ENSF 608-Fall 2020

**Ziad Chemali**

**Assignment 4**

**December 8, 2020**

# Question 1:

π FName,LName (σ CompetitorID!=0 (**COMPETITOR**))

# Question 2:

π FName,LName (σ Age<12 AND Instrument=’oboe’ (**COMPETITOR))**

# Question 3:

**STUDIO\_TEACHER** ←**TEACHER** ⨝TEACHER.StudioName=STUDIO.Name **STUDIO**

**STUDIO\_COMPETITOR** ← **COMPETITOR** ⨝COMPETITOR.TeacherID=STUDIO\_TEACER.TeacherID **STUDIO\_TEACHER**

π CompetitorID,StudioName (σ CompetitorID!=0(**STUDIO\_COMPETITOR**))

# Question 4:

**PERFORMANCE\_COMP** ←**PERFORMANCE** ⨝PERFORMANCE.CompetitorID=COMPETITOR.CompetitorID **COMPETITOR**

π FName,Score (**PERFORMANCE\_COMP**)

# Question 5:

**PERFORMED\_TITLES ←** π CategoryID,Title(**PERFORMANCE** ⨝PERFORMANCE.MusicID=COMPOSITION.MusicID**COMPOSITION**)

**PERFORMED\_TITLE\_TIME**←**CATEGORY**⨝CATEGORY.CategoryID=PERFORMED\_TITLES.CategoryID **PERFORMED\_TITLES** )

**SCHEDULED\_1PM\_COMPOSITIONS**← πTitle(σCompTime=’13:00:00’(**PERFORMED\_TITLE\_TIME**))

# Question 6:

**SELECTED\_COMPOSITIONS** ← π MusicID,Title(**PERFORMANCE** ⨝PERFORMANCE.MusicID=COMPOSITION.MusicID**COMPOSITION**)

**ALL\_COMPOSITIONS**← π MusicID,Title(σMusicID!=null(**COMPOSITION**))

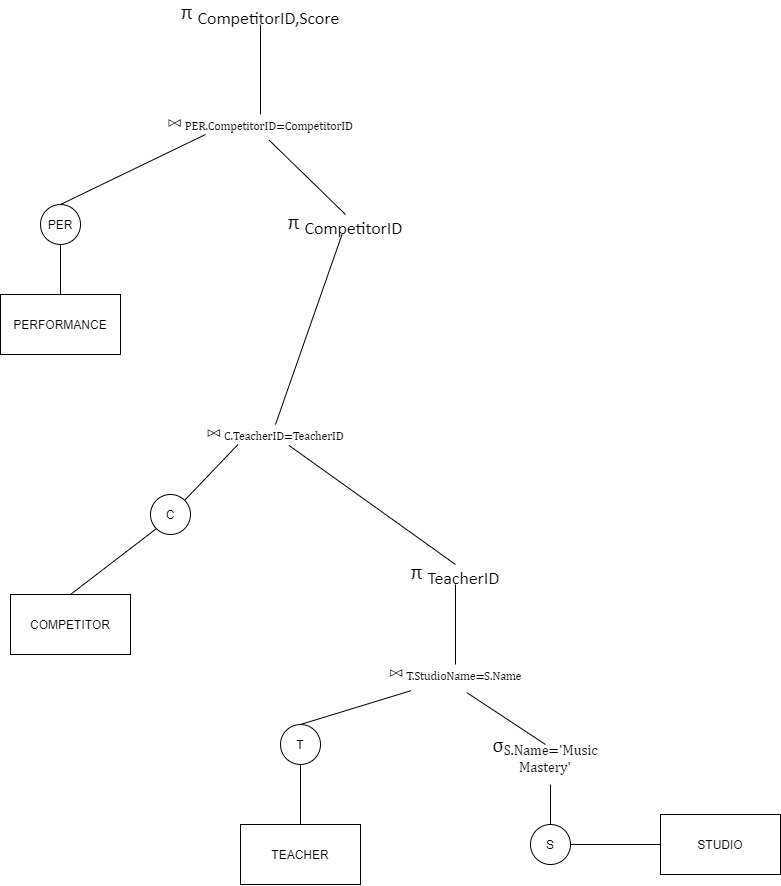
**NOT\_SELECTED\_COMPOSITIONS**← **ALL\_COMPOSITIONS** - **SELECTED\_COMPOSITIONS**

# Question 7:

**MUSIC\_MASTERY\_STUDIO**← π TeacherID(σStudioName=’Music Mastery’( **TEACHER**⨝TEACHER.StudioName=STUDIO.Name**STUDIO**))

**COMPETITORS\_IN\_MUSIC\_MASTERY**← π CompetitorID (**COMPETITOR** ⨝COMPETITOR.TeacherID= MUSIC\_MASTERY\_STUDIO.TeacherID **MUSIC\_MASTERY\_STUDIO)**

**COMPETITORS\_SCORES\_IN\_MUSIC\_MASTERY**← π CompetitorID,Score(PERFORMANCE⨝PERFORMANCE.CompetitorID= COMPETITORS\_IN\_MUSIC\_MASTERY.CompetitorID**COMPETITORS\_IN\_MUSIC\_MASTERY**)



**6**

**5**

**4**

**3**

**2**

**1**

# Question 8:

### Guideline 1: Each tuple in a relation should represent one entity or relationship

1. Attributes of different entities should not be mixed in the same relation
2. Only foreign keys should be used
3. Entity and relationships should be kept apart

### Guideline 2: Design a schema that does not suffer from anomalies

Avoid insertion, deletion, and update anomalies

### Guideline 3: Relations should be designed such that their tuples will have few NULL

Avoid Null in the tuples

### Guideline 4: The relation should be designed to satisfy the lossless join

Join operations between tables must not lose data nor create new combinations