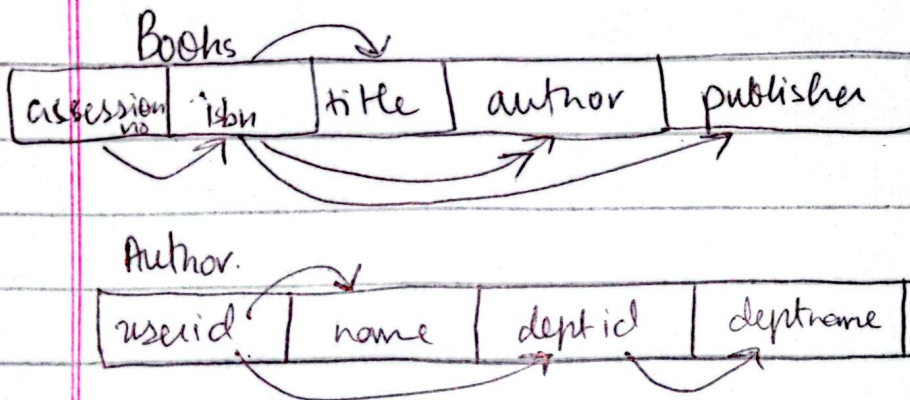


## Assignment # 4 DBMS

### Task 1

Books (accessionno, isbn, title, author, publisher)  
users (userid, name, deptid, deptname)



### 3NF

Books (isbn, author)

isbn.	author.
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Books (accessionno, isbn.)

accessionno	isbn.
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Books (isbn, title, publisher)

isbn.	title	publisher.
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Users (userid, name, deptid)

userid.	<del>deptid</del> name	deptid
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dept (deptid, deptname)

deptid	deptname.
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## Task 2

a. Yes, there exists ~~an~~ insertion anomalies,

For example:

If a new employee is hired with empid. 102 and hasn't been assigned a department yet, they can't be inserted until dept-id is entered too.

Or

If a new department<sup>or</sup> is created D.03, and no employee is assigned there yet, this cannot be inserted into the table.

b. Yes, there exists modification anomalies.

Example:

Suppose if Elen changes his address to Lahore, we will have to update every row where Elen appeared and change his address.

Or if the ~~deptid~~<sup>empid</sup> is changed from ~~101~~<sup>102</sup> to ~~102~~<sup>103</sup> will have to change multiple rows ids. for that employee.

c. Yes, there exists a deletion anomaly.

Example: if Maggie leaves the company, the deptid also deletes ~~with~~ her record because that id was dependant on that one employee. all data will be lost for that department like it never existed.



Same for Adm, if he is fired for  
example, his department data deletes with  
him.

Task 3:

- a. Shipment #  $\rightarrow$  Origin  
Shipment #  $\rightarrow$  Destination  
Shipment #  $\rightarrow$  Distance.  
Origin  $\rightarrow$  Distance  
Destination  $\rightarrow$  Distance.

- b. It's in 1NF, as no repeated values and  
all values are atomic.

It is also in 2NF, as the table has a PK  
Shipment # and all the non-key attributes  
are fully dependent on it.

It is not in 3NF as distance is indirectly  
depending on Shipment through the route  
which is due to origin or destination.

- c. Yes, here exists insertion anomaly.

New Route is entered from Karachi to Lahore.

but no shipment is added, so insertion cannot  
happen unless you write a dummy shipment.

Or maybe distance is only added or.

Shipment is added but no route decided yet.



d. Yes, there exists a modification anomaly.

Eg. If route distance has changed like maybe blockage or something, will have to find every route of that name and change the distance. If forgotten conflicting data, even if one row is missed.

Or if a city name is changed, all rows eg New York to NYC, will have to change all rows by that name.

e. Yes, there exists a deletion anomaly.

Eg: If route data from Denver to Los Angeles is deleted, Shipment # 824, then the distance of this route ~~and~~ is lost.

because there is no other row showing this.

Also for shipment # 618 and # 723.

f.	Shipment #	Origin	Distance
	409	Seattle	Denver
	618	Chicago	Pallas
	723	Boston	Atlanta
	824	-Denver	Los Angeles
	629	Seattle	Denver

Origin	Destination	Distance
Seattle	Denver	1537
Chicago	Dallas	1658
Boston	Atlanta	1214
Denver	Los Angeles	975

#### Task 4

##### a) 1NF

Full Names	Physical address	Movie/restaurant	Salutation
Janet Jones	First Street NW No 11	Pinks of the Caribbean	Ms.
Janet Jones	First Street No 4.	Clash of the Titans	Mr.
Robert Phil	3rd Street 34	Forgetting Sarah Marshall	Mr.
Robert Phil.	3rd Street 34	Paddy's Little Girls	Mr.
Robert Phil.	5th Avenue	Clash of the Titans	Mr.

##### b) 2NF

Customer

Full Names      Salutation

Janet Jones      Ms.

Robert Phil      Mr.

Robert Phil      Mr.

} as different addresses



Full Name	Physical Address	Movie Rental
Janet Jones	First Street Plot 4	Pirates of the Caribbean
Janet Jones	=	Clash of the Titans
Robert Phil	3rd Street 34	Forgetting Sarah Marshall
Robert Phil	=	Paddy's Little Girls
Robert Phil	5th Avenue	Clash of the Titans

3rd 3NF.

Full Names	Salutation	Physical Address
Janet Jones	Ms.	First Street Plot No 4.
Robert Phil	Mr.	3rd Street 34
Robert Phil	Mr.	5th Avenue.

Full Names	Physical Address	Movie Rental
Janet Jones	First Street Plot No 4	Pirates of the Caribbean
Janet Jones	=	<del>For</del> Clash of the Titans
Robert Phil	3rd Street - 34	Forgetting Sarah Marshall
Robert Phil	=	Paddy's Little Girls
Robert Phil	5th Avenue	Clash of the Titans