

ENSF 608-Fall 2020

Ziad Chemali
Assignment 4
December 8, 2020

Question 1:

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

Question 2:

TT FName,LName (σ Age<12 AND Instrument='oboe' (**COMPETITOR**))

Question 3:

STUDIO_TEACHER \leftarrow **TEACHER** \bowtie TEACHER.StudioName=STUDIO.Name **STUDIO**

STUDIO_COMPETITOR \leftarrow **COMPETITOR** \bowtie COMPETITOR.TeacherID=STUDIO_TEACHER.TeacherID **STUDIO_TEACHER**

TT CompetitorID,StudioName (σ CompetitorID!=0(**STUDIO_COMPETITOR**))

Question 4:

PERFORMANCE_COMP \leftarrow **PERFORMANCE** \bowtie PERFORMANCE.CompetitorID=COMPETITOR.CompetitorID
COMPETITOR

TT FName,Score (**PERFORMANCE_COMP**)

Question 5:

PERFORMED_TITLES \leftarrow TT CategoryID,Title(**PERFORMANCE**
 \bowtie PERFORMANCE.MusicID=COMPOSITION.MusicID**COMPOSITION**)

PERFORMED_TITLE_TIME \leftarrow **CATEGORY** \bowtie CATEGORY.CategoryID=PERFORMED_TITLES.CategoryID
PERFORMED_TITLES)

SCHEDULED_1PM_COMPOSITIONS \leftarrow TT Title (σ CompTime='13:00:00' (**PERFORMED_TITLE_TIME**))

Question 6:

SELECTED_COMPOSITIONS \leftarrow TT MusicID,Title(**PERFORMANCE**
 \bowtie PERFORMANCE.MusicID=COMPOSITION.MusicID**COMPOSITION**)

ALL_COMPOSITIONS \leftarrow TT MusicID,Title (σ MusicID!=null (**COMPOSITION**))

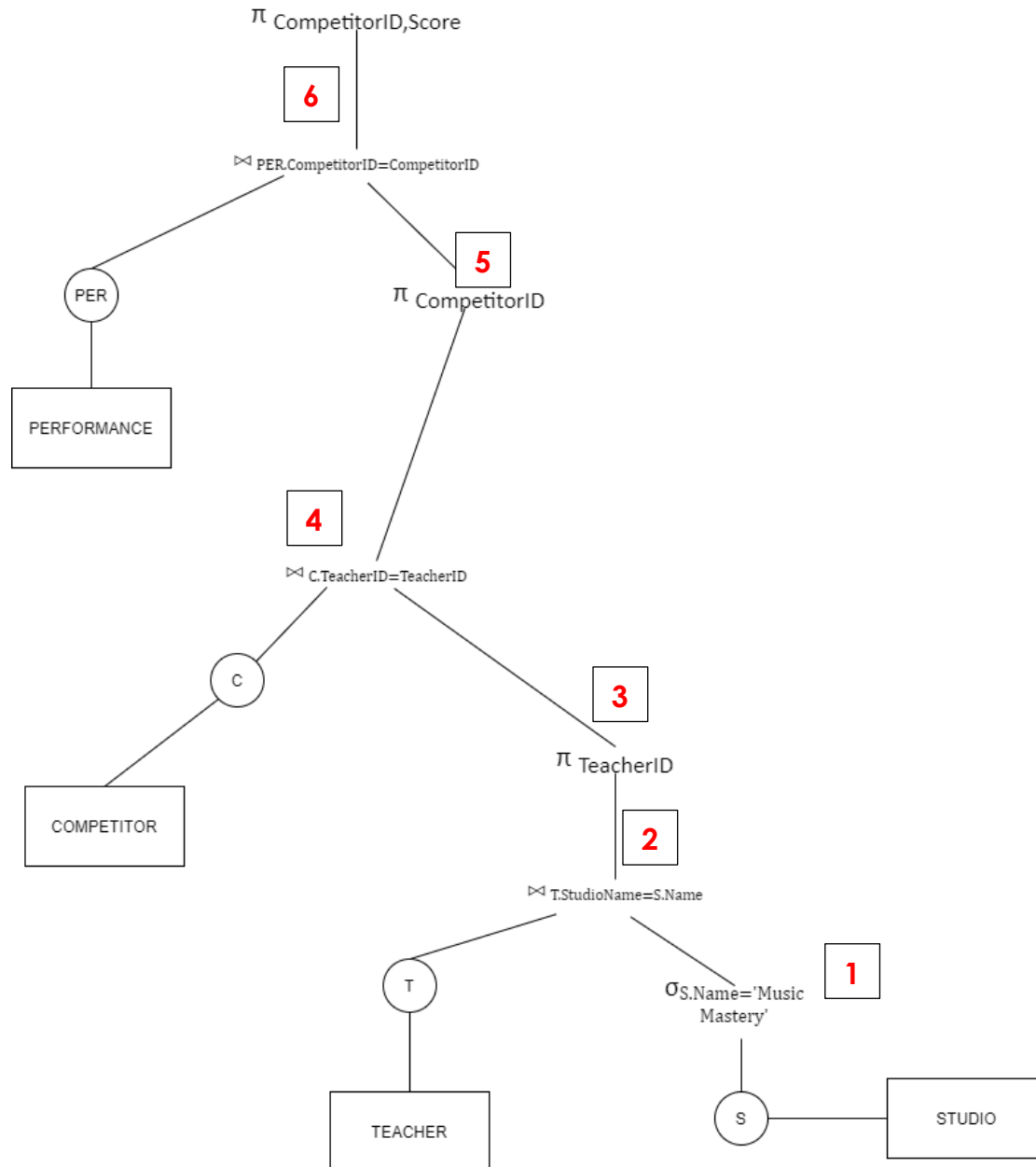
NOT_SELECTED_COMPOSITIONS \leftarrow **ALL_COMPOSITIONS** - **SELECTED_COMPOSITIONS**

Question 7:

MUSIC_MASTERY_STUDIO \leftarrow TT TeacherID (σ StudioName='Music Mastery' (
TEACHER \bowtie TEACHER.StudioName=STUDIO.Name **STUDIO**))

COMPETITORS_IN_MUSIC_MASTERY $\leftarrow \pi_{\text{CompetitorID}} (\text{COMPETITOR} \bowtie_{\text{COMPETITOR.TeacherID}=\text{MUSIC_MASTERY_STUDIO.TeacherID}} \text{MUSIC_MASTERY_STUDIO})$

COMPETITORS_SCORES_IN_MUSIC_MASTERY $\leftarrow \pi_{\text{CompetitorID,Score}} (\text{PERFORMANCE} \bowtie_{\text{PERFORMANCE.CompetitorID}=\text{COMPETITORS_IN_MUSIC_MASTERY.CompetitorID}} \text{COMPETITORS_IN_MUSIC_MASTERY})$



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