

DATABASE SYSTEM - MID 1 FALL 2022 SOLUTION

Q 1:

Answer:

a.

1. When the organization size is small
2. When multiple users/concurrency is not required.

b.

i.

i) and ii) are at **Conceptual Level** because those are about identifying/defining the constraints, done at conceptual level.

iii) at **External Level**: End-Users' view.

iv) and v) are physical considerations, hence taking place at **Physical Level**

ii.

Three-schema architecture provides Data Independence. For example, if we want to increase the storage capacity, changes will only be applied at the physical level. Physical independence makes it possible to make changes in the internal schema without having to change the conceptual schema. Hence, the external schemas need not be changed as well.

Q 2:

Answer:

a.

- i) Referential Integrity Constraint Violation: 6 does not exist in customers' table
- ii) Deletion is Acceptable
- iii) Modification is Acceptable
- iv) Key Constraint Violation: 4 already exists in customers' table
- v) Referential Integrity Constraint Violation: customer_id = 5 is referenced by shippings' table
- vi) Referential Integrity Constraint Violation

b.

- i) CREATE TABLE patient(PatientID int primary key, FirstName varchar(20), LastName varchar(20), phone int UNIQUE, email varchar(20), address varchar(20));
- ii) SELECT * FROM consultation WHERE (date BETWEEN '01-01-2020' and '31-12-2022');
- iii) UPDATE Doctors SET email = 'martin.crow@aku.com' WHERE doctor_id=2
- iv) SELECT * FROM Medicine WHERE quantity > 10
- v) Select diagnosis from (consultation c JOIN doctors d
ON c.doctorId = d.doctorId) JOIN prescription p on p.prescriptionId=c.prescriptionId
where c.date in ('2-jan-2022') And d.FirstName = 'Theo' AND d.LastName = 'James' ;
- vi) Select patients.FirstName from patients, consultation, doctors where patients.patientId
=consultation.patientID AND consultation.doctorId = doctors.doctorId AND
doctors.LastName='Crow';
- vii) Select medicineName from medicine where quantity = (select min(quantity) from medicine);