LẠI TRUNG MINH ĐỨC

IA1161 – SE62220

LAB 01 – Introduction to Database

LAB 01.

I.

1> $R(t, y, l, g, sP) := \sigma_{year = 1990 \text{ AND } studioName = 'Disney'}(Movies)$

Answer (title, length) := $\Pi_{t,l}(R)$

2> $R(n, a, g, b) := \sigma_{name = 'Aishwarya\ Rai'}(Movie\ Star)$

Answer (birthdate) := $\Pi_{b}(R)$

3> $R(n, a, p) := \sigma_{name = 'Film\ City'}(Studio)$

Answer (address) := $\Pi_{a}(R)$

4> $R(mT, mY, sN) := \sigma_{movieTitle = 'Monsoon\ Wedding'}(StarsIn)$

$S(n, a, g, b) := \sigma_{gender = 'female'}(Movie\ Star)$

Answers (name) := $\Pi_{name}(R \bowtie_{R.starName = S.name} S)$

5> $R(t, y, l, g, s, p) := \sigma_{studioName = 'Sony' \text{ AND } year = 2005}(Movies)$

$S(sN) := \Pi_{starName}(R \bowtie_{R.title = StarsIn.movieTitle} StarsIn)$

Answer (name, gender) := $\Pi_{name, gender}(S \bowtie_{S.starName = MovieStar.name} MovieStar)$

6> $R(p) := \Pi_{producer\#}(\sigma_{title = 'Star\ Wars'}(Movies))$

Answer (name) := $\Pi_{name}(R \bowtie_{R.producer\# = MovieExec.producer\#} MovieExec)$

7> $R(nW) := \Pi_{netWorth}(\sigma_{name = 'Subhash\ Ghai'}(MovieExec))$

Answer (name) := $\Pi_{name}(R \bowtie_{R.netWorth < MovieExec.netWorth} MovieExec)$

8> $R(l) := \Pi_{length}(\sigma_{title = 'Pride\ and\ Prejudice'}(Movies))$

Answer (name) := $\Pi_{name}(R \bowtie_{R.length > Movies.length} Movies)$

9> $R(t, y) := \Pi_{title, year}(Movies)$

~~$S(mT) := \Pi_{movieTitle}(StarsIn)$~~ $S(mT, mY) := \Pi_{movieTitle, movieYear}(StarsIn)$

~~Answer~~ $T(t, y) := \rho_{S(t,y)}(S)$

Answer (title, year) := $R \cup T$

10> $R(n, a) := \Pi_{name, address}(\sigma_{gender = 'male'}(Movie\ Star))$

$S(n, a) := \Pi_{name, address}(Movies \bowtie_{Movies.producer\# = MovieExec.producer\# \text{ AND } MovieExe.netWorth < 10.000} MovieExec)$

Answer (name, address) := $R \cap S$

II.

1> $\sigma_{Color = 'black\ \&\ white'\ AND\ Type\ !=\ 'laser'}(PRINTER) = \emptyset$

2> ~~$\sigma_{PC.Price = Laptop.LAPTOP.Price}$~~ $\sigma_{LAPTOP.RAM \geq PC.RAM\ AND\ LAPTOP.HDD \geq PC.HDD}\left(LAPTOP \bowtie_{PC.Price = LAPTOP.Price} PC\right)$

$= \emptyset$

3> $R(Maker) := \Pi_{Maker}(PC \bowtie_{model = Model} PRODUCT)$

$S(Maker) := \Pi_{Maker}(LAPTOP \bowtie_{Model = model} PRODUCT)$

$T(Maker) := \Pi_{Maker}(PRINTER \bowtie_{Model = model} PRODUCT)$

$\Rightarrow$ ~~Constraint~~ $(R \cup S) \cap T = \emptyset$

4> ~~$R(Maker) := R(RAM, HDD) := \Pi_{RAM, HDD}$~~

$R(PC.RAM, PC.HDD, LAPTOP.RAM, LAPTOP.HDD) :=$

$\Pi_{PC.RAM, PC.HDD, LAPTOP.RAM, LAPTOP.HDD}\left(PC \bowtie_{PC.Speed = LAPTOP.Speed} LAPTOP\right)$

$\Rightarrow \sigma_{PC.RAM < LAPTOP.RAM\ AND\ PC.HDD < LAPTOP.HDD}(R) = \emptyset$

5> $R_1(Speed, Price) := \Pi_{speed, price}(PC)$

$R_2(Speed, Price) := \Pi_{speed, price}(LAPTOP)$

$R(Speed, Price) := R_1 \cup R_2$

$S(Speed, Price) := R$

$\Rightarrow R \bowtie_{R.Speed = S.Speed\ AND\ R.Price = S.Price} S = \emptyset$

6> $\Pi_{Model}(PC) \cup \Pi_{Model}(LAPTOP) \cup \Pi_{Model}(PRINTER) \subseteq \Pi_{Model}(PRODUCT)$

$\subseteq \Pi_{Model}(PRODUCT)$