BIT2008A/ITEC2000A: Multimedia Data Management
Fall 2022

Lab 3

1. Relational Algebra

Q1.

professor (<u>prof_name</u>, dept_name)
department (<u>dept_name</u>, building)
committee (<u>comm_name</u>, <u>prof_name</u>)

a)

$$\Pi_{comm\_name}\left(committee \bowtie \left(\Pi_{prof\_name}\left(\sigma_{dept\_name='ECE'}\left(professor\right)\right)\right)\right)$$

b)

$$\Pi_{prof\_name}\left(committee \bowtie \Pi_{comm\_name}\left(\sigma_{prof\_name='Smith'}\left(committee\right)\right)\right)$$

Q2. Having the relation schema below for medical records, please answer the questions below using relational algebra.

patient(<u>p_id</u>, p_name, address)
doctor(<u>d_id</u>, d_name, hospital)
medicine(<u>m_id</u>, m_name)
appointment(<u>a_id</u>, p_id, d_id, date)
prescription(<u>a_id</u>, <u>m_id</u>)

a)

$$medicine \bowtie \Pi_{m\_id}\left(prescription \bowtie \Pi_{a\_id}\left(appointment \bowtie \Pi_{d\_id}\left(\sigma_{d\_name='Luis'}\left(doctor\right)\right)\right)\right)$$

b)

$$\Pi_{p\_name,\,address}\left(patient \bowtie \Pi_{p\_id}\left(appointment \bowtie \Pi_{d\_id}\left(\sigma_{hospital='Garcia'}\left(doctor\right)\right)\right)\right)$$

c)

$$\Pi_{m\_name}\left(medicine \bowtie \Pi_{m\_id}\left(prescription\right)\right)$$

d)

$$\Pi_{d\_name}\left(doctor \bowtie \Pi_{d\_id}\left(appointment \bowtie \Pi_{p\_id}\left(\sigma_{p\_name=d\_name}\left(patient \times doctor\right)\right)\right)\right)$$