

# *exercise set 4*


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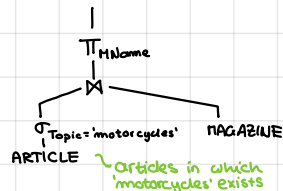
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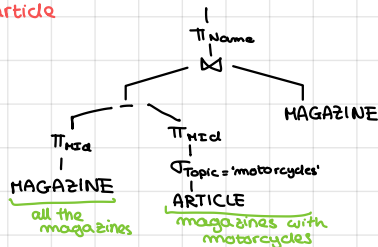
# Relational Algebra (set 4)

## exercise 1 s1

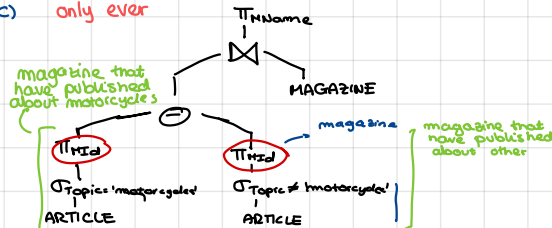
a) at least 1



b) no article



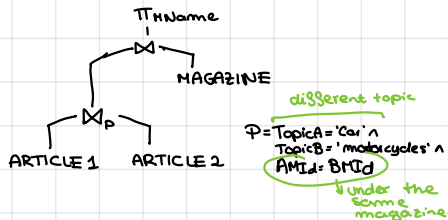
c) only ever



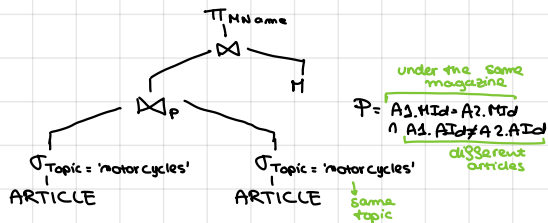
d) motorcycles OR cars



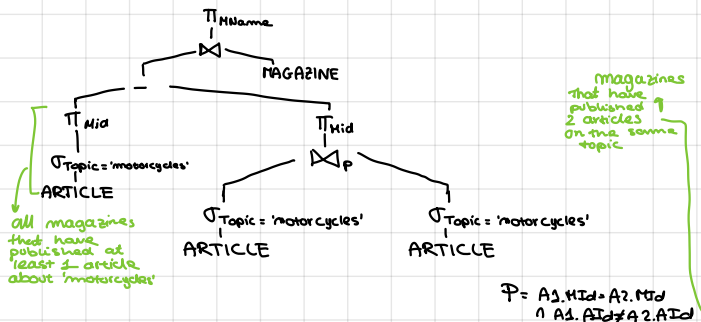
e) motorcycles AND cars



g) at least 1



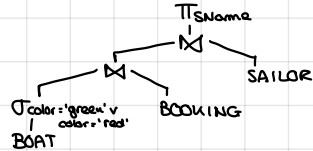
g) only 1



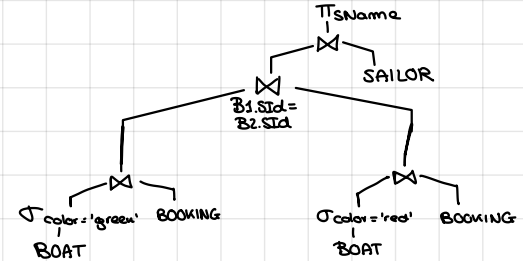
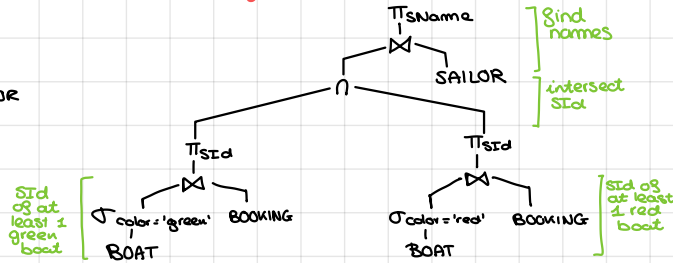
## exercise 2 s1

SAILOR(SId, SName, Expertise, DateOfBirth)  
 BOOKING(SId, BId, Date)  
 BOAT(BId, BName, Color)

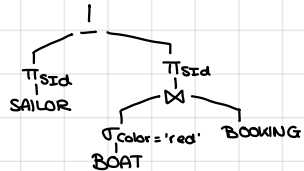
a) red OR green boat



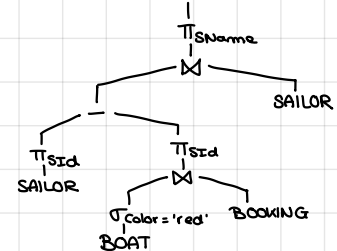
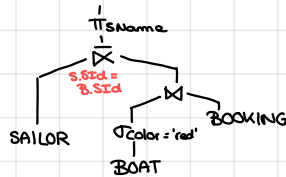
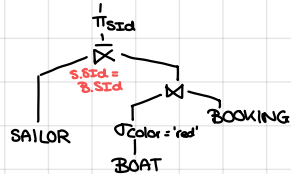
b) red and green boat



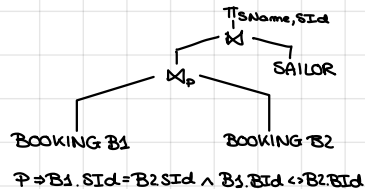
c) sailors who have never booked a red



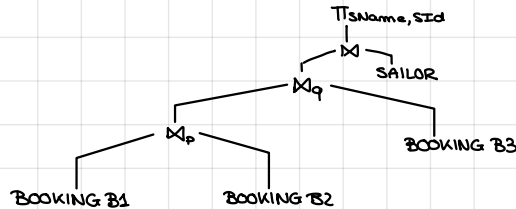
d) name who have never booked



e) at least two boats



f) at least three boats



$Q \Rightarrow B1.SId = B2.SId \wedge B1.BId \neq B2.BId \wedge B1.BId \neq B3.BId$

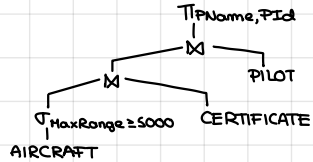
### exercise 3 S1

AIRCRAFT (AId, AName, MaximumRange)

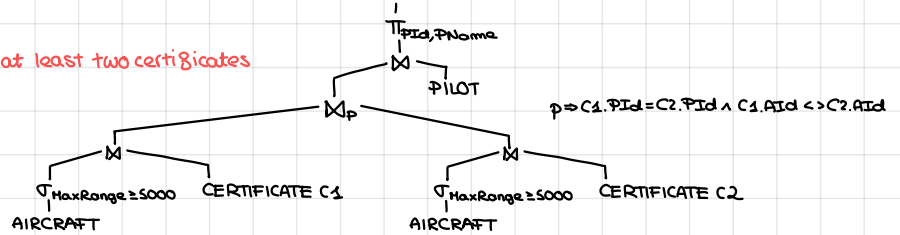
CERTIFICATE (PIId, AId)

PILOT (PIId, PName, Salary)

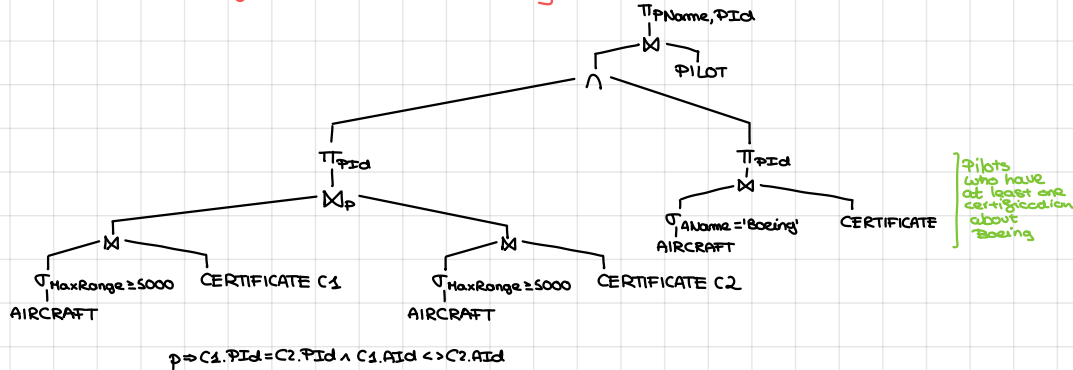
a) pilots certificates for aircraft range  $\geq 5000$



b) at least two certificates



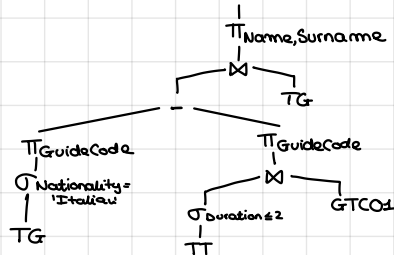
c) at least two certificates + at least 1 Boeing



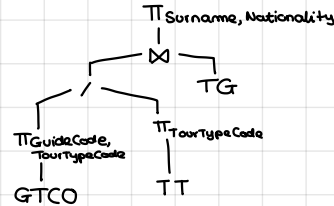
### exercise 1 S2

TOUR-GUIDE (GuideCode, Name, Surname, Nationality) TG  
 TYPE-OF-TOUR (TourTypeCode, Monument, Duration, City) TT  
 GROUP (GroupCode, NumberOSParticipants, Language) G  
 GUIDED-TOUR-CARRIED-OUT (GroupCode, Date, StartTime, TourTypecode, GuideCode) GTCO

a) Italian guides, duration > 2 hours



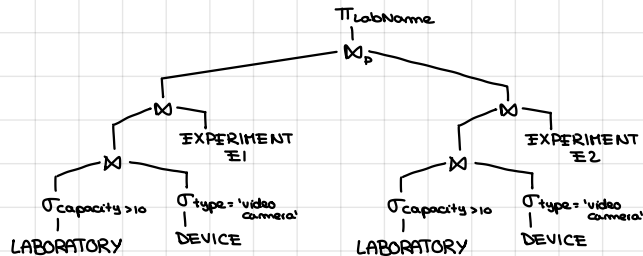
b) surname/nationality of guides have guided all types of tours



### exercise 2 S2

STUDENT (StudentID, Name, Surname, BirthDate)  
 LABORATORY (LabID, LabName, Capacity)  
 DEVICE (DeviceID, DeviceName, Type, LabID)  
 EXPERIMENT (DeviceID, StudentID, Date, Description, Category)

a) lab cap > 10, at least 2 exp performed on same day with device 'video camera' !

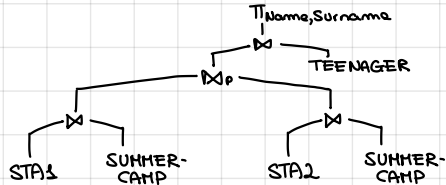


$p \Rightarrow E1.LabName = E2.LabName$   
 $\wedge E1.Date = E2.Date$   
 $\wedge (E1.DeviceID < E2.DeviceID$   
 OR  $E1.StudentID < E2.StudentID)$

### exercise 3 S2

TEENAGER (SSN, Name, Surname, BirthDate, CityOfResidence, Sex)  
 ACTIVITY (ActivityCode, AName, Description, Category)  
 SUMMER-CAMP (CampCode, CampName, City)  
 SUBSCRIPTION-TO-ACTIVITY-IN-SUMMER-CAMP (SSN, ActivityCode, CampCode,  
 SubscriptionDate)  
 STA

a) name/surname two teenagers who subscribed same date to two different activities, two summer camps, same city



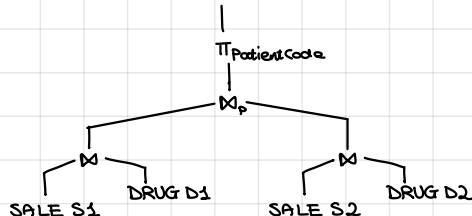
$p \Rightarrow$  STA1.SSN = STA2.SSN  
 $\wedge$  STA1.Date = STA2.Date  
 $\wedge$  STA1.ActCode  $\neq$  STA2.ActCode  
 $\wedge$  STA1.CampCode  $\neq$  STA2.CampCode  
 $\wedge$  STA1.City = STA2.City

here, it was subtended

### exercise 4 S2

DRUG (DrugCode, DrugName, Category)  
 PATIENT (PatientCode, PatientName, BirthDate)  
 DOCTOR (DoctorCode, DoctorName)  
 SALE (DrugCode, PatientCode, Date, DoctorCode, Quantity, Amount)

a) codes of patient bought at least two drugs same category, same day



$p \Rightarrow$  S1.PatientCode = S2.PatientCode  
 $\wedge$  S1.Date = S2.Date  
 $\wedge$  S1.Category = S2.Category  
 $\wedge$  S1.DrugCode  $\neq$  S2.DrugCode

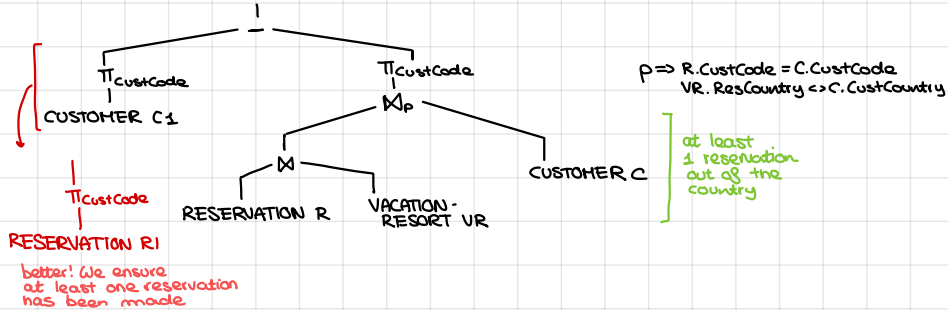
or it will get the same!!

## exercise 5 S2

VACATION-RESORT (ResCode, ResName, ResType, Location, ResCountry)

RESERVATION (CustCode, StartDate, EndDate, ResCode)

a) codes of customers that reserved resorts in their country



exercise 6 S2

SHOP (SCode, SName, DateOpening, City)

SALE (PCode, SCode, SaleStartDate, Duration, DiscountPercentage)

a) code/name of 'Puma' brand on sale at least twice in the same shop with discount  $> 60$  ?

