UG END SEM EXAM
Semester - V^th
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Branch : CSE - B
Subject : DBMS
Subject Code : CS302

Q.1.

Ans →

a) Data : It refers to all the single items that are stored in a database, either individually or as a set.

b) Data model : It defines how the logical structure of a database is modeled.

c) Entity Instance : It is referred to a single occurance of an entity.

d) Full functional dependency : It is a state of database normalisation that equates to the normalisation of standard of second normal form.

e) Atomicity : It is a feature of database systems dictating where a transaction must be all-or-nothing.

f) Pseudo transitivity : It is a rule used in DBMS which is such that if X determines Y and YZ determines W, then XZ determines W, i.e, If $X \rightarrow Y$, $YZ \rightarrow W$
Then, $XZ \rightarrow W$

Q.20

Ans.→

(a)→ SELECT E.ename, E.age FROM Emp E, Works W1, Works W2, DEPT D1, Dept D2 WHERE E.eid = W1.eid AND W1.did = D1.did AND D1.dname = 'Hardware' AND E.eid = W2.eid AND W2.did = D2.did AND D2.dname = 'Software';

Tuple Relation's

$\{ t \mid \exists e \in Emp \wedge w \in Works \wedge d \in Dept \ (t.ename = e.ename \wedge t.age = e.age \wedge e.eid = w.eid \wedge w.did = d.did \wedge d.dname = 'hardware' \wedge d.dname = 'software') \}$

(b)→ SELECT E.NAME FROM Emp E WHERE E.SALARY > 1000000;

Relational Algebra:

$\Pi_{name} (\sigma_{salary > 100000} (Emp))$

(c)→ [redacted]

SELECT DISTINCT managerid FROM Dept;

Q.3o

Ans

(a) → Primary key : (Player_ID, Team_ID) combination.

(b) → Fully functional :

(Team_ID, Player_ID) → Player_name, Citizen_Country ID, Citizen_CountryName, Role.

Partial dependencies:

(Team_ID, Player_ID) → City_code, city_name, team_name, web, owner_id, Owner_name, coach_id, coach_name.

All the above attributes depend only on Team_id.

Transitive dependencies:

i) team_id → city_code, city_code → city_name.

ii) team_id → owner_id, owner_id → owner_name.

iii) team_id → coach_id, coach id → Coach_name.

(C) → After decomposition:

IPL (team_id, player_id, player_name, role, citizen_country ID, citizen_countryName).

TEAM (team_ID, city_code, city_name, team_name, owner_id, owner_name, coach_ID, coach_name).

Q.4.

(a)

Ans → Armstrong rules are as follows:

i) Axiom of reflexivity: If $B \subseteq A$
Then, $A \rightarrow B$

ii) Axiom of augmentation: If $A \rightarrow B$
Then $AC \rightarrow BC$

iii) Axiom of transitivity: If $X \rightarrow Y$
And, $Y \rightarrow Z$
Then, $X \rightarrow Z$

Other rules that are derived from armstrong's rules are as follows:

i) Union: If $X \rightarrow Y$
and $Y \rightarrow Z$
Then, $X \rightarrow YZ$

ii) Composition: If $A \rightarrow B$
And $X \rightarrow Y$
Then, $AX \rightarrow BY$

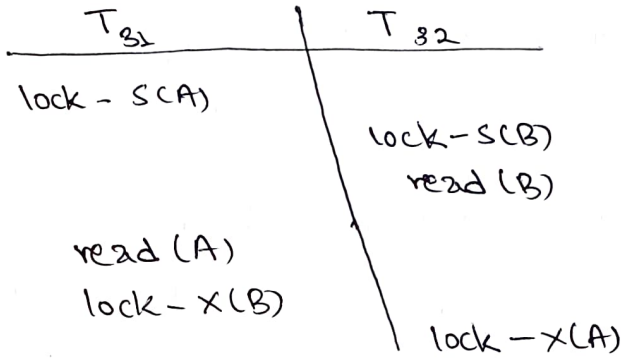
iii) Decomposition.: If $X \rightarrow YZ$
Then, $X \rightarrow Y$
And, $X \rightarrow Z$

iv) Pseudo Transitivity: If $X \rightarrow Y$
And, $YZ \rightarrow W$
Then, $XZ \rightarrow W$

Q.40

Ans

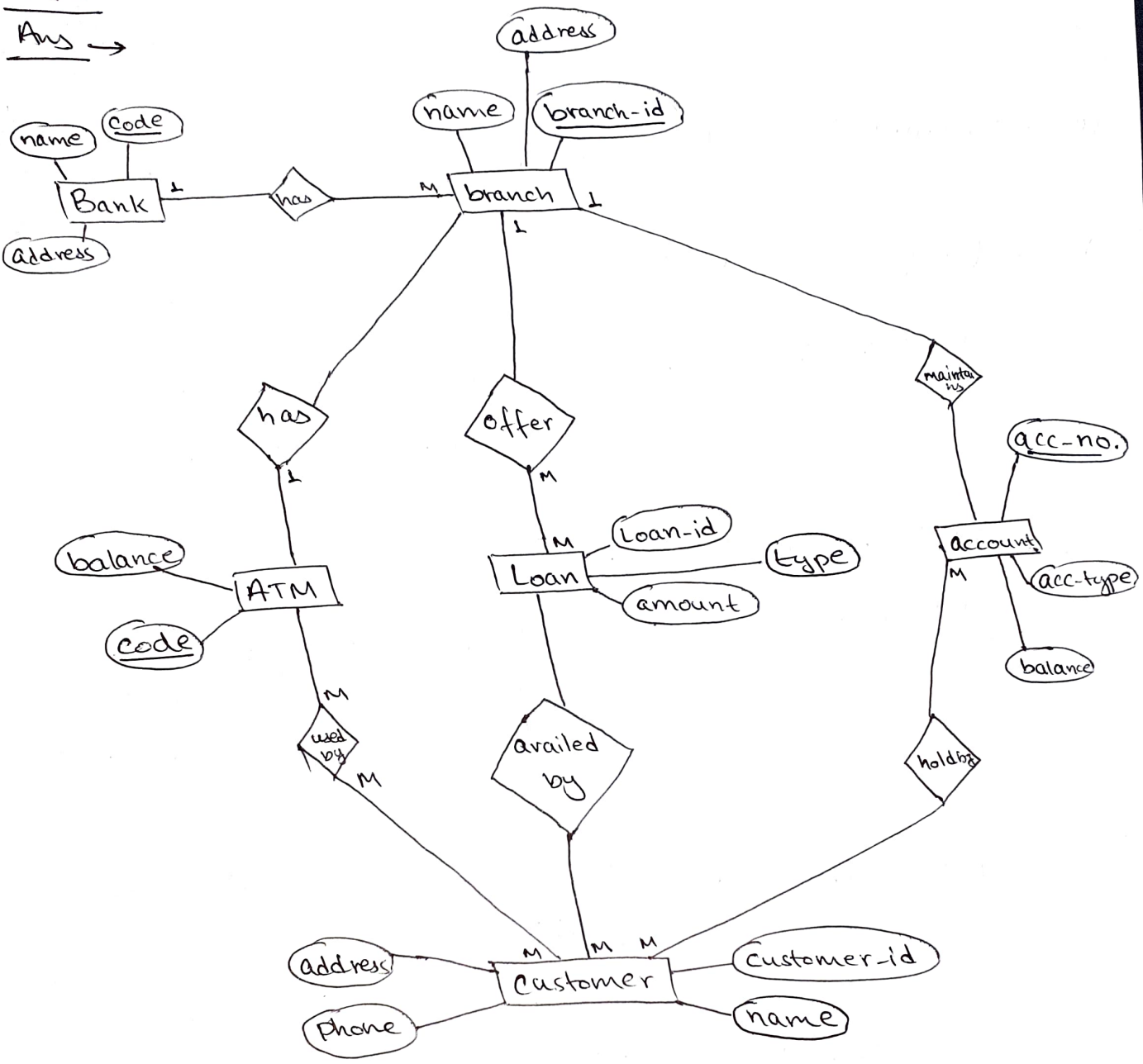
(b) → Consider the following partial schedule:



This shows that the executions of these transactions can result in conflict serialisable schedule.

Q.5.

Ans →


address
name
branch-id
name
code
Bank
1
has
M
branch
1
1
address
has
offer
maintains
acc-no.
1
M
M
Loan-id
balance
ATM
Loan
type
account
M
acc-type
code
amount
balance
M
used by
availed by
holding
M
M
M
M
address
customer
customer-id
phone
name