

ENSF 608 – Fall 2021

Lab 4 – Friday, November 26

Questions 1 to 5

1. $\pi_{\text{FName}, \text{LName}} (\text{PARTICIPANT})$

2. $\pi_{\text{OlympicID}} (\sigma_{\text{Sex}='M' \text{ AND } \text{FirstGames}='Rio 2016'} (\text{ATHLETE}))$

3. $\pi_{\text{Country}, \text{LName}, \text{BirthYear}} (\text{PARTICIPANT} \bowtie_{\text{P.OlympicID}=\text{A.OlympicID}} \text{ATHLETE})$

4. $\pi_{\text{FName}, \text{Country}} (\sigma_{\text{Orientation}='Complete'} (\text{PARTICIPANT} \bowtie_{\text{P.OlympicID}=\text{C.OlympicID}} \text{COACH}))$

5. $\text{BRONZE_MEDALISTS} \leftarrow \pi_{\text{Olympian}} (\sigma_{\text{Medal}='Bronze'} (\text{INDIVIDUAL_RESULTS}))$

$\text{RESULT} \leftarrow \pi_{\text{FirstGames}} (\text{ATHLETE} \bowtie_{\text{A.OlympicID}=\text{B.Olympian}} \text{BRONZE_MEDALISTS})$

Questions 6 to 7

6. $\text{INDIVIDUAL_GOLD} \leftarrow \pi_{\text{Olympian}} (\sigma_{\text{Medal}='Gold'} (\text{INDIVIDUAL_RESULTS}))$
 $\text{TEAM_GOLD} \leftarrow \rho_{(\text{Olympian})} (\pi_{\text{Member1}} (\sigma_{\text{Medal}='Gold'} (\text{TEAM} \bowtie_{\text{TEAM.TeamID}=\text{TEAM_RESULTS.TEAM}} \text{TEAM_RESULTS})))$
 $\text{ALL_GOLD} \leftarrow \text{INDIVIDUAL_GOLD} \cup \text{TEAM_GOLD}$
 $\text{RESULT} \leftarrow \pi_{\text{Country}} (\text{PARTICIPANT} \bowtie_{\text{P.OlympicID}=\text{A.Olympian}} \text{ALL_GOLD}))$
7. $\text{ALL_COUNTRIES} \leftarrow \pi_{\text{Country}} \text{PARTICIPANT}$
 $\text{GOLD_COUNTRIES} \leftarrow \pi_{\text{Country}} (\text{PARTICIPANT} \bowtie_{\text{P.OlympicID}=\text{A.Olympian}} \text{ALL_GOLD}))$
 $\text{RESULT} \leftarrow \text{ALL_COUNTRIES} - \text{GOLD_COUNTRIES}$

Question 8

$\pi_{A.BirthYear} (ATHLETE \bowtie_{A.OlympicID = I.Olympian}$
 $(INDIVIDUAL_RESULTS \bowtie_{I.EventID=E.EventID}$
 $(\sigma_{(EventDate='July\ 30' \text{ OR } EventDate='July\ 31')}$
 $EVENT_SCHEDULE)))$

