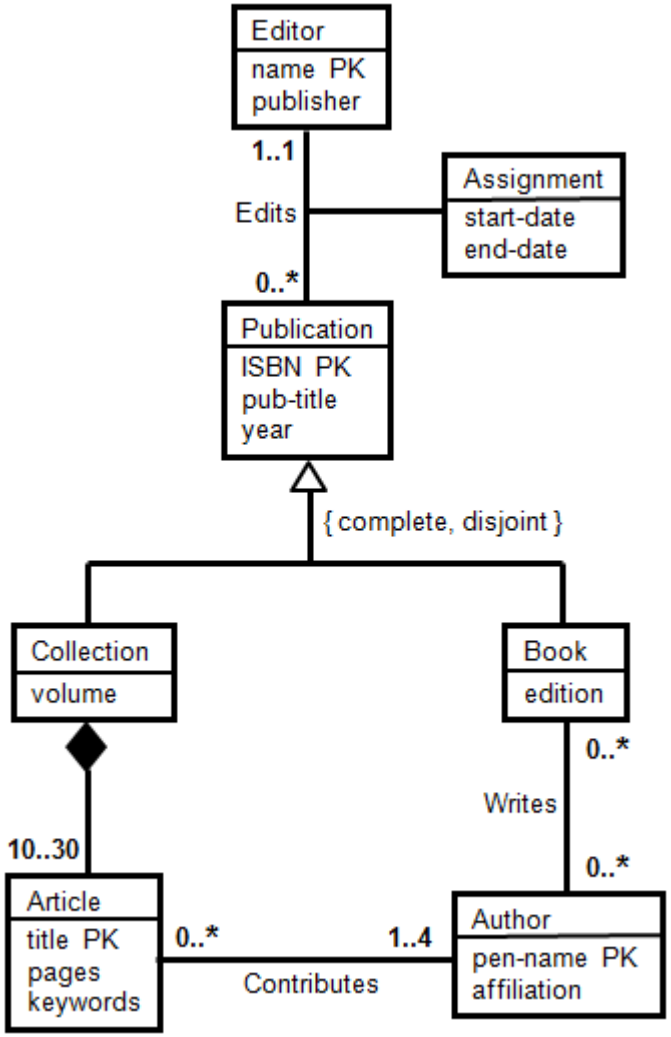
Each multiple-choice quiz problem is based on a "root question," from which the system generates different correct and incorrect choices each time you take the quiz. Thus, you can test yourself on the same material multiple times. We strongly urge you to continue testing on each topic until you complete the quiz with a perfect score at least once. Simply click the "Reset" button at the bottom of the page for a new variant of the quiz.

After submitting your selections, the system will score your quiz, and for incorrect answers will provide an "explanation" (sometimes for correct ones too). These explanations should help you get the right answer the next time around. To prevent rapid-fire guessing, the system enforces a minimum of 10 minutes between each submission of solutions.

Multiple Choice

6/8 points (graded)
[Q1]



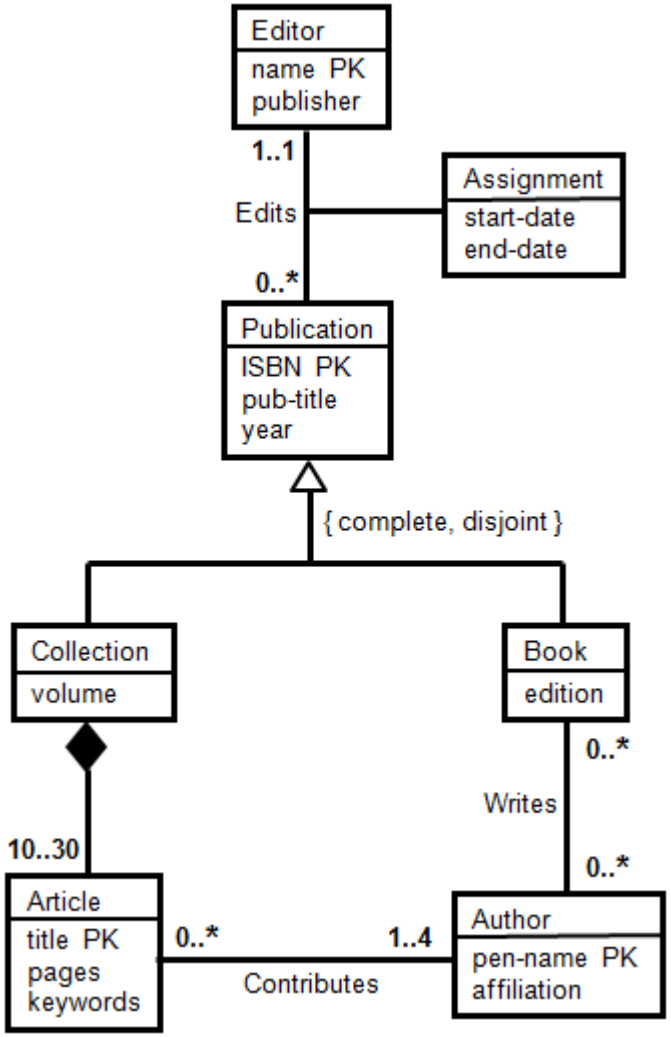
Consider translating this UML diagram to relations. Which of the following relations would *not* be generated by any of the recommended translation schemes discussed in the video?

- Collection(ISBN, volume)
- Book(edition)

- Publication(ISBN, pub-title, year, volume, edition)
- Book(ISBN, edition)

Answer-Selection Feedback
Book is a subclass of Publication and therefore must include at least the PK of its superclass.

[Q2]



Based on this UML diagram, which of the following statements about Authors is correct?

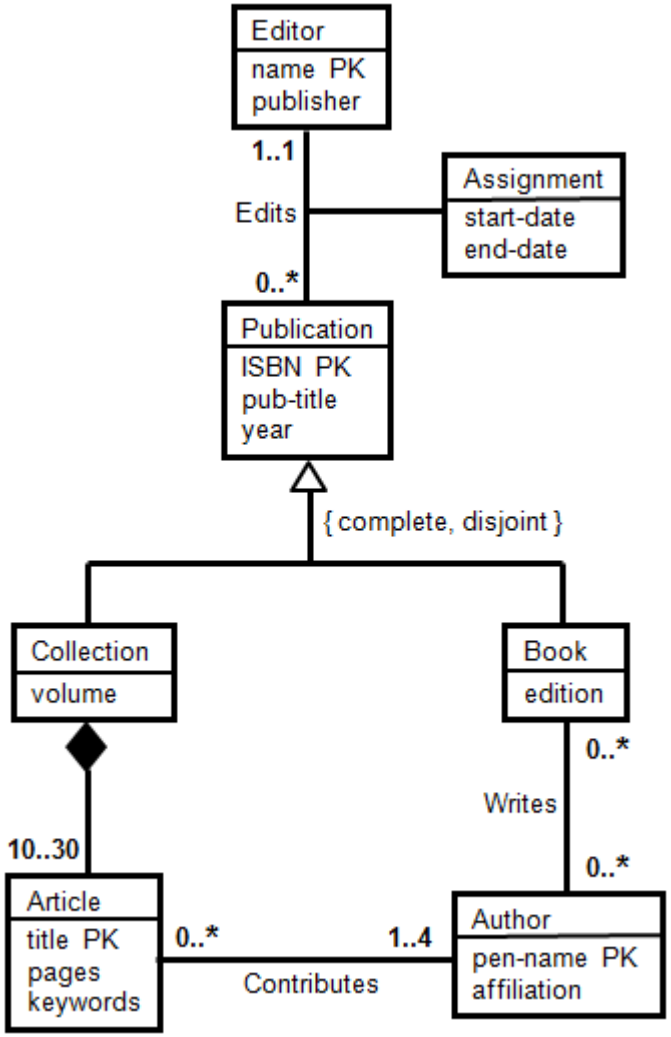
- An article may have any number of authors.
- An author may have written nothing.
- Every book has up to one author.

- An author can write a book or contribute an article, but not both.

Answer-Selection Feedback

The multiplicity of 0..* for both Book (via Writes) and Article (via Contributes) says an Author may not be associated with any books or any articles.

[Q3]



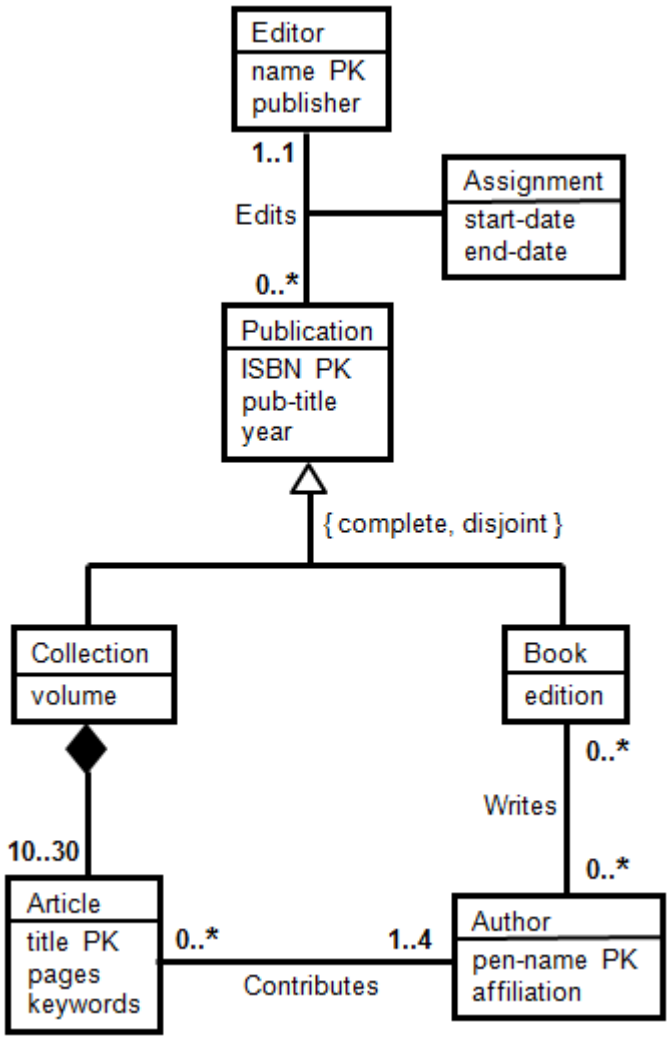
Based on this UML diagram, which of the following relations best represents articles?

- Article(title, pages, keywords, volume)
- Article(title, pages, keywords, ISBN, pub-title, year)
- Article(title, pages, keywords, volume, ISBN, pub-title, year)
- (selected) Article(title, pages, keywords, ISBN)

Answer-Selection Feedback

Article is the included class in a Composition relationship. Thus, its relation should contain the attributes of Article, plus the key of its including class. The including class Collection inherits its key (ISBN) from its superclass.

[Q4]



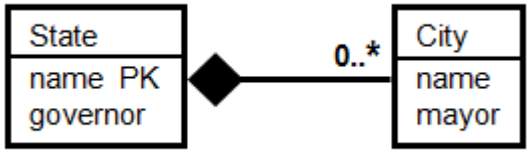
Consider translating this UML diagram to relations. In the relation Edits generated from the Edits association, which of the following set of underlined attributes is a minimal key?

- Edits(name, ISBN, start-date, end-date)
- Edits(name, ISBN, start-date, end-date)

- Edits(name, ISBN, start-date, end-date)
- Edits(name, ISBN, start-date, end-date)

Answer-Selection Feedback
The default key in the relation generated from an association is the combination of the PKs from the two classes in the association. When the association is many-one, the key can be made even smaller by eliminating the PK from the *one* side of the many-one association.

[Q5]

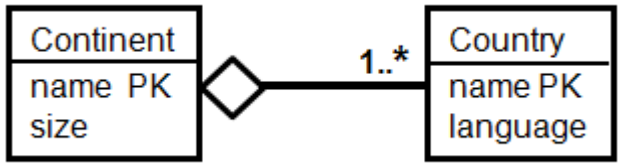


Based on this UML diagram, which of the following statements about the City and State classes is correct?

- No two cities can have the same name.
- **No two states can have the same governor.**
- No person can be the mayor of cities in two different states.
- Each city has at most one mayor.

Answer-Selection Feedback
The only constraint on State is that names are unique (specified by PK).

[Q6]

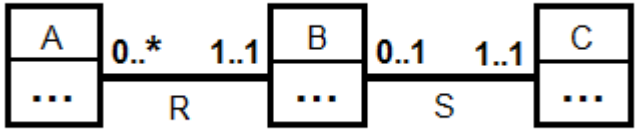


Based on this UML diagram, which of the following statements about the Continent and Country classes is correct?

- A continent may have no countries.
- Each country must belong to a continent.
- A country and a continent may have the same name.
- A country can speak two languages.

Answer-Selection Feedback
PK specifies uniqueness within a class, so continent names must be unique only within continents, and ditto for countries.

[Q7]



This UML diagram puts some constraints on the cardinalities of classes A, B, and C. Which of the following combinations of cardinalities is permitted? (Note: The cardinality of a class C, denoted |C|, indicates the number of objects in the class.)

- |A| = 10; |B| = 10; |C| = 0

- |A| = 10; |B| = 0; |C| = 0
- |A| = 0; |B| = 10; |C| = 0
- |A| = 0; |B| = 0; |C| = 1

[Q8] Suppose there is a UML superclass Movies with subclasses. Consider the following possible pairs of subclasses:

1. {B,NB}: B = movies in which Kevin Bacon appears; NB = movies in which Kevin Bacon does not appear
2. {B,R}: B = movies in which Kevin Bacon appears; R = movies in which Julia Roberts appears
3. {B,K}: B = movies in which Kevin Bacon appears; K = movies in which Val Kilmer appears
4. {L,S}: L = movies more than 100 minutes long; S = movies less than 105 minutes long

Consider whether each pair of subclasses is *complete* or *incomplete* (*partial*), and whether the pair is *overlapping* or *disjoint*(*exclusive*). (Depending on your knowledge, you may have to do some web searches on movies to get the right classification.) Which of the following statements is correct?

- {B, NB} is complete and overlapping.
- {B, K} is incomplete and disjoint.
- {L, S} is incomplete and overlapping.
- {B, K} is incomplete and overlapping.

Answer-Selection Feedback
Do Bacon and Kilmer appear together in any movies?