Course: ENSF 608 – Fall 2023

Assignment 4

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Submission Date: November 27, 2023

1. Write a query to retrieve the first and last name of each competitor (1 mark).

```
SELECT FName, LName
FROM COMPETITOR;
```

$\pi_{FName,\ LName}(COMPETITOR)$

2. Write a query to retrieve the first and last name of all competitors under the age of twelve who play the oboe (1 mark).

```
SELECT FName, LName
FROM COMPETITOR
WHERE Age < 12 AND Instrument = 'Oboe';
```

$\pi_{\ FName,\ LName}(\sigma_{\ Age < 12,\ Instrument = 'Oboe'}(COMPETITOR))$

3. Write a query to retrieve all competitor ID numbers and the name of the music studio that they belong to (1 mark).

```
SELECT C.CompetitorID, T.StudioName
FROM COMPETITOR as C, TEACHER as T
WHERE C.TeacherID = T.TeacherID;
```

$\pi_{\ CompetitorID,\ StudioName}(COMPETITOR \bowtie_{C.TeacherID = T.TeacherID} TEACHER)$

4. Write a query to retrieve the first name and score earned by each competitor (1 mark).

```
SELECT C.FName, P.Score
FROM COMPETITOR as C, PERFORMANCE as P
WHERE C.CompetitorID = P.CompetitorID;
```

$\pi_{\ FName,\ Score}(COMPETITOR \bowtie_{C.CompetitorID = P.CompetitorID} PERFORMANCE)$

5. Write a query to retrieve the titles of all compositions that will be performed during categories scheduled for the 1:00 PM timeslot (3 marks).

```
SELECT DISTINCT M.Title
FROM COMPOSITION AS M
JOIN (CATEGORY AS G JOIN PERFORMANCE AS P ON G.CategoryID =
P.CategoryID) on M.MusicID = P.MusicID
WHERE G.CompTime = '13:00';
```

$R1 \leftarrow (CATEGORY \bowtie_{G.CategoryID = P.CategoryID} PERFORMANCE)$

$R2 \leftarrow (R1 \bowtie_{P.MusicID = M.MusicID} COMPOSITION)$

$RESULT \leftarrow \pi_{Title} (\sigma_{CompTime = '13:00'}(R2))$

6. Write a query to retrieve the titles of all compositions that have not been selected by any performers (3 marks).

```
SELECT M.Title
FROM COMPOSITION AS M
WHERE NOT EXISTS(
                SELECT *
FROM PERFORMANCE AS P
WHERE M.MusicID = P.MusicID
);
```

$R1 \leftarrow COMPOSITION - PERFORMANCE$

$RESULT \leftarrow \pi_{Title} (R1)$

7. Code the following query as either a sequence or single expression (4 marks), then draw the corresponding query tree (4 marks). You do not need to list the data results of the query.

Retrieve a list of all score values that were earned by competitors belonging to the “Music Mastery” studio.

```
SELECT P.Score
FROM TEACHER AS T
JOIN COMPETITOR AS C ON C.TeacherID = T.TeacherID
```

```
JOIN PERFORMANCE AS P ON P.CompetitorID = C.CompetitorID
WHERE T.StudioName = "Music Mastery";
```

$R1 \leftarrow \sigma_{T.StudioName= "Music Mastery"}(R2)$

$R2 \leftarrow (TEACHER \bowtie_{T.TeacherID = C.TeacherID} COMPETITOR)$

$R3 \leftarrow (R1 \bowtie_{C.CompetitorID = P.CompetitorID} PERFORMANCE)$

$RESULT \leftarrow \pi_{Score} (R3)$