

**RPI Computer Science**  

**Submitty** 

**Database Systems**  

**Lecture 3 Exercise**



## **New submission for: Lecture 3 Exercise**

**Due: 09/10/2021 @ 04:45 AM CST (*Local Time*)**

**09/09/2021 @ 04:45 PM EDT (*Server Time*)**

**Gradeable Time Remaining: 01 days 21 hours**

You are given the following datamodel to be used in all the following questions.

Books may have no authors, single or multiple authors. Not all books are edited but edited books may have single or multiple editors.

Person relation includes all authors and editors, no one else. :

Person(personid, name, dateofbirth) (key: id)

Books(bookisbn, title, publisher, year) (key: bookisbn)

BookAuthors(personid, bookisbn) (key: personid, bookisbn)

BookEditors(personid, bookisbn) (key: personid, bookisbn)

Which relational algebra expressions find name of people who have authored a book in year 2021?

Be careful, some answers may contain wrong SQL syntax or logic below. Don't fall for it.

For full credit, you need to select all correct options.

- ☐  $\text{project\_}\{\text{name}\} (\text{Person join\_}\{\text{personid=personid}\} \text{T1 join\_}\{\text{bookisbn=bookisbn}\} (\text{select\_}\{\text{year=2021}\} (\text{Books})))$
- ☐  $\text{T1}(\text{personid1, bookisbn1}) = \text{BookAuthors},$   
 $\text{project\_}\{\text{name}\} (\text{Person intersect T1 intersect (select\_}\{\text{year=2021}\} (\text{Books}))$   
 $\text{T1}(\text{personid1, bookisbn1}) = \text{BookAuthors},$
- ☒  $\text{project\_}\{\text{name}\} (\text{select\_}\{\text{personid=personid1 and bookisbn=bookisbn1 and year=2021}\} (\text{Person x T1 x Books}))$
- ☒  $\text{project\_}\{\text{name}\} (\text{Person * BookAuthors * (select\_}\{\text{year=2021}\} (\text{Books})))$
- ☒  $\text{project\_}\{\text{name}\} (\text{select\_}\{\text{year=2021}\} (\text{Person * BookAuthors * Books}))$
- ☐  $(\text{project\_}\{\text{name}\} (\text{Person})) * \text{BookAuthors * (select\_}\{\text{year=2021}\} (\text{Books}))$
- ☐  $\text{project\_}\{\text{name}\} (\text{Person x select\_}\{\text{year=2021}\} (\text{BookAuthors * Books}))$   
 $\text{T1}(\text{personid1, bookisbn1}) = \text{BookAuthors},$
- ☒  $\text{project\_}\{\text{name}\} (\text{Person join\_}\{\text{personid=personid1}\} \text{T1 join\_}\{\text{bookisbn1=bookisbn}\} (\text{select\_}\{\text{year=2021}\} (\text{Books})))$
- ☐  $\text{project\_}\{\text{name}\} (\text{select\_}\{\text{year=2021}\} (\text{Person}) * \text{BookAuthors * Books}))$
- ☐ None of the other choices

[Clear](#)[Use Most Recent Submission](#)

Which relational algebra expressions find title of books with an author and an editor (not necessarily the same person)?

Be careful, some answers may contain wrong SQL syntax or logic below. Don't fall for it.

For full credit, you need to select all correct options.

- ☐  $T1 = \text{project}_{\{\text{bookisbn}\}} (\text{BookAuthors} \text{ intersect } \text{BookEditors}),$   
 $\text{project}_{\{\text{title}\}} (\text{Books} * T1)$
- ☐  $T1(\text{bookisbn1}) = \text{project}_{\{\text{bookisbn}\}} (\text{BookAuthors} \text{ union } \text{BookEditors}),$   
 $\text{project}_{\{\text{title}\}} (\text{select}_{\{\text{bookisbn1}=\text{bookisbn}\}} (\text{Books} \times T1))$
- ☐ None of the other choices
- ☐  $\text{project}_{\{\text{bookisbn}\}} (\text{Books}) \text{ intersect } (\text{project}_{\{\text{bookisbn}\}} (\text{BookAuthors})$   
☒  $\text{intersect } \text{project}_{\{\text{bookisbn}\}} (\text{BookEditors})),$   
 $\text{project}_{\{\text{title}\}} (\text{Books} * T1)$
- ☐  $T1(\text{personid1}, \text{bookisbn1}) = \text{BookAuthors} \text{ intersect } \text{BookEditors},$   
 $\text{project}_{\{\text{title}\}} (\text{select}_{\{\text{bookisbn1}=\text{bookisbn}\}} (T1 \times \text{Books}))$
- ☐  $\text{project}_{\{\text{title}\}} (\text{Books} * \text{BookAuthors} * \text{BookEditors})$
- ☐  $T1(\text{bookisbn1}) = \text{project}_{\{\text{bookisbn}\}} (\text{BookAuthors}) \text{ intersect}$   
☒  $\text{project}_{\{\text{bookisbn}\}} (\text{BookEditors}),$   
 $\text{project}_{\{\text{title}\}} (\text{Books} \text{ join}_{\{\text{bookisbn1}=\text{bookisbn}\}} T1)$
- ☐  $T1 = \text{project}_{\{\text{bookisbn}\}} (\text{Books}) - (\text{project}_{\{\text{bookisbn}\}} (\text{BookAuthors}) \text{ intersect}$   
 $\text{project}_{\{\text{bookisbn}\}} (\text{BookEditors})),$   
 $\text{project}_{\{\text{title}\}} (\text{Books} * T1)$

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Which relational algebra expressions find title of books that have no editors?

Be careful, some answers may contain wrong SQL syntax or logic below. Don't fall for it.

For full credit, you need to select all correct options.

- ☐  $T1 = \text{project}_{\{\text{bookisbn}, \text{title}, \text{publisher}, \text{year}\}} (\text{Books} * \text{BookAuthor}),$   
 $\text{Books} - T1$
- ☐  $T1 = \text{project}_{\{\text{bookisbn}, \text{title}, \text{publisher}, \text{year}\}} (\text{Books} * \text{BookEditor}),$   
 $\text{Books} - T1$
- ☐  $T1(\text{bookisbn1}) = \text{project}_{\{\text{bookisbn}\}} (\text{BookEditors}),$   
 $\text{project}_{\{\text{title}\}} (\text{Books} \text{ join}_{\{\text{bookisbn} \neq \text{bookisbn1}\}} T1)$
- ☐ None of the other choices
- ☐  $\text{project}_{\{\text{title}\}} (\text{Books} - \text{BookEditors})$
- ☐  $\text{project}_{\{\text{title}\}} (\text{Books} \text{ join}_{\{\text{bookisbn} \neq \text{bookisbn}\}} \text{BookEditors})$
- ☐  $\text{project}_{\{\text{title}\}} (\text{Books} \text{ intersect } \text{BookEditors})$
- ☒  $T1 = (\text{project}_{\{\text{bookisbn}\}} (\text{Books})) - (\text{project}_{\{\text{bookisbn}\}} (\text{BookEditors})),$   
 $\text{project}_{\{\text{title}\}} (\text{Books} * T1)$
- ☐  $T1(\text{personid}, \text{bookisbn1}) = \text{BookEditors},$   
 $\text{project}_{\{\text{title}\}} (\text{Books} \text{ join}_{\{\text{bookisbn} \neq \text{bookisbn1}\}} T1)$

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