

# ENSF 609 - Assignment 4

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## PART 1:

### Single Expression:

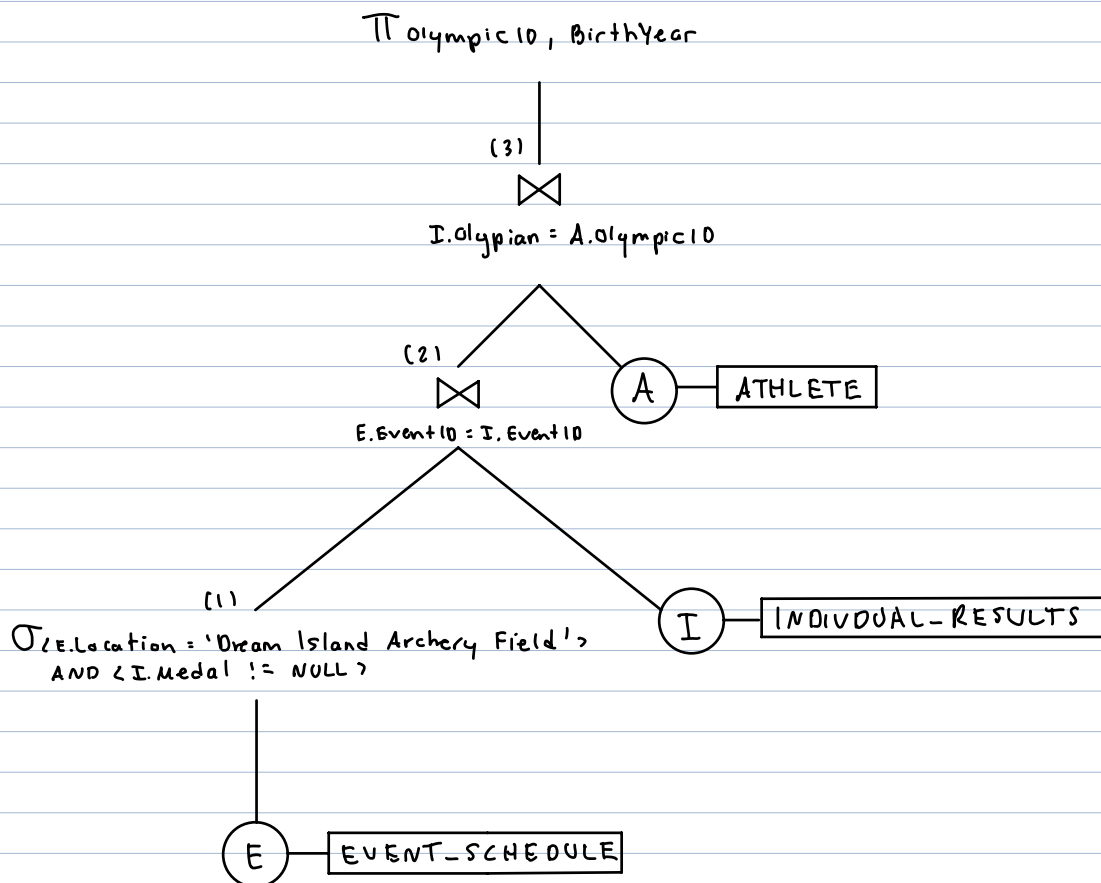
$\pi_{OlympicID, BirthYear}(((\sigma_{(E.Location = 'Dream Island Archery Field') \wedge (I.Medal \neq NULL)}(EVENT\_SCHEDULE)$

$\bowtie INDIVIDUAL\_RESULTS) \bowtie ATHLETE)$

$E.EventID = I.EventID$

$I.Olympian = A.OlympicID$

### Query Tree:



## Part 2:

1) COACHES  $\leftarrow$  COACH  $\bowtie$  PARTICIPANT  
COACH.olympicID = PARTICIPANT.olympicID

RESULT  $\leftarrow$  COACHES  $\bowtie$  COUNTRY  
COACHES.Country = COUNTRY.CName

$\Pi_{FName, LName, Country, AllTimeGold, AllTimeSilver, AllTimeBronze}$  (RESULT) //

2) MEDALS  $\leftarrow \sigma_{(AllTimeGold + AllTimeSilver + AllTimeBronze) \geq 3}$  (COUNTRY)

$\Pi_{CName}$  (MEDALS) //

3) COACHES  $\leftarrow$  COACH  $\bowtie$  PARTICIPANT  
COACH.olympicID = PARTICIPANT.olympicID

$\Pi_{CName, COUNT(olympicID)}$  (COACHES) //

4) ATHLETES  $\leftarrow$  ATHLETE  $\bowtie$  PARTICIPANT  
ATHLETE.olympicID = PARTICIPANT.olympicID

$\Pi_{olympicID, FName, LName, BirthYear}$  (ATHLETES) //

5) ATHLETES  $\leftarrow$  ATHLETE  $\bowtie$  PARTICIPANT  
ATHLETE.olympicID = PARTICIPANT.olympicID

$\Pi_{FName, LName}$  (ATHLETES) //

6) ATHLETE\_IR  $\leftarrow$  ATHLETE  $\bowtie$  INDIVIDUAL\_RESULTS  
ATHLETE.olympicID = INDIVIDUAL\_RESULTS.olympian

BRONZE\_MEDALIST  $\leftarrow \sigma_{Medal = 'Bronze'}$  (ATHLETE\_IR)

$\Pi_{FirstGames}$  (BRONZE\_MEDALIST) //

7) TEAM\_DATA  $\leftarrow$  ATHLETE  $\bowtie$  PARTICIPANT  $\bowtie$  TEAM

TEAMS  $\leftarrow \sigma_{\langle \text{ATHLETE.OlympicID} = \text{PARTICIPANT.OlympicID} \rangle} (\text{TEAM\_DATA})$   
 $\text{AND } \langle \text{ATHLETE.FirstGame} = \text{'Tokyo 2020'} \rangle$

$\pi_{\text{TeamID}} (\text{TEAMS}) //$

8) ATHLETES  $\leftarrow$  PARTICIPANT  $\bowtie$  ATHLETE  
 $\text{PARTICIPANT.OlympicID} = \text{ATHLETE.OlympicID}$

MEMBERS  $\leftarrow$  ATHLETES  $\bowtie$  COACH  
 $\text{ATHLETES.OlympicID} = \text{COACH.OlympicID}$

RESULT  $\leftarrow \sigma_{\langle \text{COUNT}(\text{ATHLETE.OlympicID}) > 2 \rangle} (\text{MEMBERS})$   
 $\text{AND } \langle \text{COUNT}(\text{COACH.OlympicID}) > 1 \rangle$

$\pi_{\text{CName}} (\text{RESULT}(\text{COUNTRY})) //$

9) COACHES  $\leftarrow$  COACH  $\bowtie$  PARTICIPANT  
 $\text{COACH.OlympicID} = \text{PARTICIPANT.OlympicID}$

RESULT  $\leftarrow \sigma_{\langle \text{orientation} = \text{'Pending'} \rangle} (\text{COACHES})$

$\pi_{\text{FName, LName, Country}} (\text{RESULT}) //$

10) PARTICIPANT\_IR  $\leftarrow$  PARTICIPANT  $\bowtie$  INDIVIDUAL\_RESULTS  
 $\text{PARTICIPANT.OlympicID} = \text{INDIVIDUAL\_RESULTS.OlympicID}$

NOT\_GOLD  $\leftarrow \sigma_{\langle \text{Medal} \neq \text{'Gold'} \rangle} (\text{PARTICIPANT\_IR})$

$\pi_{\text{Country}} (\text{NOT\_GOLD}) //$