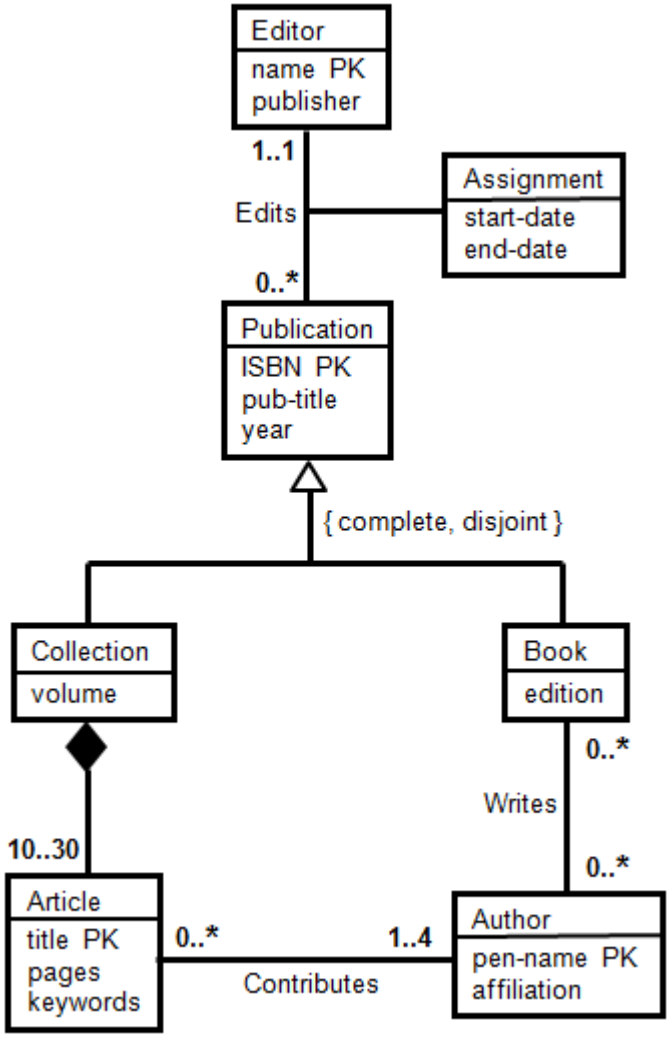
Each multiple-choice quiz problem is based on a "root question," from which the system generates different correct and incorrect choices each time you take the quiz. Thus, you can test yourself on the same material multiple times. We strongly urge you to continue testing on each topic until you complete 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

5/8 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?

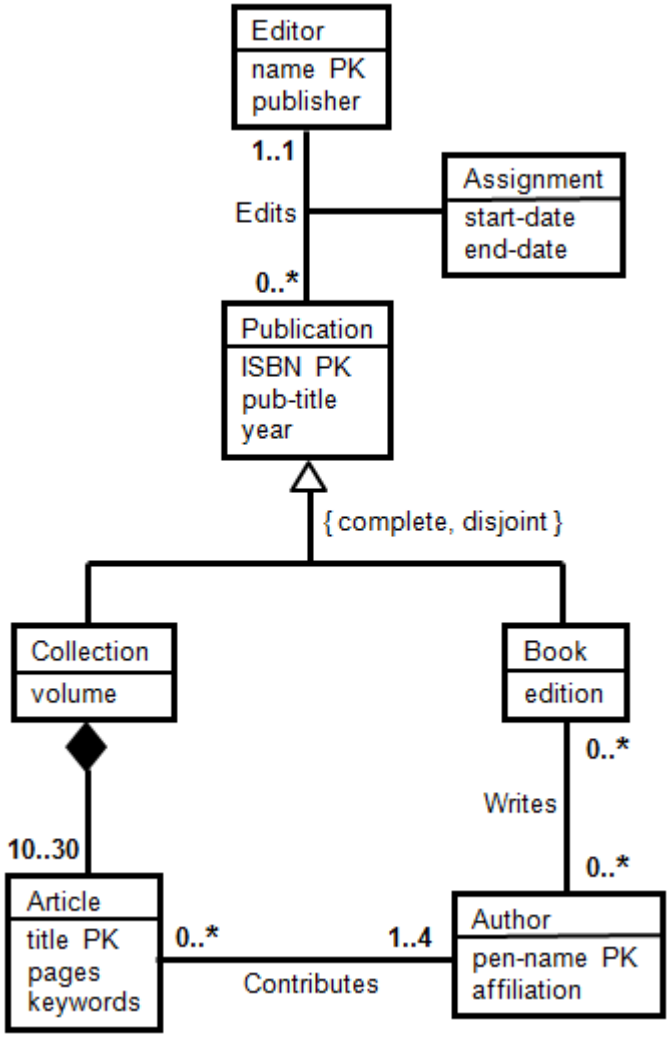
- Book(ISBN, edition)
- Publication(ISBN, pub-title, year, name, start-date, end-date)

- [x] Book(edition)
- [ ] Collection(ISBN, volume)

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?

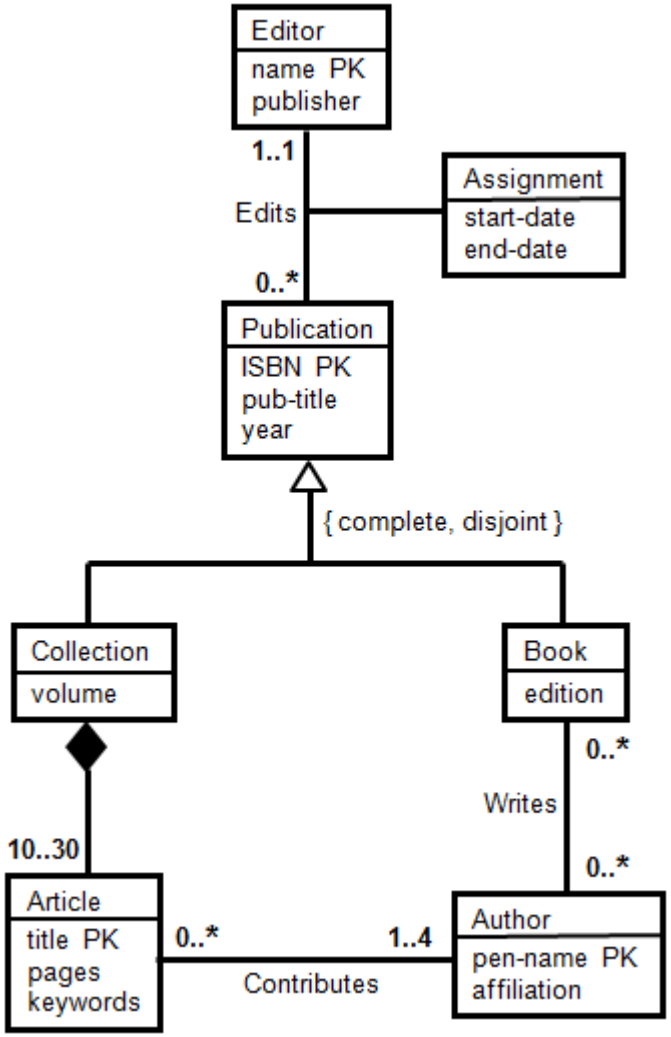
- Every book has up to one author.
- Every author has contributed up to four articles.
- An article may have any number of authors.

◉ Every article has at least one author.

Answer-Selection Feedback

The multiplicity of 1..4 on the Author end of association Contributes says that each article has at least one and at most four authors.

[Q3]



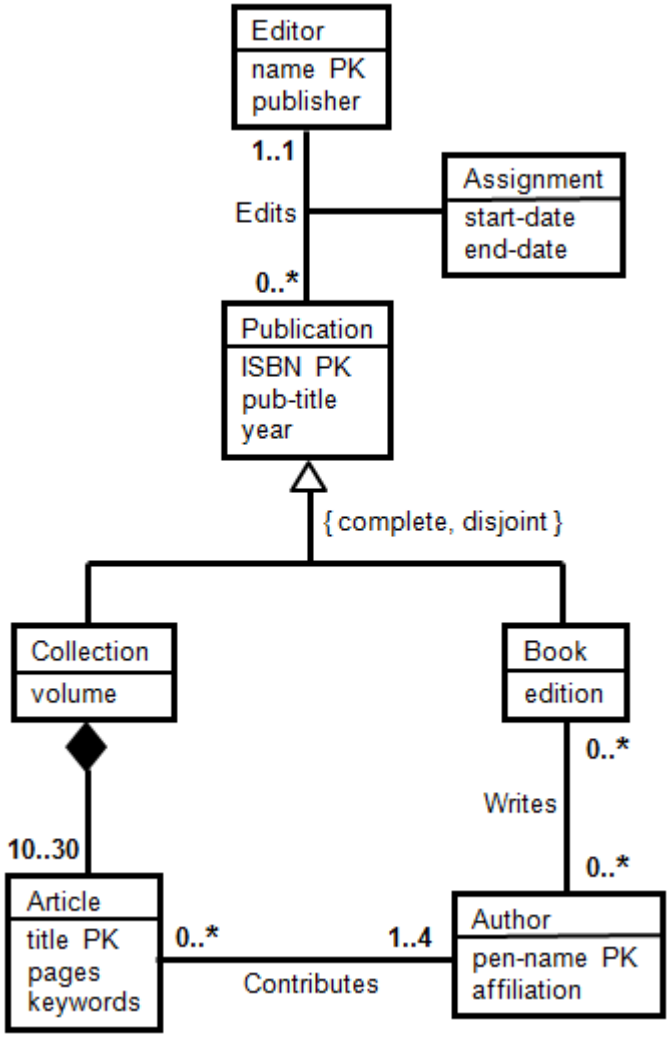
Based on this UML diagram, which of the following relations best represents articles?

- (•) Article(title, pages, keywords, volume)
- ( ) Article(title, pages, keywords, ISBN, volume)
- ( ) Article(title, pages, keywords, volume, ISBN, pub-title, year)
- ( ) 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. Attribute volume is not a key for Collection.

[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?

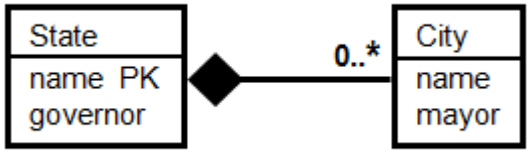
- Edits(name, ISBN, start-date, end-date)
- Edits(name, ISBN, start-date, end-date)

- 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. Association-class attributes are never needed in a minimal key.

[Q5]



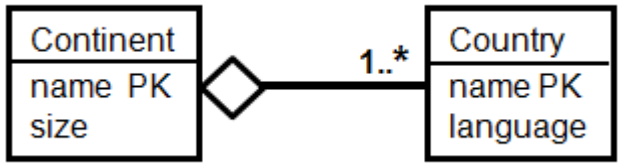
Based on this UML diagram, which of the following statements about the City and State classes is correct?

- Each state has at least one city.
- No two states can have the same name.
- No two cities can have the same mayor.
- No two cities can have the same name.

Answer-Selection Feedback

name is specified as PK for State, so state names must be unique.

[Q6]



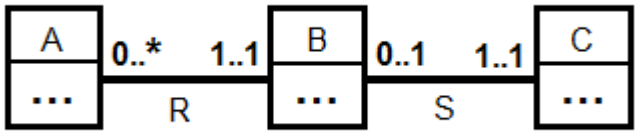
Based on this UML diagram, which of the following statements about the Continent and Country classes is correct?

- No two continents can have the same size.
- A country and a continent may have the same name.
- **Each country must belong to a continent.** ✓
- A country can be in two different continents.

Answer-Selection Feedback

The hollow diamond represents aggregation, which has an implicit multiplicity of 0..1 on the diamond side. So each country object may belong to zero or one continent objects.

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

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

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