2a)

https://www.geeksforgeeks.org/introduction-of-deadlock-in-operating-system/
https://www.tutorialspoint.com/distributed_dbms/distributed_dbms_deadlock_handling.htm

2b)

https://www.guru99.com/dbms-data-independence.html

3a).

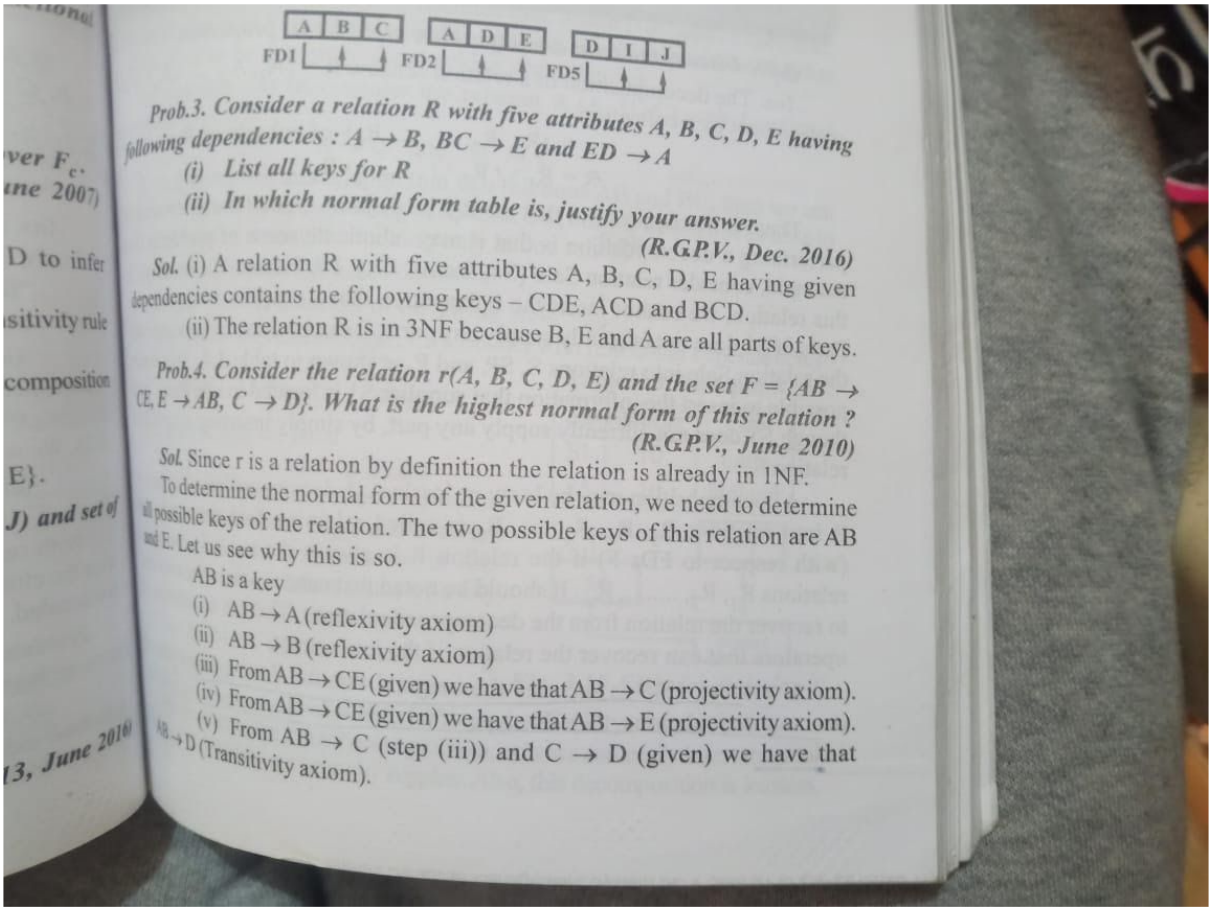
https://www.geeksforgeeks.org/two-phase-locking-protocol/

3b).

https://www.javatpoint.com/dbms-log-based-recovery

4a)https://www.geeksforgeeks.org/dba-full-form/

4b)



Prob.3. Consider a relation R with five attributes A, B, C, D, E having following dependencies : A → B, BC → E and ED → A

(i) List all keys for R

(ii) In which normal form table is, justify your answer.

(R.G.P.V., Dec. 2016)

Sol. (i) A relation R with five attributes A, B, C, D, E having given dependencies contains the following keys – CDE, ACD and BCD.

(ii) The relation R is in 3NF because B, E and A are all parts of keys.

Prob.4. Consider the relation r(A, B, C, D, E) and the set F = {AB → CE, E → AB, C → D}. What is the highest normal form of this relation ?

(R.G.P.V., June 2010)

Sol. Since r is a relation by definition the relation is already in 1NF.

To determine the normal form of the given relation, we need to determine all possible keys of the relation. The two possible keys of this relation are AB and E. Let us see why this is so.

AB is a key

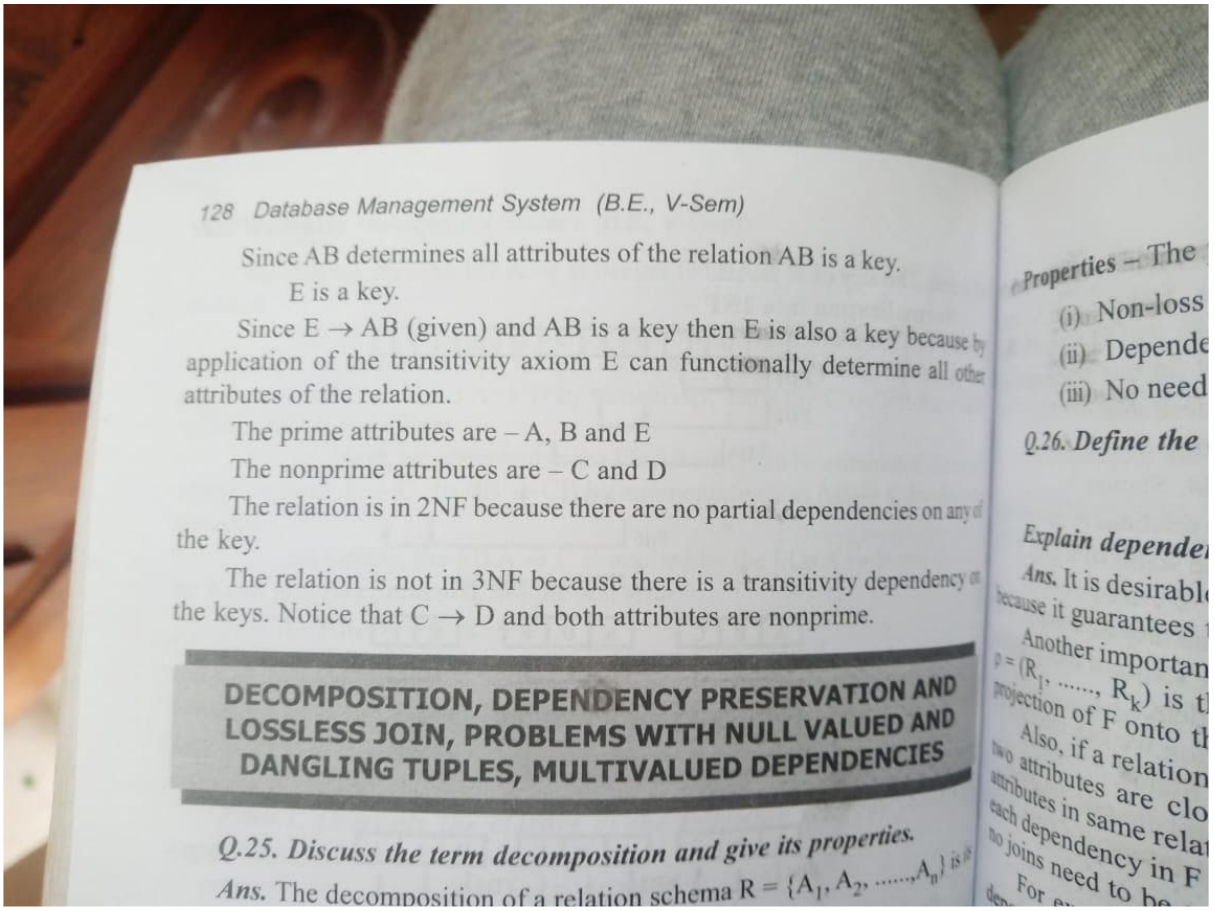
(i) AB → A (reflexivity axiom)

(ii) AB → B (reflexivity axiom)

(iii) From AB → CE (given) we have that AB → C (projectivity axiom).

(iv) From AB → CE (given) we have that AB → E (projectivity axiom).

(v) From AB → C (step (iii)) and C → D (given) we have that AB → D (Transitivity axiom).



Since AB determines all attributes of the relation AB is a key.

E is a key.

Since E → AB (given) and AB is a key then E is also a key because by application of the transitivity axiom E can functionally determine all other attributes of the relation.

The prime attributes are – A, B and E

The nonprime attributes are – C and D

The relation is in 2NF because there are no partial dependencies on any of the key.

The relation is not in 3NF because there is a transitivity dependency on the keys. Notice that C → D and both attributes are nonprime.

DECOMPOSITION, DEPENDENCY PRESERVATION AND LOSSLESS JOIN, PROBLEMS WITH NULL VALUED AND DANGLING TUPLES, MULTIVALUED DEPENDENCIES

Q.25. Discuss the term decomposition and give its properties.

Ans. The decomposition of a relation schema $R = \{A_1, A_2, \ldots, A_n\}$ is

5.a)

https://www.geeksforgeeks.org/generalization-specialization-and-aggregation-in-er-model/

5b)

https://www.javatpoint.com/dbms-relational-decomposition

7a).

https://www.guru99.com/sqlite-query-insert-update.html

7 b).

https://www.quora.com/What-is-the-difference-between-DDL-DMl-and-DCL

https://www.geeksforgeeks.org/sql-ddl-dql-dml-dcl-tcl-commands/

8 i,iii,v