

Assignment 4

I. 1. $\Pi_{name}(Student)$

2. $\Pi_{lecturer}(Subject)$

3. $\Pi_{code, lecturer}(\sigma_{lecturer = write's}(EnrolledIn))$

3. $Result := EnrolledIn \bowtie id$

3. $Result := EnrolledIn \bowtie EnrolledIn.code = subject.code Subject$

3. $Result \leftarrow EnrolledIn \bowtie EnrolledIn.code = subject.code Subject$

$\Pi_{code, lecturer}(\sigma_{lecturer = write's}(Result))$

(or)

$\Pi_{code, lecturer}(\sigma_{code = CS3010 \text{ OR } code = CS1500}(Result))$

4. $\sigma_{id} \Pi_{id, name}(\sigma_{id = 1234 \text{ OR } id = 4000}(Student))$

$\Pi_{id, name}(\sigma_{not name = joe \text{ OR } name = hector}(Student))$

$\Pi_{id, name}(Student) - \Pi_{id, name}(\sigma_{id = 2000}(Student))$

5. $\Pi Result \leftarrow Student \times EnrolledIn$

$\Pi_{Student.id, Student.name}(\sigma_{Student.id = 1234}(Result))$

6. $Result \leftarrow Student \bowtie_{theta} (\sigma_{Student.id = EnrolledIn.id}) EnrolledIn$

$\Pi_{Student} \sigma_{Student.id = 1234}(Result)$

7. $\text{Result} \leftarrow \text{Student} \bowtie_{\text{Student.id} = \text{enrolledIn.id}} \text{enrolledIn}$

$\sigma_{\text{Studentid} = 1234} (\text{Result})$

8. $\pi_{\text{id}} / \pi_{\text{Student.id}, \text{enrolledIn.code}} (\sigma_{\text{Studentid} = 1234} (\text{Result}))$

9. $\text{Result1} \leftarrow \text{Student} \bowtie_{\text{Student.id} = \text{enrolledIn.id}} \text{enrolledIn}$

$\text{Result2} \leftarrow \text{Result1} \bowtie_{\text{Result1.code} = \text{Subject.code}} \text{Subject}$

$\sigma_{\text{id} = 400} (\text{Result2})$

10. $\pi_{\text{name}, \text{lecturer}} (\sigma_{\text{lecturer} = \text{curtis}} (\text{Result2}))$

II

1. ~~$\text{Result} \leftarrow \text{Student} \bowtie_{\text{Student.id} =}$~~

1. $\text{Result} \leftarrow \text{Student} \bowtie_{\text{Student.id} = \text{enrolledIn.id}} \text{enrolledIn}$

~~$\pi_{\text{Result.name}} \quad \pi_{\text{name}} (\sigma_{\text{code} = \text{CS3020}} (\text{Result}))$~~

2.

~~$\pi_{\text{code}} (\sigma_{\text{lecturer} = \text{r}})$~~

2. $\text{Result} \leftarrow \text{Student} \bowtie_{\text{Student.id} = \text{enrolledIn.id}} \text{enrolledIn}$

~~$\pi_{\text{name}} \quad \pi_{\text{code}} (\sigma_{\text{name} = \text{Kector}} (\text{Result}))$~~

3. $\Pi_{\text{lecturer}} (\sigma_{\text{code} = \text{CS1500}} (\text{subject}))$

4. $\Pi_{\text{lecturer}} (\sigma_{\text{code} = \text{CS1600 OR code} = \text{CS3020}} (\text{subject}))$

5. $\text{Result} \leftarrow \sigma_{\text{count_lecturer} \geq 2} (\text{count_code})$

5. $\text{Result} \leftarrow \text{Lecturer} \Join \text{count_code} (\text{subject})$

~~$\sigma_{\text{count_code} \geq 2} (\text{Result})$~~

~~$\Pi_{\text{lecturer}} (\sigma_{\text{count_code} \geq 2} (\text{Result}))$~~

6. $\text{Result} \leftarrow \text{Student} \bowtie_{\text{student.id} = \text{enrolledIn.id}} \text{enrolledIn}$

~~$\sigma_{\text{name}} (\Pi_{\text{name}} (\sigma_{\text{code} = \text{CS1500 OR code} = \text{CS3010}} (\text{Result})))$~~

~~7. $\text{Table} \leftarrow \sigma_{\text{code} = \text{CS1500 OR code} = \text{CS3010}} (\text{Result})$~~

7. $\text{Table} \leftarrow \Pi_{\text{code}} (\sigma_{\text{code} = \text{CS1500 OR code} = \text{CS3010}} (\text{enrolledIn}))$

$\text{Result} \leftarrow \text{Student} \bowtie_{\text{student.id} = \text{enrolledIn.id}} \text{enrolledIn}$

~~$\Pi_{\text{name}} (\sigma_{\text{name}} (\text{Result} \div \text{Table}))$~~

8. $\text{Result}_1 \leftarrow \text{Student} \bowtie_{\text{student.id} = \text{enrolledIn.id}} \text{enrolledIn}$

~~$\text{Result}_2 \leftarrow \text{name} \Join_{\text{count code}} (\text{Result}_1)$~~

$\text{Result}_2 \leftarrow \text{name} \Join_{\text{count code}} (\text{Result}_1)$

$\Pi_{\text{name}} (\sigma_{\text{count_code} > 1} (\text{Result}_2))$

9. ~~$\sigma_{\text{code}} (\text{subject})$~~

10. ~~σ~~

9. $\Pi_{\text{code}} (\text{subject})$

10. $\Pi_{\text{name}} (\text{Student})$

11. $\text{Result} \leftarrow \text{Student} \bowtie_{\text{Student.id} = \text{enrolledIn.id}} \text{enrolledIn}$

~~$\Pi_{\text{name}} (\text{Result})$~~

$\Pi_{\text{name}} (\sigma_{\text{code} = \text{CS1500}} (\text{Result}))$

12. $\text{Result}_1 \leftarrow \text{Student} \bowtie_{\text{Student.id} = \text{enrolledIn.id}} \text{enrolledIn}$

$\text{Result}_2 \leftarrow \text{Result}_1 \bowtie_{\text{Result}_1.\text{code} = \text{subject.code}} \text{subject}$

$\Pi_{\text{name}} (\sigma_{\text{lecturer} = \text{Roger}} (\text{Result}_2))$

13. Result 1 \leftarrow Student \bowtie Student.id = Enrolled In.id
Enrolled In

Result 2 \leftarrow Result 1 \bowtie Result 1.code = Subject.code AND Lec
there Subject.lecture
1: Rogers

Subject

π_{name} (Subject) π_{name} (Result 2)

2. 1. π_{title} ($\sigma_{myear > 1997}$ (Movies))

2. π_{title} ($\sigma_{director = Hanson \text{ AND } myear > 1997}$ Movies)

3. $\pi_{title, rating}$ (Movies)

4. π_{actor} (Actors)

$\pi_{director}$ (Directors)

5. Result \leftarrow Actor \bowtie Actor.myear = Director.dyear Directors

5. Result 1 \leftarrow Actor \bowtie Actor.actor = Acts.actor Acts

Result 2 \leftarrow Result 1 \bowtie Result 1.title = Movies.title Movies

π_{name} π_{title} ($\sigma_{actor =$

π_{title} ($\sigma_{director = Coen \text{ AND } actor = McDormand}$ (Result 2))

6. ~~π_{title}~~

$R_1 \leftarrow \pi_{title} (\sigma_{actor = Maguire} (Acts))$

$R_2 \leftarrow \pi_{title} (\sigma_{actor = McDormand} (Acts))$

$R_1 - R_2$

7. $Result \leftarrow Movies \bowtie_{Movies.title = Acts.title} Acts$

$\pi_{actor} (\sigma_{director = coen} (Result))$

8. $Result \leftarrow Actors \times Directors$

$\pi_{director, actor} (\sigma_{year < ayear} (Result))$

~~9. $Result \leftarrow \pi_{title} (\sigma_{...})$~~

~~9. $Result1 \leftarrow \pi_{title}$~~

~~9. $Result1 \leftarrow Movies \bowtie$~~

9. $Result \leftarrow \pi_{title} (\sigma_{director = coen} (Movies))$

$Acts \div Result$

10. $Result1 \leftarrow Movies \bowtie_{Movies.title = Acts.title \text{ AND } Movies.director = coen} Acts$

$Result2 \leftarrow Result1 \bowtie_{actor} Result1.actor = Actors.actor$

~~$\pi_{name, ayear} (Result2)$~~