



SAVEETHA ENGINEERING COLLEGE

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AUTONOMOUS



Sl. No.:

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| Marks | (0) |
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C1A-II Examination -April/May/Nov/Dec 20_25

Register No.: 2122230410207

Branch & Sem.: BE CSE

Date: 29/05/25

4th Sem

Sign of the Invigilator:

Subject Code & Subject Name : 19CS404 Database Management and its applications

Part-B Questions answer any four questions

- 6) *Discuss the various properties of DBMS and its significance.*
- b) *Evaluate the significance of ACID Properties in transactions and analyze states of transaction.*
- 7) *a) write a brief note on multimedia database and web database highlights. the feature and significance*
- 8) *a) Develop SQL Query for the following relations of a company Database application:*

Employee (ENo, Name, DOB, DOJ, Designation, Basic_Pay, DeptNo)

Department (Dept_no, name), project (proj_no, name, Dept_no)

workfor (Eno, Proj_no, Date, hours)

9) *Identify the foreign key develop DDL to implement the above schema*

(2)

ii) Develop an sql query to list the department number and number of employees in each department.

iii) Develop a view that will keep the track of department, number of employees in department and total basic pay expenditure for each department

iv) Develop an sql query to list the details of employee who have worked in more than three projects on a day.



6)
b)

(3)

A transaction in DBMS refers to series of operation that are executed together to form a single task such as transferring money from one account to another. A transaction state is the current state in this of execution.

There are different types of transaction in DBMS, & they are

Active state

Partially committed

Failed state

Committed state

Aborted state

Terminated state

(4)

Active state:

This is first state in the transaction, which began the execution.

The operations such as insertion, deletion, updation are performed in this stage.

Partially committed State:

The transaction has finished its final execution but the changes are not saved in database.

After completing all read and write operations, it stored in main memory, if it made for permanent state then it moved to committed state, if in case of failure it moved to failure state.

committed state:

This state can be achieved when all the basic transaction related operation are executed successfully. Now the data is ready to store in database.



(5)

Failed state :

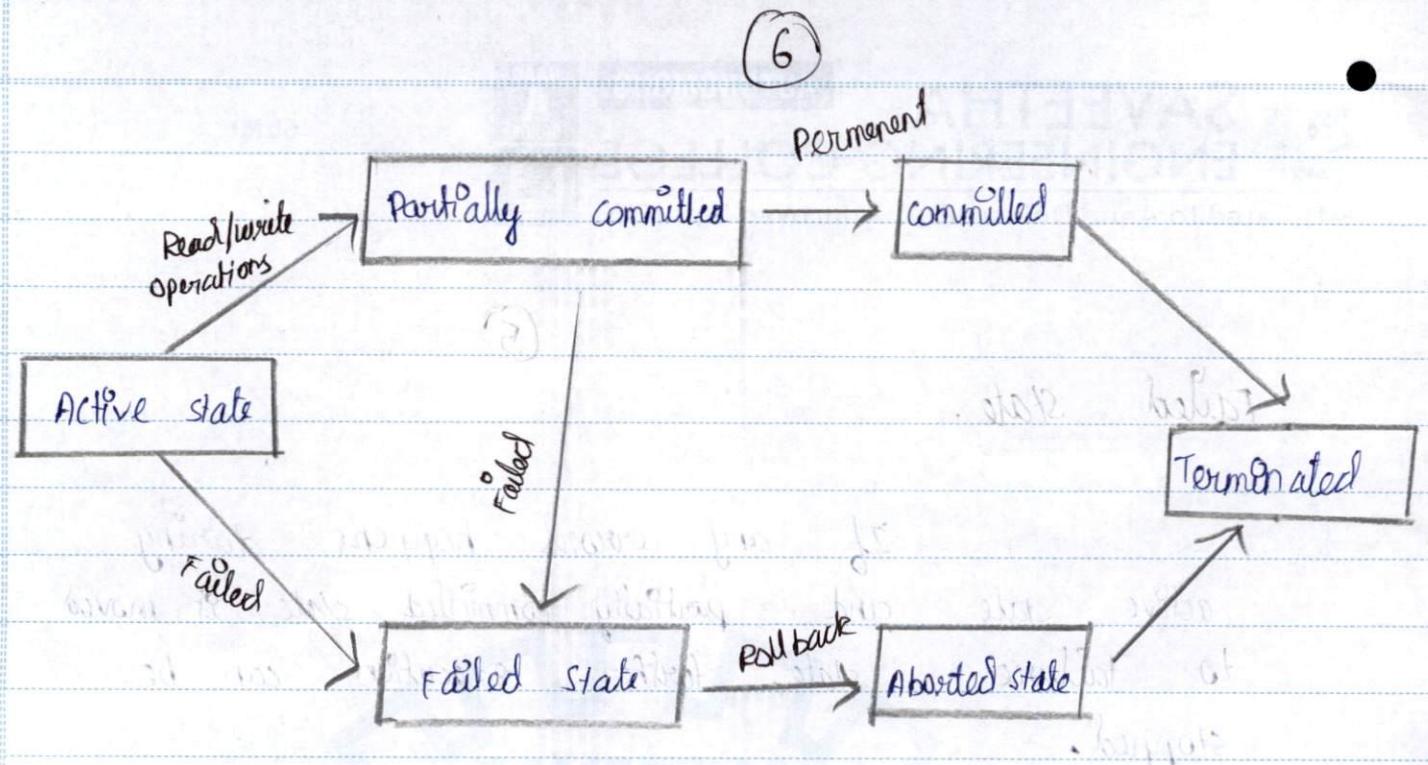
If any errors happens during active state and partially committed state it moved to failure state, further execution can be stopped.

Aborted state :

If the transaction moved to failed state, DB recovery system try to rollback the data to commit, if it not able to solve the error then it goes to terminated state.

Terminated state :

It is the final state, if it refers all execution is completed, if the transaction has reached this phase, then either the transaction is fully completed or terminated successfully.



Properties of AID ACID:

A - Atomicity

C - consistency

I - Isolation

D - Durability

Transaction with ACID Properties.

Ensures with relational database to manage reliable data management.



(7)

student Submission

Atomicity:

In atomicity, either all transactions are happens at once else it does not happen.

Consistency:

The transaction must maintain consistency before or after transaction

Isolation:

Multiple transaction can be performed without any interference

Durability:

gives successful transaction changes even in the failed transaction occurs.

(8)

7)

a) Multimedia Database

Multimedia is an interactive way to represent the data to user. It has several categories such as, audio, text, video, graphic etc.. A database that holds these different kinds of multimedia data is called multimedia database.

Types:

* Static

* Dynamic

* Dimensional

Static multimedia database:

static multimedia database is used in specific static objects.



Dynamic multimedia database:

Dynamic database : store Rubin

Dynamic forms of data.

Dimensional multimedia Database:

In this Database we can store or create 3D object & to the database by using computer aided design programs.

Contents in multimedia:

It store and query a large set of multimedia data , it also store additional information related to the data that apart from the multimedia.

Media :

A multimedia data or primary data in the database is called media.

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Media format:

It is responsible for format used in this media.

Media feature:

It is used represent the features in the database such as description of colours.

Applications

Document record management:

If is used in industries that require large set of documents and records.

Example: Insurance policy industries.

Education:

In Education it is used in the form of software tools called computer aided design.



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Web database:

Web database is used to manage and store the data that can be accessed via Internet. Web database is integral form of modern web database for features.

Benefits of web database:

* It provides instant access to database and providing real time applications.

* They can scale horizontally or vertically to accommodate high traffic and large data volumes.

* It transactions with ACID [Atomicity, consistency, isolation, durability] properties relational database can manage relational database management.

(12)

Cloud based database reduce physical infrastructure, reducing cost etc...

Applications:

⇒ E-commerce

⇒ Social media platform

⇒ online bank, finance platform

Part - C

8)

a)

foreign keys:

| Table | foreign key | References |
|----------|-------------|---------------------|
| Employee | dept-Id | department(dept-Id) |
| Project | dept-Id | department(dept-Id) |
| workbs | Eno | Employee(eno) |
| workfor | proj-no | Project(proj-no) |



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) not show space

Create Department (

Dept-no int,

Name varchar(50),

ENO int, primary key,

Name varchar(50),

DOB Date,

DOJ Date,

Designation varchar(20),

BasicPay decimal,

Dept.no.

Foreign key (dept-no) references to (department(dept_id))

)

¶ Create Project (Proj-nr

Project-no int Primary Key,

Name varchar(20),

Dept-no,

(14)

foreign key (dept_id) references (department(dept_id))
)

create workfor ()

int Eno int primary key,
 Proj_id int primary key
 date Date,
 hours int,
 foreign key (Eno) references (employee(eno))
 foreign key (Proj_id) references (Project(Proj_id))
);

Depart table:

| Dept-no | Name |
|---------|------|
|---------|------|

| | |
|-----|-------|
| 101 | Karen |
|-----|-------|

| | |
|-----|---------|
| 102 | Vignesh |
|-----|---------|

| | |
|-----|---------|
| 103 | Sathish |
|-----|---------|

| | |
|-----|--------|
| 103 | Vinush |
|-----|--------|



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Employee table :

| ENO | NAME | DOB | DOJ | DESIGNATION | BASIC PAY | DEPT-NO |
|-----|---------|------------|-----------|-------------|-----------|---------|
| 1 | Karan | 12/03/2000 | 11/3/2015 | IT | 50,000 | 101 |
| 2 | Vignesh | 16/05/2000 | 15/3/2020 | Payroll | 65,000 | 102 |
| 3 | Haru | 20/01/1998 | 6/3/2021 | HR | 70,000 | 103 |
| 4 | Sathish | 13/03/1999 | 18/4/2022 | Manager | 75,000 | 103 |
| 5 | Vinush | 15/07/2002 | 12/5/2019 | Engineer | 48,000 | 103 |

Project table :

| PROJ-NO | NAME | DEPT-NO |
|---------|---------|---------|
| 201 | HR | 101 |
| 202 | Finance | 102 |
| 203 | Payroll | 102 |

(16)

Work for table:

(7)

| ENO | Proj_no | Date | hours |
|-----|---------|------|-------|
|-----|---------|------|-------|

| | | | |
|---|-----|------------|---|
| 1 | 201 | 12/03/2015 | 3 |
|---|-----|------------|---|

| | | | |
|---|-----|------------|---|
| 2 | 202 | 14/05/2020 | 2 |
|---|-----|------------|---|

| | | | |
|---|-----|------------|---|
| 3 | 203 | 15/05/2019 | 1 |
|---|-----|------------|---|

| | | | |
|---|-----|------------|---|
| 4 | 203 | 16/03/2018 | 4 |
|---|-----|------------|---|

(Q) select count(*) dept_id, count(*) as total_employee
 from employee
 group by dept_id.

Output:

| dept_id | TotalEmployee |
|---------|---------------|
| 101 | 1 |
| 102 | 1 |
| 103 | 3 |



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Sign of the Invigilator: 4/210

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create view department_summary AS
Select dept_id, count(*) as total_employee,
sum(basic_pay) as total_expenditure
from employee;

output :

| Dept_Id | total employee | total expenditure |
|---------|----------------|-------------------|
| 101 | 1 | 45000 |
| 102 | 1 | 55000 |
| 103 | 3 | 145000 |

(18)

iv)

Select E.*
from employee
join (

Select ens, date

from employee

select

Group by ens, date, , through line 300

Having count(Proj-no) > 3

) as W

on E.empno = W.empno;

000031

101

000032

101

000033

8

101