

1NF

BorrowID	StudentID	StudentName	BookID	BookTitle	Author	BorrowedDuration	AuthorNationality
B001	S001	Alice	BK101	Database Systems	Dr.Smith	14 days	American
B001	S001	Alice	BK101	Database Systems	Dr.Smith	14 days	British
B002	S002	Bob	BK102	Machine Learning	Dr.Johnson	7 days	Canadian
B003	S003	Charlie	BK103	Quantum Computing	Dr.Lee	21 days	Chinese
B003	S003	Charlie	BK103	Quantum Computing	Dr.Zhang	21 days	Korean
B004	S004	David	BK104	Web Development	Dr.Taylor	30 days	American
B005	S005	Eve	BK101	Database Systems	Dr. Smith	14 days	American
B005	S005	Eve	BK101	Database Systems	Dr. Brown	14 days	British
B006	S006	Frank	BK105	Data Structure	Dr.White	7 days	Australian
B007	S007	Grace	BK102	Machine Learning	Dr. Johnson	7 days	Canadian
B008	S008	Harry	BK104	Web Development	Dr. Taylor	30 days	American

2NF

BookID	BookTitle	Author
BK101	Database Systems	Dr.Smith
BK102	Machine Learning	Dr.Johnson
BK103	Quantum Computing	Dr.Lee
BK104	Web Development	Dr.Taylor
BK105	Data Structure	Dr.White
BK102	Machine Learning	Dr. Johnson
BK104	Web Development	Dr. Taylor

BorrowID	StudentID	BookID	BorrowedDuration
B001	S001	BK101	14 days
B002	S002	BK102	7 days
B003	S003	BK103	21 days
B004	S004	BK104	30 days
B005	S005	BK101	14 days
B006	S006	BK105	7 days
B007	S007	BK102	7 days
B008	S008	BK104	30 days

Author	AuthorNationality
Dr.Smith	American
Dr.Johnson	Canadian
Dr.Lee	Chinese
Dr.Zhang	Korean
Dr.Taylor	American
Dr. Brown	British
Dr.White	Australian

3NF

StudentID	StudentName
S001	Alice
S002	Bob
S003	Charlie
S004	David
S005	Eve
S006	Frank
S007	Grace
S008	Harry

		BookID	BookTitle
		BK101	Database Systems
		BK102	Machine Learning
		BK103	Quantum Computing
Author	AuthorNationality	BK104	Web Development
Dr.Smith	American		
Dr.Johnson	Canadian	BK105	Data Structure
Dr.Lee	Chinese		
Dr.Zhang	Korean	BK102	Machine Learning
Dr.Taylor	American		
Dr. Brown	British	BK104	Web Development
Dr.White	Australian		
BorrowID	StudentID	BookID	BorrowedDuration
B001	S001	BK101	14 days
B002	S002	BK102	7 days
B003	S003	BK103	21 days
B004	S004	BK104	30 days
B005	S005	BK101	14 days
B006	S006	BK105	7 days
B007	S007	BK102	7 days
B008	S008	BK104	30 days

Final Questions:**Why was it important to fix the 1NF violation?**

To ensure each cell contains only one value, rather than listing multiple items together, helps to make the data cleaner and easier to work with.

How did you fix the partial dependencies issue that caused the table to violate 2NF?

Everything in the table has to depend on the key to keep things organized and avoid repeating information. I created 3 separate tables author, borrowing, and bookID

What was the transitive dependency that violated 3NF, and how did you fix it?

AuthorNationality depended on Author, not directly on BookID. I created a separate Authors table where each author has their nationality listed, so there are no dependencies.