Assignment :-

Name : Prakruti Jahnavi

VTU : 30565

Course Name : Database Management System

Bayce - codd Normal - formal (BCNG):

Rule:
- Table must be in 3NF
- for every functional dependency (x→y), x should be a superkey

example:

Course	Instructor	Room
DBMS	Ravi	R1
DBMS	Ravi	R1

5) fourth Normal form (4NF)

Rule:
- Table must be in BCNF
- there should be no multi-valued dependencies

Student	Hobby	language
Ravi	cricket	English
Ravi	music	Hindi

Here "Hobby" and language are independent multi-valued Eich

After 4NF

Student Hobby

Student	Hobby
Ravi	Cricket
Ravi	music

Student language

Student	language
Ravi	English
Ravi	Hindi

6) fifth Normal formal (5NF)

Rule:
- Table must be in 4NF
- should not have join dependency

Ex:- Relation R = {subject, lecture, semester}

Student	Lecturer	semester
Computer	Anshika	semester
Computer	John	semester
math	John	semester
math	John	semester
Chemistry	Praveen	semester

R1 = {semester, subject}

R2 = {subject, lecturers}

R3 = {semester, lecturer}

All three relation are now in 5NF

Student ID	Course ID	Student Names	Course Name
1	C1	Ravi	DBMS

ere,
- Student ID. + Course ID = primary key
- Student Name depends only on Student ID (Partial dependence)

fter (2NF) Student table

Student ID	Student Name
1	Ravi

ourse table:

Course ID	Course Name
C1	DBMS

rollment table:

Student ID	CourseID
1	C1

Third Normal table: (3NF)

e:
able must be in 2NF
o transitive dependency (non-key attribute should be depent on another non-key attribute)

ample

StudentID	StudentName	DeptID	DeptName
1	Ravi	D1	math

DeptName depends on DeptID, not directly on

e 3NF

Student table

Student ID	Student Name	Dept ID
1	Ravi	D1

artment table

Dept ID	Dept Name
D1	maths

Normalization and Pts. various type of Norm
Normalization is a process of organizing the data
database to avoid data redundacy and improve d
integrity
It divides large tables into smaller related tabula
links them using foreign keys

Objective

1. To eliminate data redundicy
2. To avoid update, insert and delete anomalies
3. To ensure data consistency and integrity
4. To make database structure simple and efficia

Types of Normalization

1. first Normal from (1NF)

Rule:

- Each column shauld contain atomic (indivisable)
- No repeating groups or arays one allowed

Ex:- (Before 1NF)

Student ID	Name	Subject
1	Ravi	math, scien

After 1NF

Student ID	Name	Subject
1	Ravi	math
1	Ravi	science

2) Secound Normal form (3NF)

Rule:

- Table must be in 2NF
- No transitive dependency (non-key attribut sha not depent on another non-key attribute

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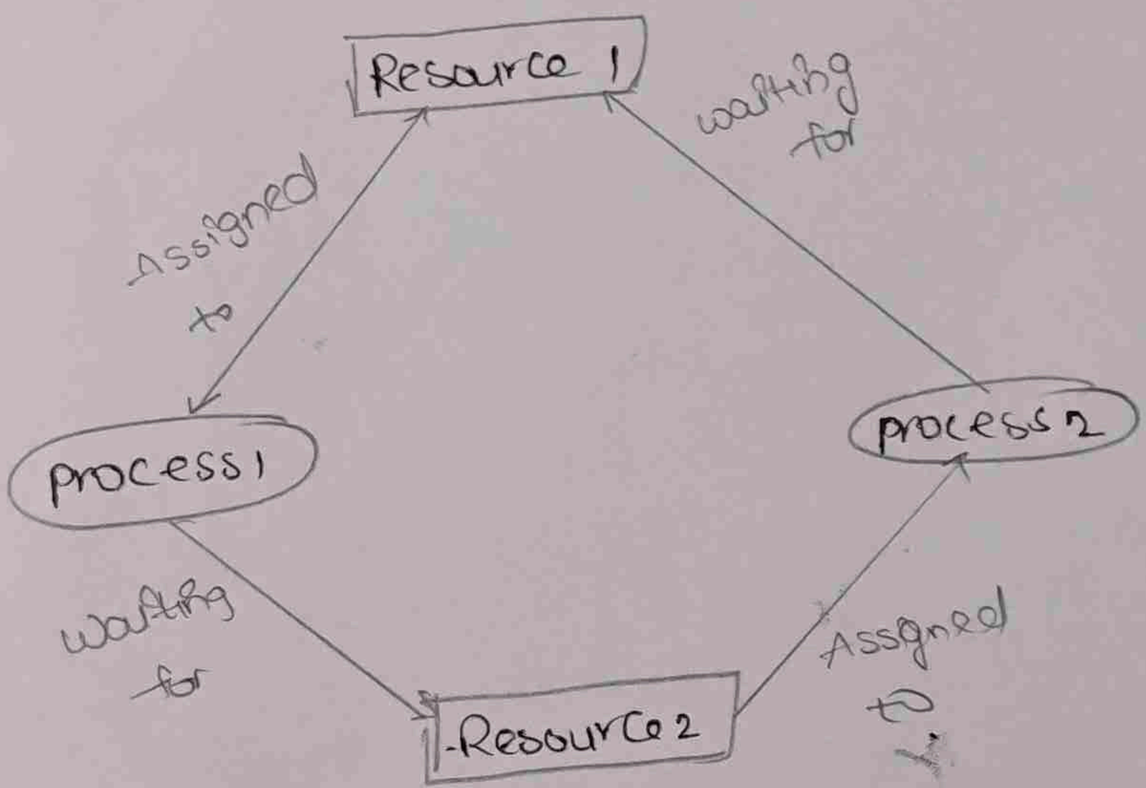
Ex:- Banker's algorithm

3. Deadlock Detection and Recovery :- Allow deadlock to occur, detect it using an algorithm, and then recovery (by terminating or rolling back process)

4. Deadlock Ignorance :- the system assumes that deadlock never occurs, used in most OS (like window, linux), because deadline are rare

Deadlock handling is essential in operating system to ensure smooth execution of processes and efficient resource utilization. Different techniques are used depending on system requirement and complexity



Unit-IV

Explain about Deadlock and its handling in doms

A dead lock is a condition in a multiprogramming system where two or more processor are waiting indefinitely for resources held by each other, causing all of them to remain blocked forever

ex :-

- process P1 holds Resource R1 and with for R2
- process P2 holds Resource R2 and waits for R1

→ Both process wait forever deadlock occur

Necessary Conditions for deadlock :-

A deadlock can occur only if all there four conditions hold simultaneously

1. mutual exclusion : only one process can use a resource at a time
2. Hold and wait : A process holding a resource is waiting for other
3. No preemption : Resource cannot be forcibly taken from a process
4. Circular wait : A circular chain processors exists each waiting for a resource held by the next process

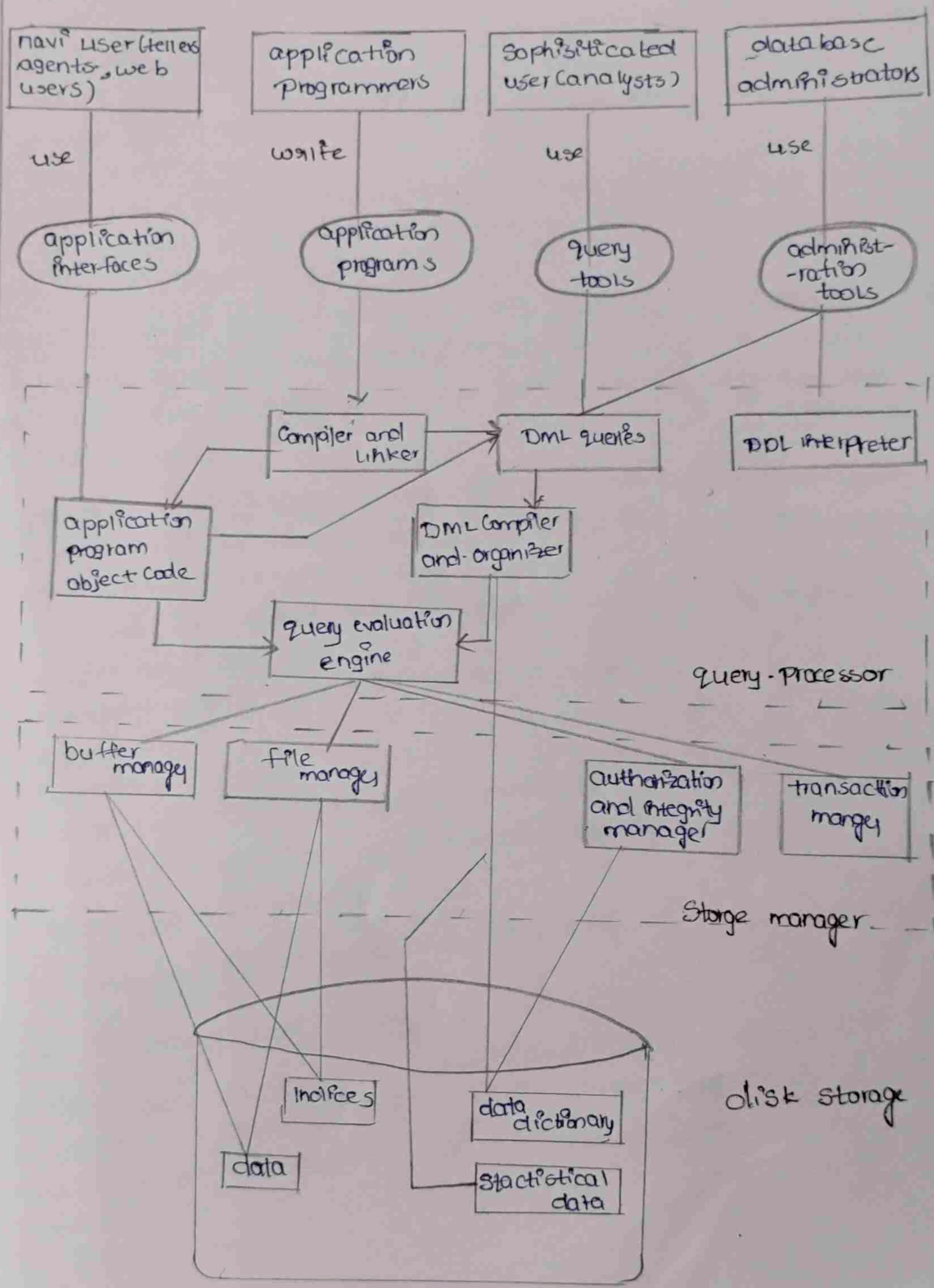
Deadlock Handling methods

1. Deadlock prevention : Design the system in such a way that at least one of the four neccessary condition never occur

Ex :- Don't allow hold-and-wait

2. Deadlock Avoidance : Dynamically check resource request to ensure the system never enters an unsafe state

Explain in details about database system Architecture with neat diagram



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Assignment :-

Name :- Phakenti Jahnavi

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Course Code :- 10211CA207

Course title :- Database Management System.

2 : (Bit-level Stripping) Data is striped at bit level with error correction code (ECC)

RAID 3 : (Byte-level stripping with parity) Data is striped a byte-level and a seperate disk stores parity bits

RAID 4 : (BLOCK-level stripping with parity) : parity information is stored on a dedicated disk

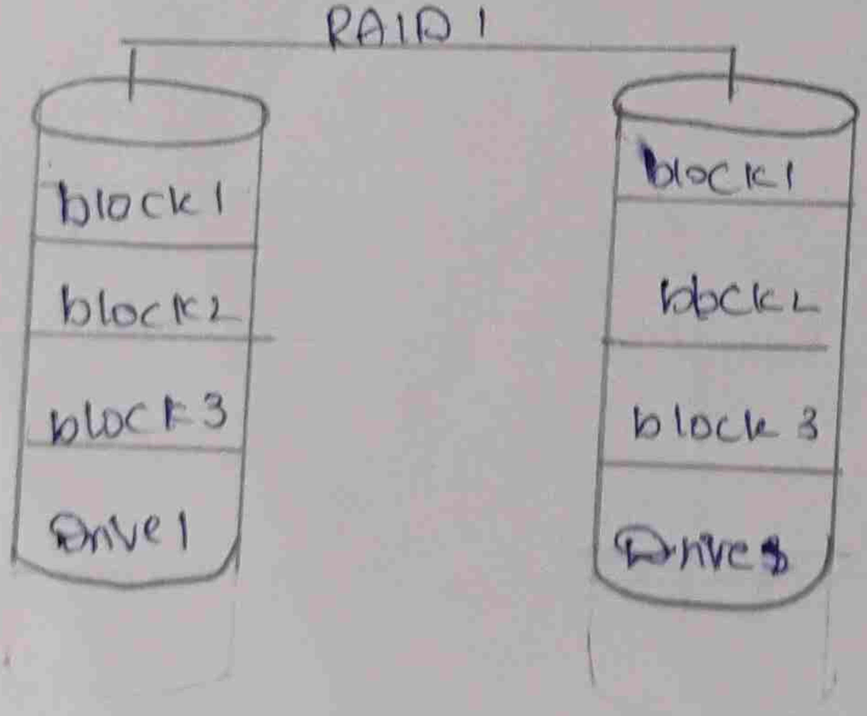
RAID 5 : (Block-level stripping with distributed parity) : Parity is distributed accross all disks

RAID 6 : (Double Distributed parity) : similar to RAID 5 but uses two parity blocks for extra protection

RAID 10 Combination of (RAID 1 + RAID 0) combines mirroring and striping

RAID storage technology provides a balance between performes and reliability

The selection of RAID level depends on system needs whether speed cost or data safety is the priority



Assignment

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Course Name : Database management system

5 Mks

RAID storage and its types

RAID stands for Redundant Array of independent Disks. It is a data storage technology that combines multiples physical hard drives into a single logical unit to improve performance fault tolerance and data reliability.

RAID is mainly used in servers and high performance system where data availability and speed are important

Objective of RAID:

- TO increase storage capacity
- TO improve read/write performane
- TO provide data redundancy (backup in case of disk failure).
- TO enchance system reliability

Objective of RAID:

RAID uses a techniques called data striping (diving data into blocks and storing them accross multiple disks) and parity (extra information used for recovery if one disk fails).

working principle: Types of RAID levels:

RAID 0 (striping): Data is divided into blocks and stores accross multiple disks

RAID 1 (mirroring): same data is copied (mirrored) on two or more disks