Vidyavardhini's College of Engineering and Technology

Department of Artificial Intelligence & Data Science

AY: 2025-26

Class:	TE	**Semester:**	V
Course Code:	CSC 504	**Course Name:**	Data warehousing & mining

Name of Student:	Pranita Kumbhar
Roll No. :	70
Assignment No.:	01
Title of Assignment:	Build a data warehouse with dimensional modelling concepts of OLAP operations.
Date of Submission:	
Date of Correction:	

Evaluation

Performance Indicator	Max. Marks	Marks Obtained
Completeness	5	5
Demonstrated Knowledge	3	3
Legibility	2	2
Total	10	10

Performance Indicator	Exceed Expectations (EE)	Meet Expectations (ME)	Below Expectations (BE)
Completeness	5	3-4	1-2
Demonstrated Knowledge Legibility	3	2	1
Legibility	2	1	0

Checked by

Name of Faculty : Ms. Neha Raut

Signature :

Date :

Q.1] Draw schemas for "Hotel Occupancy"

i] Design star and snowflake schema for "Hotel Occupancy" considering dimensions like Time, Hotel, Room, etc.

ii] Calculate the maximum number of base fact table records for the value given below.

Time period : 5 years

Hotels : 150

Rooms : 750 rooms in each Hotel (about 400 occupied in each hotel daily).

→ * Star Schema

Hotel Dimension

Room Dimension
Hotel name
Hotel type
Star rating
Region
City
State
Zone
Country.

Room dimension

Room id
Room type
Max occupant
No. of beds
Room side
A/C non a/c
Renovation year.

Hotel Occupancy Fact table.

Hotel name
Room id
Customer id
Date
No. of occupied Rooms
No. of vacant Rooms

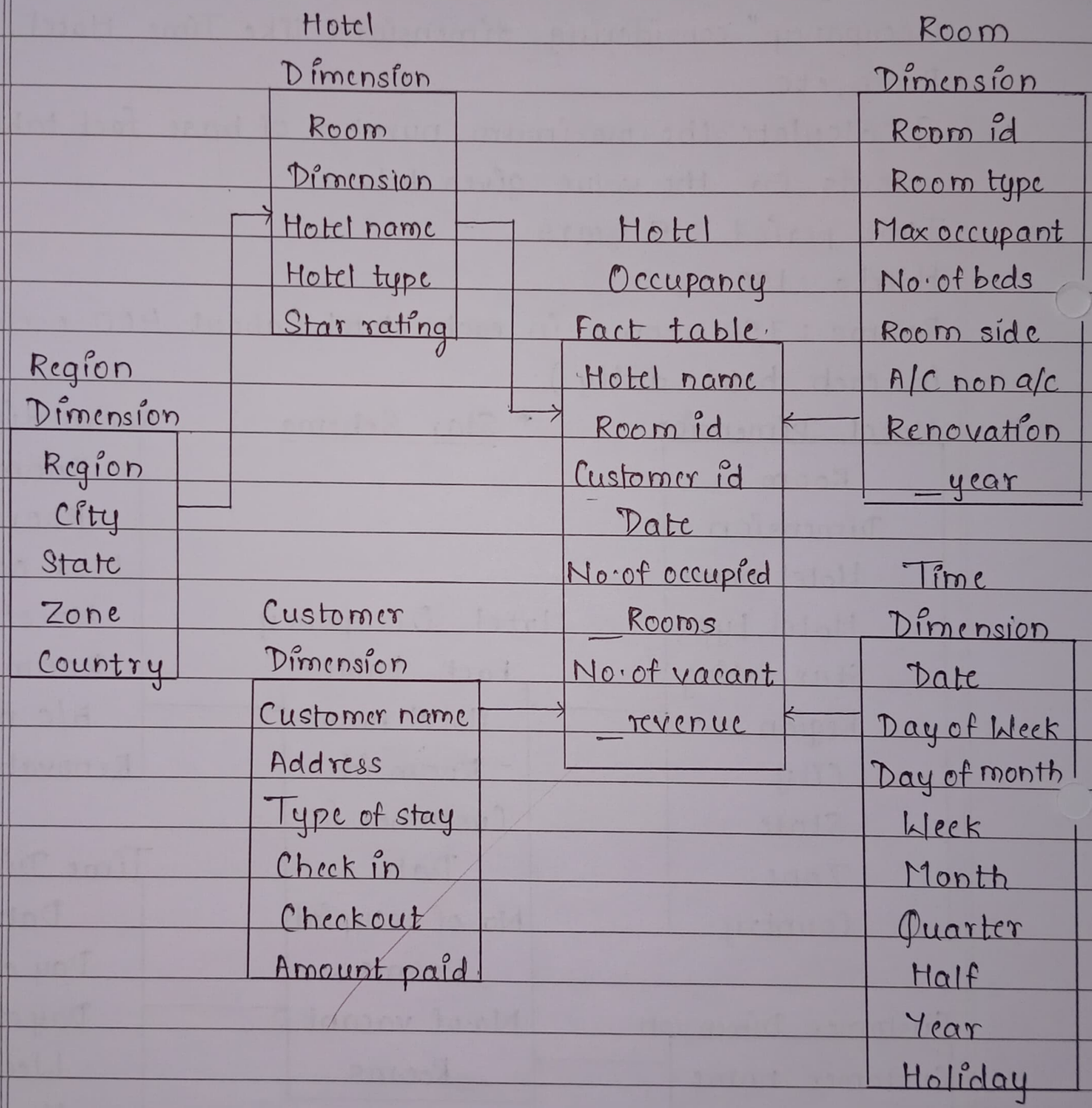
Time Dimension

Date
Day of week
Day of month
Week
Month
Quarter
Half
Year
Holiday

Customer Dimension

Customer name
Address
Type of stay
Check in
Checkout
Amount paid

* Snowflake Schema



ii] Calculation of maximum Number of Base Fact Table Records.

Given :

Time Period = 5 years
Hotels = 150
Rooms per Hotel = 750
Occupied Rooms daily = 400.

We assume one occupancy record per room per day

Calculate total days :

5 years × 365 days / year = 1825 days

Total Occupied Records.

150 hotels × 400 rooms/day × 1825 days
= 109500000 records.

∴ The maximum number of base fact table records is 109500000.

Q.2] The college wants to record the marks for the courses completed by students using the dimensions: course, Student, Time and a measure of Aggregate marks. Create a Cube and describe following OLAP operations:

a] Roll up

b] Drill down

c] Slice

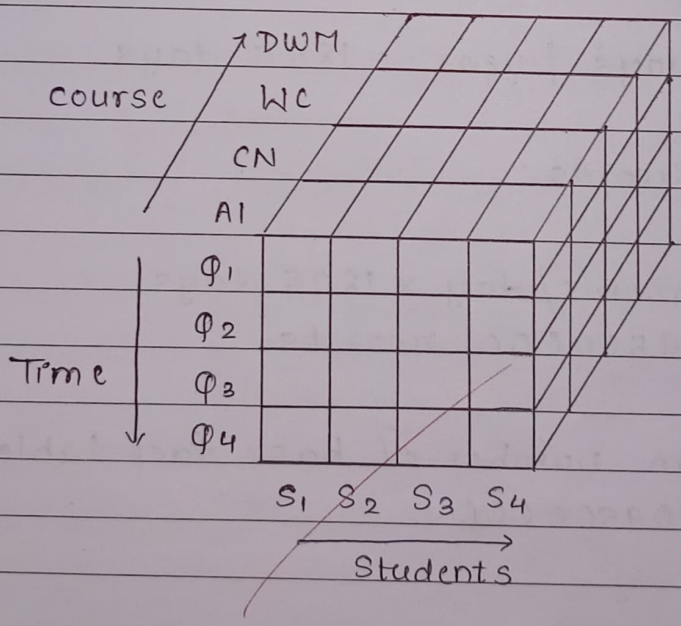
d] Dice

e] Pivot.

→

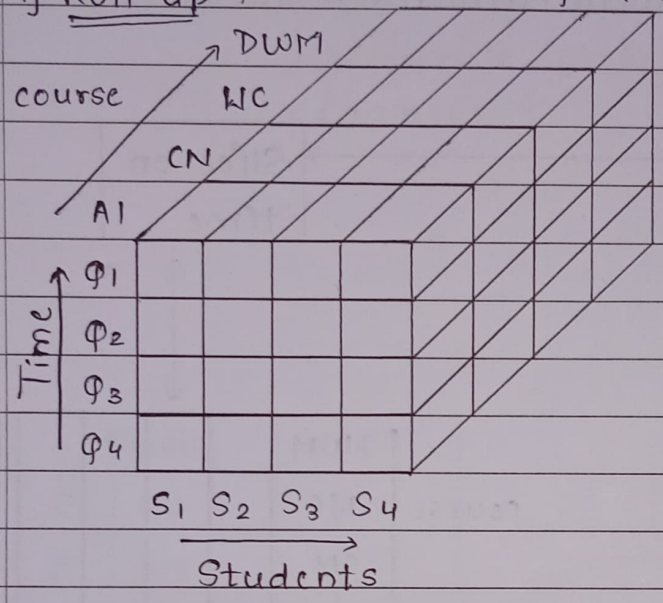
Fact: ~~marks - obtained~~. Aggregate marks.

Dimensions: course, student and time.

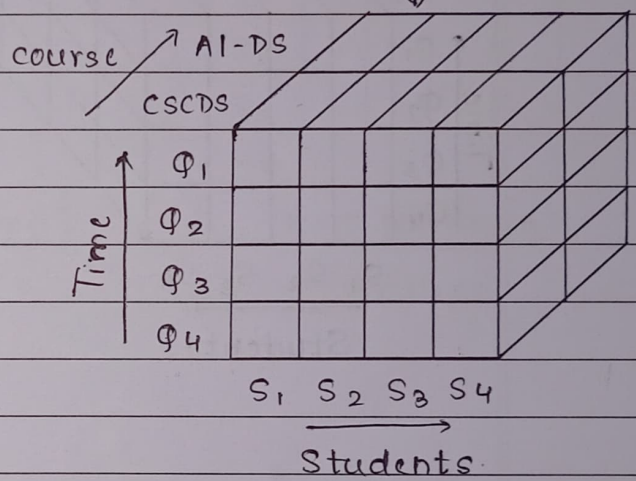


Initialize cube.

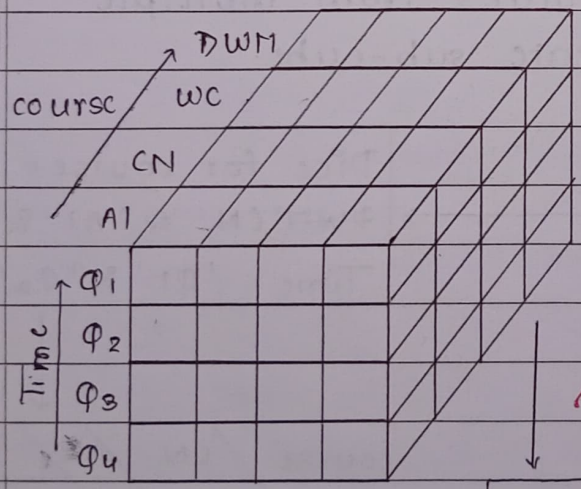
1] Roll up : Summarizing data



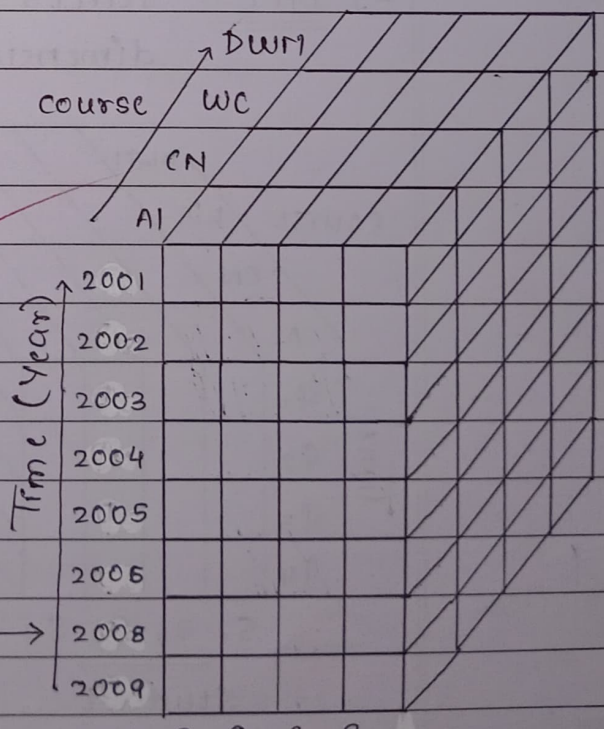
Roll-up subjects from individual subjects to department-wise



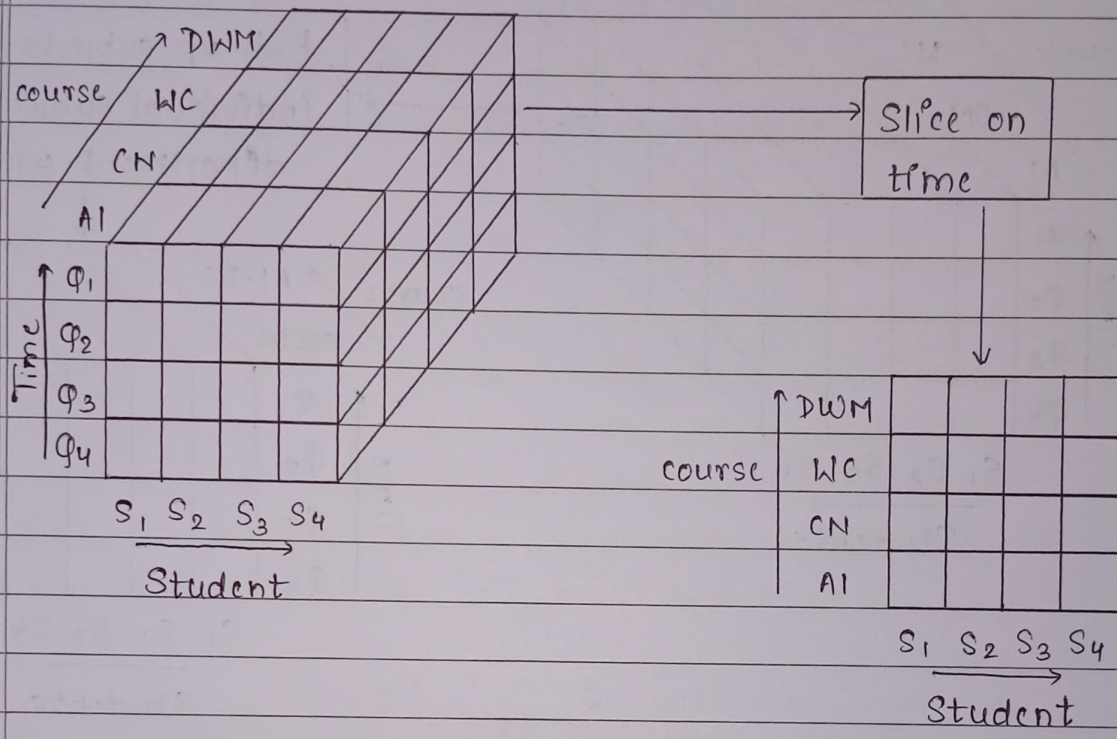
2] Drill down : Viewing more detailed data.



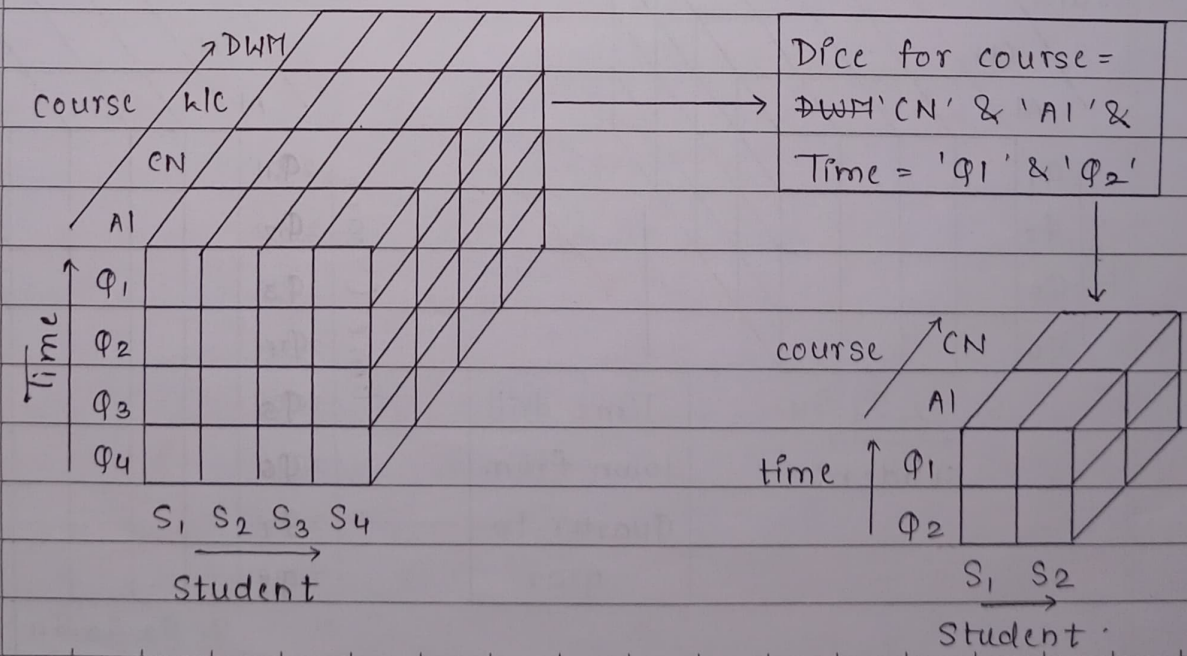
Time drill down from Quarter to year



c] Slice : Selecting a specific dimension value.



d] Dice : Selects specific values from multiple dimensions to create sub-cube.



e] Pivot : Rotates the data view to provide alternative presentations of the data dimensions.