In the unit 1 assignment, we defined the relations and keys for a library system. In unit 2 we learned about constraints. For your unit 2 assignment, identify and describe the constraints that would be appropriate for the relations that we have within our library system. Constraints that you should consider may include:

**Entity integrity constraint**

**Referential integrity constraint**

Semantic integrity constraint

Domain constraint

**Null constraint**

**Unique constraint**

The constraints in **Bold** type should all be present in your assignment.

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| **BOOK RELATION** | |
| **Attribute** | **Constraint** |
| Title | Not null constraint - a book needs a title. |
| Author | Not all books have an author the not null constraint would not be used here. |
| ISBN\_number | Not Null would be appropriate as it is part of the primary key which is unique and required. |
| Publication date | Semantic integrity constraint - dates are required and must be valid. |
| Cost | Semantic integrity constraint here as well - cost should be above 0 (unless free books are offered?) |
| sequence | Is associated with the primary key and unique and so the unique constraint and the not null constraint would be used here.. |

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| **BORROWER RELATION** | |
| **Attribute** | **Constraint** |
| Library card # | The library card # is unique and a key, so so requires not null and unique constraints. |
| Name | Name would be required to borrow a book so should have not null. |
| Address | Depends if a required field. If not required, dont have any constraints here. |
| Postal Code | Depends - if an international library - post codes are not difficult to standardize. We will do no constraints to keep it simple. |
| Phone Number | Perhaps validate the constraint with semantic constraint, but being cognizant of the fact that phone numbers have different area and country codes? |
| Membership date | A date - same as above - semantics. |

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| **BookLended Relation** | |
| **Attribute** | **Constraint** |
| BorrowerID | Not Null would be appropriate as it is part of the primary key which is unique and required (not null and unique constraints) |
| CheckoutDate | Same as above. |
| ReturnDate | See above for other dates - same. |
| Book | Referential integrity constraint - must be consistent with known database of books the library ghs. |
| Librarian | Referential constraint - same logic as above with known librarians. |

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| **Librarian Relation** | |
| **Attribute** | **Constraint** |
| Librarian Id | Not Null would be appropriate as it is part of the primary key which is unique and required (not null and unique constraints) |
| Name | Not null because all librarians have a name which we need to know for the database. |
| Phone Number | Same as above case with phone number. |