ = \{A, C, D\}$

$\{AC\}^+ = \{A, C, D\}$

$\{E\}^+ = \{A, C, D, E, H\}$

$\{A\}^+ = \{A\}$; $\{B\}^+ = \{B\}$;

$ACF \rightarrow DG$?

~~$ACF \rightarrow A$~~

$A \rightarrow B$

$AC \rightarrow BC \rightarrow DE$

$AC \rightarrow D$

$AC \rightarrow E$

$AC \rightarrow AE$

$ACF \rightarrow AEF \rightarrow G$

$ACF \rightarrow G$

$ACF \rightarrow D$

$ACF \rightarrow DG$

```
Select FiO, Date
From D Join DC on (D.ID = DC.DID)
     Join C on (DC.CID = C.ID)
(D Join (DC Join C))[ Fio, Date]
```

~~Rename DF~~

CX. Date, DX. FIO where exists DCX (DX.ID = DCX.DID and DCX.CID = CX.ID)

```
Select Phone
From D Join DC on (D.ID= DC.DID)
        Join C on(C.ID= DC.CID
                and C.Color= 'White'
                and C.Date.Like '%2018')
((D Join DC) Join(C where (Color = 'White' and Date Like '%2018'))
 [ Phone ]
DX.Phone where Exists DCX (DX.ID=DCX.DID
   and exists CX(DCX.CID= CX.ID and CX.Color='White'
                and CX.Date Like '%2018'))

Select Distinct CID
From DC
Group by CID
Having COUNT(DID)>2
((Summarize DC Per DC{CID}
  ADD COUNT(DID)as count)where count>2)[CID]
CX.ID where COUNT(DCX where CX.ID=DCX.CID)>2
```

1) Select D.License, F.Type, F.Date
From Drivers Join Fines on (D.ID = F.DID)

(D Join F)[License, Type, Date];

...

DX.License, FX.Type, FX.Date where
(DX.ID = FX.DID)

2) Select Distinct CID
From DC
Where not exists (Select F.ID
From F
Where F.DID = DC.DID)

Select Distinct CID
From DC Where DID not IN
(Select DID
From DC
Where exists (Select F.ID
From F
Where F.DID = DC.DID))

Select Distinct CID
From DC Left Join F on (DC.DID = F.DID)
Where F.DID is null

((Summarize (DC Left Join F) Per DC {CID}
ADD (COUNT(ID) as count) Where count = 0)
[CID]

DX.CID where not exists F(DX.DID=
=F.ID

3) Select DID
From F
Group by D.ID
Having Min(F.Date) Like '%2020'

((Summarize
(D Join F) Per D{ID} ADD Min(Date) as
min Date) where min Date Like '%2020')
[DID]

DX.ID where min(FX.Date where (FX.DID=
=DX.ID)) Like '%2020'

(exists DX)

Select Distinct DID
From F
where Amount >1000;
(F where Amount >1000)[DID]
Range of FX IS F where (FX.Amount >1000)
FX.DID

Select Date.year, COUNT(Amount)
From F
Group by Date.year

Summarize F Per F{Da