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■ 依"交響樂團"資料庫 Relational database schema,利用 Relational Algebra 回答下列查詢:

(以下問題是以第二頁的 Relational Schema 回答)

1. 列出指揮家(Conductor_Name)是"小澤征爾"所指揮的音樂會上所演出的所有曲目編號與曲目名稱。

```
conductor \leftarrow \sigma_{Conductor\_Name} = "小澤征爾" (CONDUCTOR)

concert \leftarrow conductor \bowtie_{conductor\_Conductor\_ID} = CONCERT.Conductor\_ID (CONCERT)

composition\_concert \leftarrow concert \bowtie_{concert\_Number} = composition\_and\_concert\_Number} (COMPOSITION and CONCERT)

RESULT \leftarrow \pi_{Composer\_Name}, Composition\_Name (composition\_concert)
```

2. 列出獨奏者上一次演出特定曲目的日期是"01/01/2020"獨奏者名字及所演出的所有曲目編號與曲目 名稱。

```
soloist_composition \leftarrow \sigma_{\text{Date\_Last\_Performed}="01/01/2020"}(\text{SOLOIST and COMPOSITION})
soloist \leftarrow soloist_composition \bowtie_{\text{soloist\_composition.Soloist\_ID}=\text{SOLOIST.Soloist\_ID}}(\text{SOLOIST})
RESULT \leftarrow \pi_{\text{Soloist\_Name,Composer\_Name,Composition\_Name}}(\text{soloist})
```

3. 列出在"01/01/2020"音樂季舉行的音樂會上所演奏的所有曲目編號與名稱。

```
\begin{aligned} & concert \leftarrow \sigma_{Month="01"\,AND\,\,Day="01"\,\,AND\,\,Year="2020"}(CONCERT) \\ & composition\_concert \leftarrow concert \bowtie_{concert\_Number=COMPOSITION\,\,and\,\,CONCERT\_Concert\_Number} (COMPOSITION\,\,and\,\,CONCERT) \\ & RESULT \leftarrow \pi_{Composer\_Name,Composition\_Name}(composition\_concert) \end{aligned}
```

CONDUCTOR

Conductor ID

Conductor_Name

111522056 資工碩一 黃怡庭 CONCERT SEASON Month <u>Day</u> <u>Year</u> CONCERT Conductor_ID Concert Number Month Day Year Concert_Date of CONCERT Concert Number Month Day Year Time COMPOSITION and CONCERT Composition Name Concert Number Composer Name COMPOSITION Composer Name Composition Name Movement_ID of COMPOSITION Movement_Number Movement_Name Composer Name Composition Name SOLOIST and COMPOSITION Composition Name Composer Name Soloist ID Date_Last_Performed SOLOIST Soloist ID Soloist_Name