PCRS   Quests   Code Editor ▾   Logged in as *zhan4662*   ⚙

Prep 2 - Part 2 of 3

The next topic in our course is Relational Algebra. This is a mathematical language for writing queries on a relational database. You already know an algebra that lets you write things like "(3x + 17)/5". Relational algebra is similar, but the operands are relations and the operators let you do things like pick the rows you want or the columns you want.

In relational algebra, not only are the operands relations, but the result of applying an operation is always another relation. Because of this, you can nest expressions inside of expressions. You see the same sort of nesting in expressions like "(3x + 17)/5".

Learn about the three most basic operators, select, project and Cartesian product, by watching the first 9:17 of Jennifer Widom's video: Select, Project and Join.

Important note: In the video, the notation for indicating a key is slightly different from what we are using. The Apply relation shows three attributes underlined and these three attributes together form the key for the relation. We would put a single underline under all three attributes to indicate that they together form a key.

These next questions, again, refer to the instance of the database in the Movies handout.

Multiple Choice Question   ✔

What are the cardinality and arity of

$\sigma_{year > 1980}(\Pi_{director}$ Movies)?

☐ **1 and 3**

☐ **2 and 1**

☐ **1 and 2**

☑ **This query is ill-formed**

History   Submit

> ✔ Your solution is complete.

> Submitted after the deadline!

Multiple Choice Question ✔

What are the cardinality and arity of

$\sigma_{\text{director}='Kubrick'}(\Pi_{\text{director, year}}\text{Movies})$?

☐ **1 and 2**

☑ **2 and 2**

☐ **2 and 1**

☐ **This query is ill-formed.**

History   Submit

> ✔ Your solution is complete.

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Multiple Choice Question ✔

How many tuples are in

$\Pi_{\text{director}}(\sigma_{\text{director}='Kubrick'}\text{Movies})$?

☐ **0**

☑ **1**

☐ **2**

☐ **This query is invalid**

History

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Multiple Choice Question ✔

How many tuples are in

Roles X Artists?

- ☑ **24: one for every combination of a tuple from Roles and a tuple from Artists.**
- ☐ **6: one for every tuple in Roles with a matching aID in Artists.**
- ☐ **4: one for every tuple in Artists with a matching aID in Roles.**
- ☐ **10: one for every tuple in Roles and one for every tuple in Artists.**

History

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✔ Your solution is complete.

Submitted after the deadline!

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