~~2. 4 candidate keys.~~ ?

EC703C

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2. Relation R have 4 candidate keys.

A+ is ABCDEFGH which is all attributes except D.

B+ is ABCEFGH which is all attributes except D.

E+ is also ABCEFGH which is all attributes except D.

F+ is also ABCEFGH which is all attributes except D.

So there are total 4 candidate keys AD, BD, ED and FD.

4. Book is in 2NF and Collection is in BCNF.

Book (Title, Author, Catalog-no, Publisher, Year, Price)

Collection (Title, Author, Catalog-no)

with in the following functional dependencies

I. Title, Author → Catalog-no

II. Catalog-no → Title, Author, Publisher, Year

III. Publisher, Title, Year → Price

Assume {Author, Title} is the key for both schemes.

→ The table "Collection" is in BCNF as there is only one functional dependency "Title Author → Catalog-no" and {Author, Title} is key for Collection

→ Book isn't in BCNF because because Catalog-no isn't a key and there is a functional dependacy "Catalog-no → Title Author Publisher Year".

→ Book isn't in 3NF because non-prime attributes are transitively dependent on key.

→ Book is in 2NF because every non-prime attribute of the table is either dependent on the whole of a candidate key one {Title, Author} and {Catalog_no}
In table Book, non-prime attributes (attributes that don't occur in any candidate key) are Publisher, Year, Price.

5. Titles of the five most expensive books
The outer query selects all title from book table. For every selected book, the subquery returns count of those books which are more expensive than the selected book. The where clause of outer query will be true for 5 most expensive book. For example count(*) will be 0 for the most expensive book, and count(*) will be 1 for second most expensive book.