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1. $\pi_{HName,City}\tau_{-Annual_Budget}(\sigma_{Annual_Budget>3000000}(Hospital))$

2. $\pi_{FirstName,LastName,Gender,DateOfBirth}((\sigma_{Disease='\%cancer\%'}(Diagnose) \bowtie Patient) \bowtie_{PatientID=ID} \sigma_{('2019-11-12'-DateOfBirth)/365<41)\wedge(City='Toronto')}(Person))$

3. a) $\pi_{Specialty,avg(Salary)}\gamma_{Specialty,avg(Salary)}(Physician)$

b) $Temp := Physician \bowtie (\pi_{P1.HName}\sigma_{(P1.HName=H1.HName)\wedge(H1.City='Hamilton')}(Hospital\ H1 \bowtie Physician\ P1) \vee (\pi_{P1.HName}\sigma_{(P1.HName=H1.HName)\wedge(H1.City='Toronto')}(Hospital\ H1 \bowtie Physician\ P1))$
$\pi_{Specialty,avg(Salary)}\sigma_{count(*)>=5}\gamma_{Specialty,avg(Salary),count(*)}(Temp)$

c) $\pi_{YearsOfPractice,avg(Salary)}\gamma_{YearsOfPractice,avg(Salary)}\tau_{-YearsOfPractice}(Nurse)$

4) $Temp := \sigma_{Date>='2017-08-05'}(Admission) \wedge \sigma_{Date<='2017-08-10'}(Admission)$
$\pi_{HName,count(PatientID)}\gamma_{HName,count(PatientID)}(Temp)$

10 a) $Temp := \pi_{PhysicianID}\sigma_{(DName='Intensive\ Care\ Unit')\wedge(HName='University\ of\ Toronto\ Medical\ Centre')}$ (Physician)
$Tempconcat := \pi_{distinct(Disease||'\ '||Prognosis),Disease,Prohnosis}(Diagnose \bowtie Temp)$
$\pi_{Disease,Prognosis}(Tempconcat)$

b) $Temp := \pi_{PhysicianID}\sigma_{(DName='Intensive\ Care\ Unit')\wedge(HName='University\ of\ Toronto\ Medical\ Centre')}$ (Physician)
$TempPatient := \pi_{distinct(PatientID)}(Diagnose \bowtie Temp)$
$\tau_{-TotalCost}(\pi_{PatientID,sum(Fee)->TotalCost}\gamma_{PatientID,TotalCost}(Take \bowtie MedicalTest \bowtie TempPatient))$

c) $Temp := \pi_{PhysicianID}\sigma_{(DName='Intensive\ Care\ Unit')\wedge(HName='University\ of\ Toronto\ Medical\ Centre')}$ (Physician)
$TempPatient := \pi_{distinct(PatientID)}(Diagnose \bowtie Temp))$

$\tau_{-TotalCost}(\pi_{PatientID,sum(UnitCost)->TotalCost}\gamma_{PatientID,TotalCost}(Prescription \bowtie Drug \bowtie TempPatient))$

11. $TempCategory := \pi_{PatientID}\sigma_{Category='urgent'}(Admission) \cup \pi_{PatientID}\sigma_{Category='standard'}$ (Admission)

$TempCount := \pi_{PatientID,count(HName)}\sigma_{count(*)=2}\gamma_{PatientID,count(HName),count(*)}(Admission \bowtie Hospital \bowtie TempCount))$

$\pi_{ID,FirstName,LastName}(Person \bowtie_{ID=PatientID} TempCount)$