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1. Businf := $\pi_{busID,\ age,\ manufacturer}(\sigma_{advertisingRevenue>=9000}(Bus))$

2. R := $\pi_{SIN}(\sigma_{DateOfBirth>'1/1/1993' \vee Occupation='student'}(Person))$

   Number_Student := $\gamma_{count(*)\rightarrow NumberOfStudents}(\sigma_{Person.SIN=R.SIN}(Person \bowtie R))$

3. R := $\pi_{SIN}(\sigma_{Occupation='student'}(Person))$

   Result := $\gamma_{count(*)}(\sigma_{Take.SIN=R.SIN}\ (\sigma_{Bus.RouteID = 5 \wedge take.date='5/3/2017'}\ (Take \bowtie Bus) \bowtie R))$

4. Result := $\tau_{SUM(AdvertisingRevenue)\ DESC}(\gamma_{RouteID,\ SUM(AdvertisingRevenue)\rightarrow AdRevenue}(Bus))$

5(a). R := $\pi_{SIN}(\sigma_{COUNT(date)<3}(\gamma_{SIN,COUNT(date)}(Infraction)))$

   Result := $\pi_{Person.SIN,\ Person.FirstName,\ Person.LastName}(\sigma_{Person.SIN=R.SIN}\ (Person \bowtie R))$

5(b). R := $\tau_{SUM(Infraction.Demerit)\ DESC}(\pi_{Infraction.SIN,SUM(Infraction.Demerit)\rightarrow TotalDemerit,SUM(Infraction.Fine)\rightarrow TotalFine}$

   $(\sigma_{SUM(Infraction.Demerit)>=2}(\gamma_{Infraction.SIN,\ SUM(Infraction.Demerit),SUM(Infraction.fine)}(\sigma_{Infraction.SIN=Driver.SIN}$
   $(Infraction \bowtie Driver)))))$

6. R := $\pi_{Bus.Manufacturer}(\sigma_{COUNT(Bus.BusID<2}(\gamma_{Manufacturer,\ COUNT(BusID)}(Bus)))$

   Result := $\pi_{Bus.BusID,\ Bus.Manufacturer}\ (\sigma_{Bus.Manufacturer=R.Manufacturer}\ (Bus \bowtie R))$

7(a). Result := $\gamma_{Passenger.type,}$

   $SUM(Fare.fee)\rightarrow TotalRevenue(\sigma_{Take.SIN=Passenger.SIN}(\sigma_{Passenger.Type=Fare.Type}(Passenger \bowtie Fare)$
   $\bowtie Take)))$

7(b). Result := $\pi_{Passenger.type}(\sigma_{SUM(Fare.fee)>500}(\gamma_{Passenger.type,}$

$_{SUM(Fare.fee)\rightarrow TotalRevenue}(\sigma_{Take.SIN=Passenger.SIN}(\sigma_{Passenger.Type=Fare.Type}(Passenger \bowtie Fare) \bowtie Take))))$

7(c). Result := $\pi_{Passenger.type}(\sigma_{rownum()=1}(\tau_{SUM(Fare.fee)\ DESC}(\gamma_{Passenger.type,\ SUM(Fare.fee)\rightarrow TotalRevenue}(\sigma_{Take.SIN=Passenger.SIN \wedge Take.Date='5/1/2017'}(\sigma_{Passenger.Type=Fare.Type}(Passenger \bowtie Fare) \bowtie Take)))))$

8(a) R1 := $\gamma_{COUNT(*)}((\sigma_{Take.Date='5/7/2017'}(Bus \bowtie Take) \bowtie Route))$

MAX := $\gamma_{MAX(num)}$ (R1)

Result :=

$\pi_{Route.RouteID,COUNT(*)\rightarrow NumberOfPassenger}(\sigma_{COUNT(*)=MAX}(\gamma_{COUNT(*)}(\sigma_{Take.Date='5/7/2017'}(Bus \bowtie Take) \bowtie Route)))$

8(b) R1 := $\gamma_{COUNT(*),\ Take.date}$(Take)

MAX := γ_{MAX} (R1)

Result := $\pi_{Take.Date,\ COUNT(Take.SIN)\rightarrow NumberOfTrips}(\sigma_{COUNT(Take.SIN)=MAX}(\gamma_{Take.Date,\ COUNT(Take.SIN)}$ (Take))

9. Result := $\pi_{Person.Occupation}(\sigma_{Take.Date='5/5/2017'}((\sigma_{Site.SIName='Library' \vee Take.Date='5/6/2017'}(Site \bowtie Go) \bowtie Bus) \bowtie Take) \bowtie Person)$

10. R := $\pi_{Infraction.SIN,SUM(Infraction.Demerit)}(\sigma_{SUM(Infraction.Demerit)<10}(\gamma_{Infraction.SIN,\ SUM(Infraction.Demerit)}$ (Infraction)))

Result := $\pi_{Person.FirstName,\ Person.LastName,\ Person.SIN\rightarrow ID}$ ($\sigma_{Driver.YearsOfService>5 \wedge Driver.Salary>80000}(Driver \bowtie Person) \bowtie R$)

11. Result := $\pi_{Person.FirstName,\ Person.LastName,\ Person.Sex}(\sigma_{Person.Occupation='student'}(\sigma_{Event.EName='Marauders\ Tennis'}(\sigma_{Bus.RouteID=4}(Take \bowtie Bus) \bowtie Go) \bowtie Event) \bowtie Person)$

12. R := $\pi_{Go.RouteID}$ ($\sigma_{Event.EName='Marauders\ Basketball'}(Go \bowtie Event)$)

Result := $\pi_{\text{Schedule.RouteID, Stop.SName, Schedule.ArrivalTime}}(\sigma_{\text{Schedule.ArrivalTime}>=\text{'16:20:00' AND Schedule.ArrivalTime} <= \text{'16:50:00' AND Schedule.Date='5/1/2017'}}((\text{Schedule} \bowtie R) \bowtie \text{Stop}))$