

Task : 1

Date : 28/7/2025

Title: Conceptual design using  
ER Model - School management  
system

Aim: To design the ER Diagram  
for the school management  
database using draw.io.

Step 1: Problem understanding &  
Requirement analysis

Analyze the real-world application School  
management system understand the  
domain: Students, Teachers, Classes,  
Subjects, Examinations, Results.

Step 2: Identify major entities are  
code components representing  
objects or concepts in the system

- Student
- Teacher
- Class
- Subject
- Exam
- Result.

Step 3: Identify Attributes for  
each entity

Entity Attributes

Student attributes  
Student ID (PK); Name, Age,  
Gender, Phone, Address,  
Class ID (FK).

Teacher Teacher ID(PR), Name

Qualification, Contact No

Class Class ID(PR), Class Name

Section Section

Subject Subject ID, Exam ID,  
Date, Time.

Result Result ID, Student ID, Grade

Step 4: Define Relationships

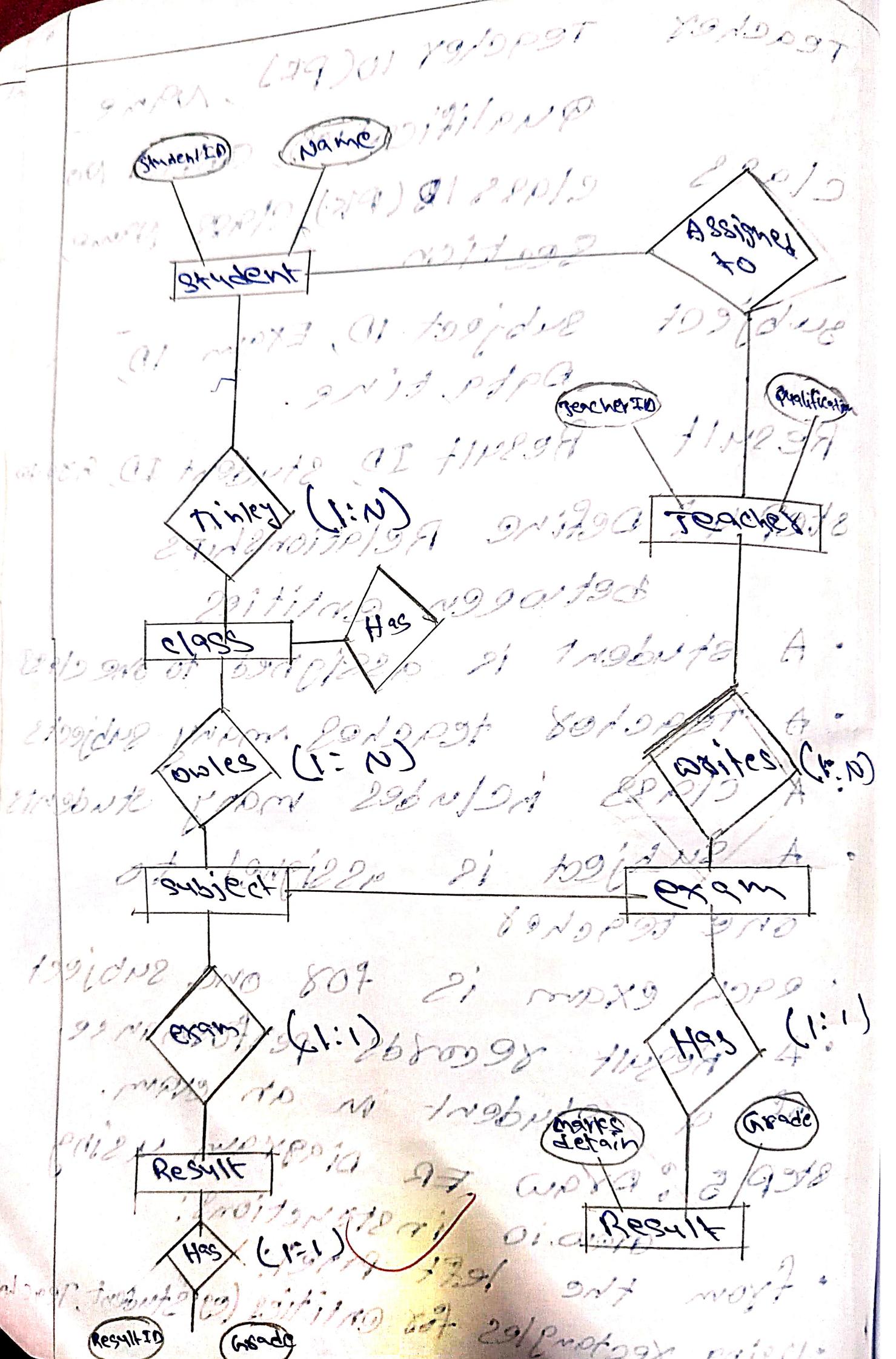
between entities

- A student is assigned to one class
- A teacher teaches many subjects
- A class includes many students
- A subject is assigned to one teacher
- Each exam is for one subject
- A result records performance of a student in an exam.

Step 5: Draw ER Diagram using draw.io instructions:

- From the left panel:

- Using rectangles for entities (e.g. Student, Teacher)



- Use ellipses for Attributes
- Use diamonds for Relationships
- Connect using solid lines.

Example Relationships:

- Class(1) - includes  $\rightarrow$  (M) student
- Teacher(1) - Teacher  $\rightarrow$  (M) subject
- Subject(1) - has  $\rightarrow$  (M) exam
- Student(W - writes  $\rightarrow$  (M) exam
- Result includes link between student and exam.

~~Input for the ER design~~

- Real time school system scenario.
- Use of Requirements: Student Records, Teacher Assignment, Class management, Exam, Tracking, Result management.

Database Design Rules: Identify Entities, Attributes, Relationships, Cardinality keys.

Output:

Entity Relationship Diagram(ERD)  
that clearly shows  
All Identified Entities with  
Attributes  
All Relationships with appropriate  
Cardinalities.  
Foreign keys and keys marked  
appropriately

VEL TECH	
EX No.	+
PERFORMANCE (5)	5
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	5
RECORD (5)	5
TOTAL (20)	15
SIGN WITH DATE	AM 20/2/16

~~Result: The School management  
was successfully drawn by  
using E-R Model~~

Date: 28/02/2025

1st Convert ER diagram into Relational Model  
AIM: To convert ER diagram into Relational Model  
Steps for converting the ER diagram  
to the table.

- Entity type becomes a table.
- All single-valued attribute becomes a column for the table.
- A key attribute of the entity type represented by the primary key.
- The multivalued attribute is represented by separate table.
- Composite attribute represented by components.
- Derived attributes are not considered in the table.

Using these rules, you can convert the ER diagram to tables and columns and assign relationships between the tables. Table structure for the given ER diagram is as below.

<b>Student</b>	07/08
• Student ID	0001
• Name	John Smith
• Class ID	101

<b>Teacher</b>	07/08
• Teacher ID	0002
• Name	Mrs. Johnson

<b>Class</b>	07/08
• Class ID	001
• Teacher ID	0002

<b>Subject</b>	07/08
• Subject ID	001

<b>Class-Subject</b>	07/08
• Class ID	001
• Subject ID	001

<b>Exam</b>	07/08
• Exam ID	001
• Subject ID	001

<b>Subject-Exam</b>	07/08
• Student ID	0001
• Exam ID	001

<b>Result</b>	07/08
• Result ID	001
• Student ID	0001
• Exam ID	001
• Grade details	Pass

VEL TECH	
EX No.	15
PERFORMANCE (5)	5
RESULT AND ANALYSIS (5)	5
VIVA VOCE (5)	4
RECORD (5)	4
<b>TOTAL (20)</b>	<b>14</b>
SIGN WITH DATE	12/4/17

VEL TECH	
EX No.	
PERFORMANCE (5)	
RESULT AND ANALYSIS (3)	
VIVA VOCE (3)	
RECORD (4)	
<b>TOTAL (15)</b>	
SIGN WITH DATE	

Result: The relational diagram  
was successfully verified.