SL		ID		SL		ID	

1) Suppose you have to implement the database for a library. You identified two entities for Book and Author. Each Book has only one author. However one author can write many books. You used the primary key of the Book table as a foreign key in the Author table in your design. Your friend suggested that you should have done the opposite. Will you take your friend's suggestion or keep your design unchanged? Explain your reasoning behind the answer.   **[10]**

2) Crimes in Dhaka city is getting prominent. Mr Holmes has decided to make a criminal investigation organization of his own. For this, he needs a database system that will help him to keep track of solved cases and other informations. He hired you as his database administrator. The following requirements are given:

   a) Mr Holmes will hire a number of detectives. Each detectives has a unique detective code, a name, work rating etc.

   b) Mr Holmes would also like to keep track of criminals and their crimes. A crime has the following attributes: a unique crime id, crime name, date of occurrence and severity. A criminal has a unique criminal id, name, age. A criminal may also have a (but not more than one) boss who is also a criminal himself.

   c) A criminal may commit a number of crimes and multiple criminals may be associated in committing a crime.

   d) When a criminal commits a crime, A case is created. Each case is assigned to one detective and one detective only. However, one detective may be assigned multiple cases.

i) Draw an ERD for the given scenario. You should use primary keys from the mentioned attributes. Unless you find a suitable primary key for an entity, you may use your own primary key. Mention any assumption you made while drawing the ERD. Your ERD must highlight the relationship between entities and foreign key constraints properly. **[80]**

ii) Draw a schema diagram according to the ERD you drew.   **[10]**

SL		ID		SL		ID	

1) Suppose you have to implement the database for an investigation agency. You identified two entities: Criminal and Crime. A criminal may commit multiple crimes. Bu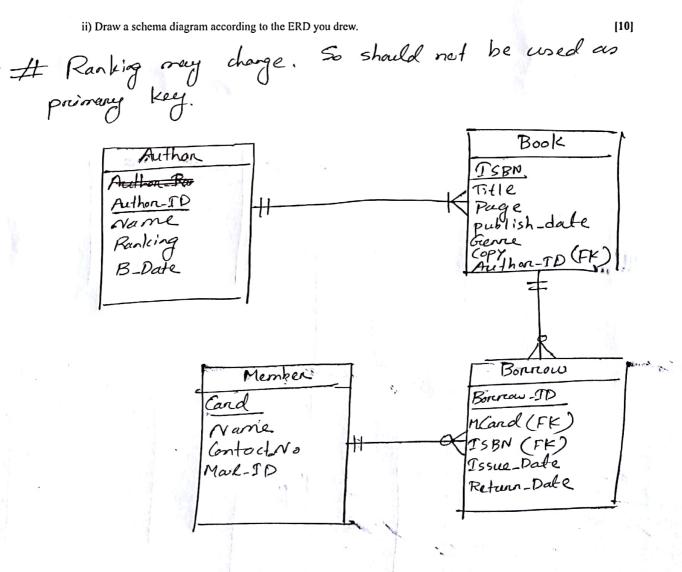t one crime is committed by one criminal only. You used the primary key of the Crime table as a foreign key in the Criminal table in your design. Your friend Holmes suggested that doing the opposite would have given you more advantage. Is he right? Validate your reasoning.   **[10]**

2) You are appointed for designing the database system of a library. The following requirements are given:
   a) Library will accommodate a lot of books. Each book has an identifier ISBN no, Title, Pages, publish date, genre, author and available copy no. Each book is written by only one author and each book is of only one genre.
   b) Each author has name, author ranking, birthdate etc.
   c) Members can borrow book from a library. Each member has a unique membership card no, name, contact no and mail address.
   d) When a member borrows a book, he is given an issue date and a return date.

   i) Draw an ERD for the given scenario. You should use primary keys from the mentioned attributes. Unless you find a suitable primary key for an entity, you may use your own primary key. Mention any assumption you made while drawing the ERD. Your ERD must highlight the relationship between entities and foreign key constraints properly. **[80]**

   ii) Draw a schema diagram according to the ERD you drew.   **[10]**

Ranking may change. So should not be used as primary key.

Author
~~Author Ra~~
Author-ID
Name
Ranking
B_Date

Book
ISBN
Title
Page
publish-date
Genre
Copy
Author-ID (FK)

Member
Card
Name
ContactNo
Mail-ID

Borrow
Borrow-ID
MCard (FK)
ISBN (FK)
Issue_Date
Return_Date