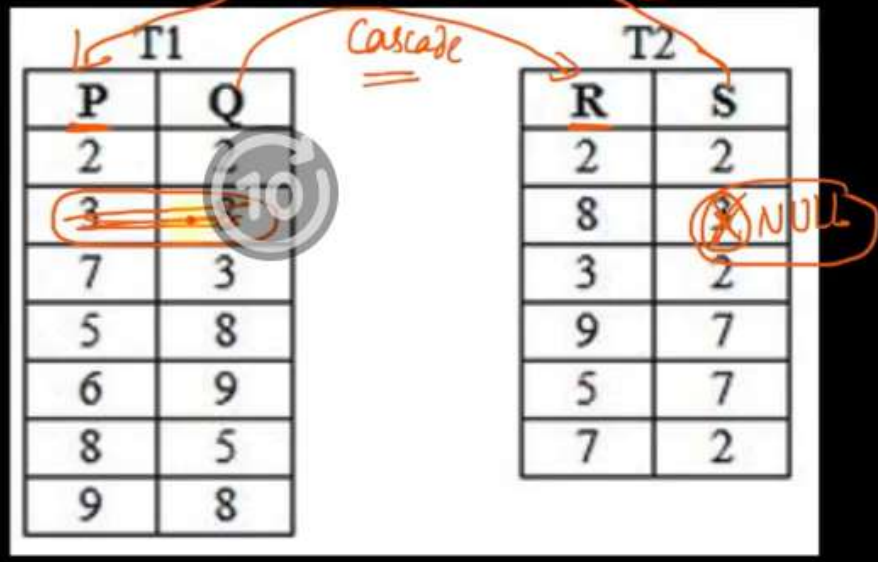
Consider the following tables T1 and T2.

In table T1, P is the primary key and Q is the foreign key referencing R in table T2 with on-delete cascade and on-update cascade. In table T2, R is the primary key and S is the foreign key referencing P in table T1 with on-delete set NULL and on-update cascade. In order to delete record ⟨3,8⟩ from table T1, the number of additional records that need to be deleted from table T1 is _____.

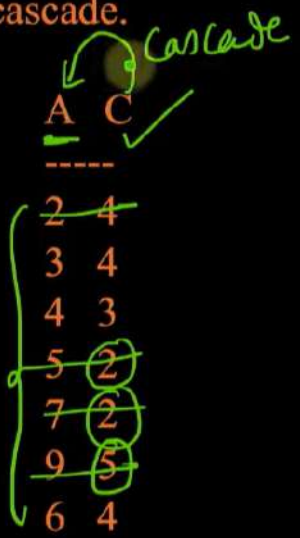
ZERO



P	Q
2	2
3	10
7	3
5	8
6	9
8	5
9	8

R	S
2	2
8	NULL
3	2
9	7
5	7
7	2

primary key and C is the foreign key referencing A with on-delete cascade.



The set of all tuples that must be additionally deleted to preserve referential integrity when the tuple (2,4) is deleted is:

(A) (3,4) and (6,4)
(B) (5,2) and (7,2)
(C) (5,2), (7,2) and (9,5)
(D) (3,4), (4,3) and (6,4)

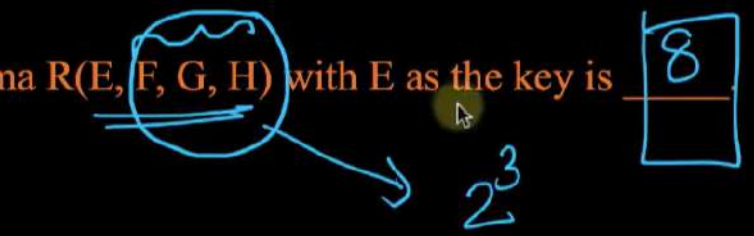
Let R(a,b,c) and S(d,e,f) be two relations in which d is the foreign key of S that refers to the primary key of R. Consider the following four operations R and S

I. Insert into R
II. Insert into S
III. Delete from R
IV. Delete from S

Which of the following can cause violation of the referential integrity constraint above?

1. Both I and IV
2. Both II and III
3. All of these
4. None of these

The maximum number of super keys for the relation schema R(E, F, G, H) with E as the key is 8



Given the STUDENTS relation as shown below.

For (StudentName, StudentAge) to be the key for this instance, the value X should not be equal to 19

StudentID	*StudentName*	*StudentEmail*	*StudentAge*	*CPI*
2345	Shankar	shankar@math	X	9.4
1287	Swati	swati@ee	19	9.5
7897	Shankar	shankar@cse	19	9.4
9876	Swati	swati@mech	18	9.3
8765	Ganesh	ganesh@civil	19	8.7

Which of the following is NOT a superkey in a relational schema with attributes V, W, X, Y, Z and primary key V Y ?

1. V X Y Z
2. V W X Z
3. V W X Y
4. V W X Y Z

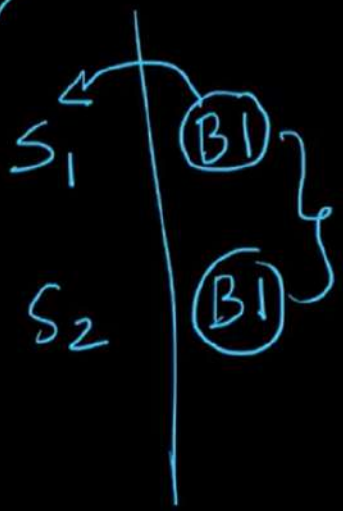
V,Y U { }

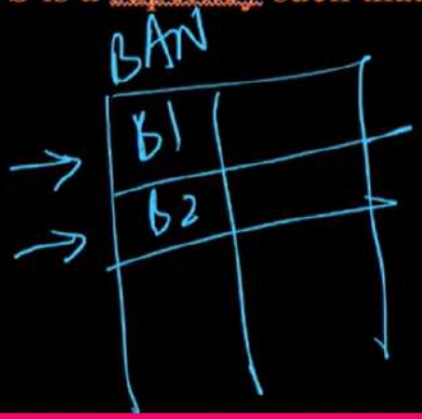
Consider a relational table with a single record for each registered student with the following attributes.

1. Registration_Num: Unique registration number of each registered student
2. UID: Unique identity number, unique at the national level for each citizen
3. BankAccount_Num: Unique account number at the bank. A student can have multiple accounts or joint accounts. This attribute stores the primary account number.
4. Name: Name of the student
5. Hostel_Room: Room number of the hostel

Which one of the following option is INCORRECT?

(A) BankAccount_Num is candidate key
(B) Registration_Num can be a primary key
(C) UID is candidate key if all students are from the same country
(D) If S is a superkey such that S∩UID is NULL then S∪UID is also a superkey

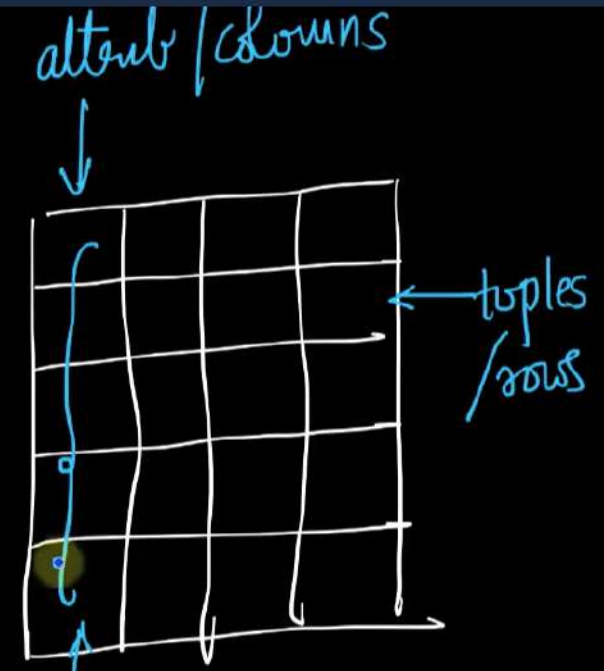




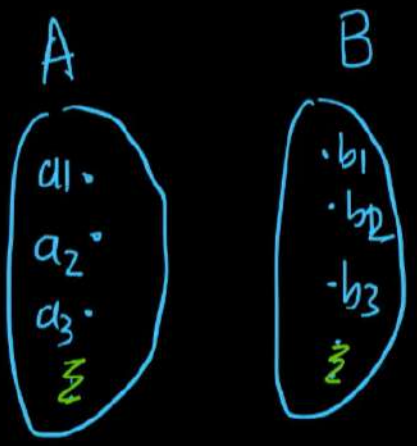
Relational Model:

- ER-model → pictorial / diagram
- Tables → Relational databases
- Mathematical: Set, Relations
  - Cross-product

Table / Relation



Relations (in Math):



Relation

$R \subseteq A \times B$

$A = \{ a_1, a_2, a_3, \ldots \}$

$B = \{ b_1, b_2, b_3, \ldots \}$

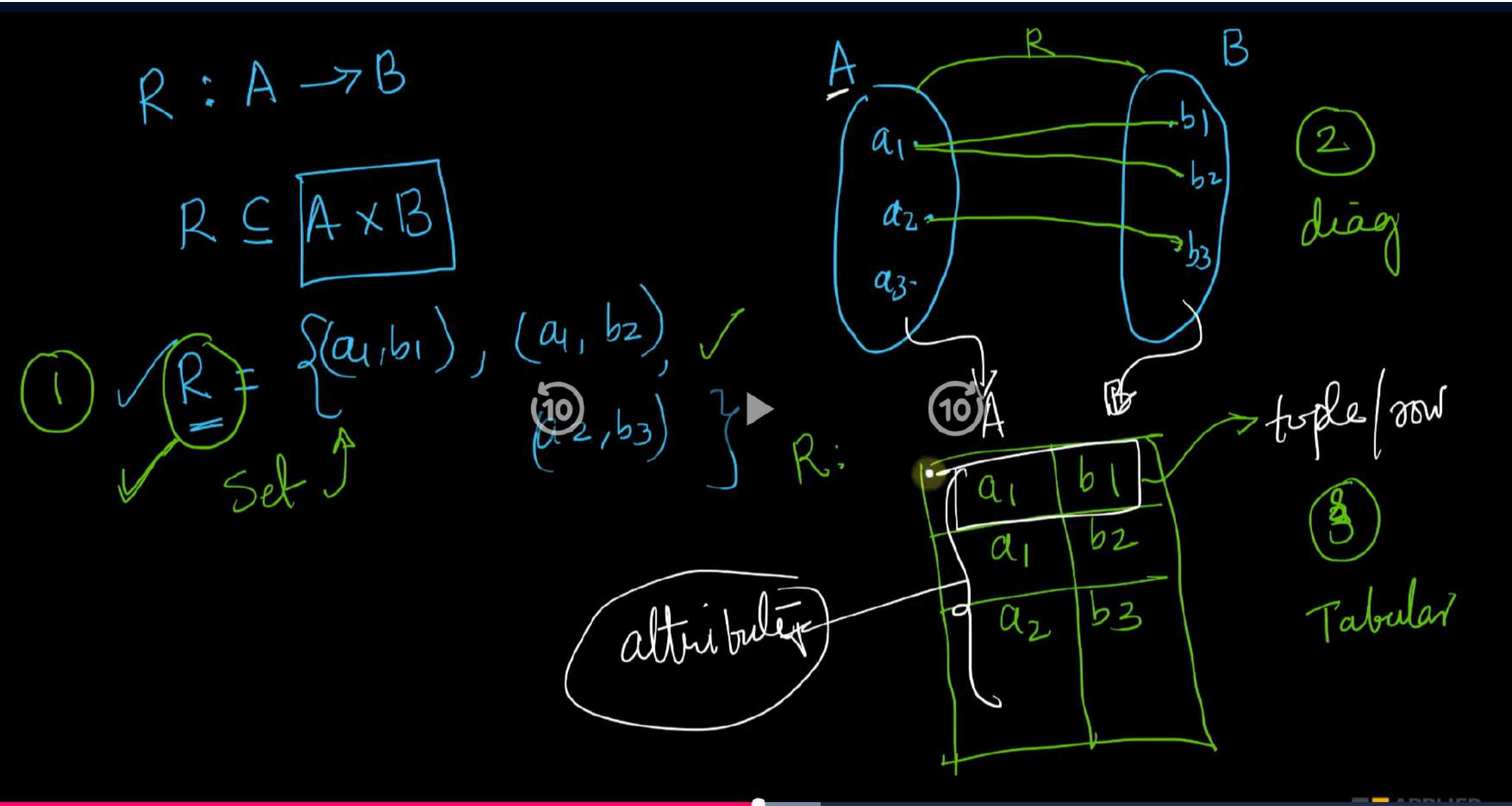
$A \times B = \{ (a, b) \mid a \in A, b \in B \}$

$R = \{$

$\{ (a_1, b_1), (a_1, b_2), (a_1, b_3), (a_2, b_1), \ldots \}$

9

ordered pair / 2-tuples



13:29 / 26:54

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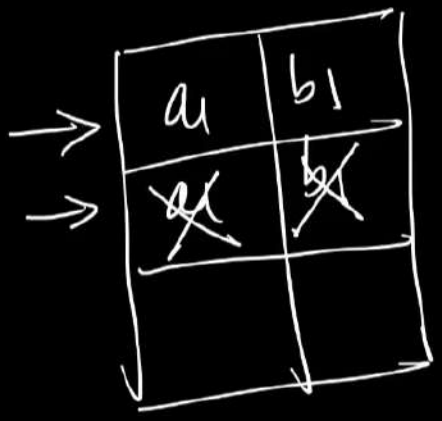
R : Set

Multiset

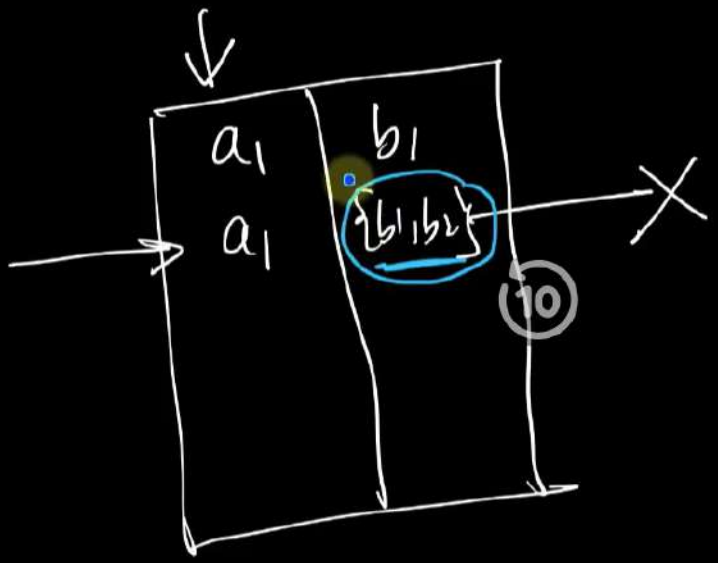
Relational model



$R = \{ (a_1, b_1), (a_1, b_1) \}$

No two tuples / rows in a table / relation are the same

ER-diagrams — Tables

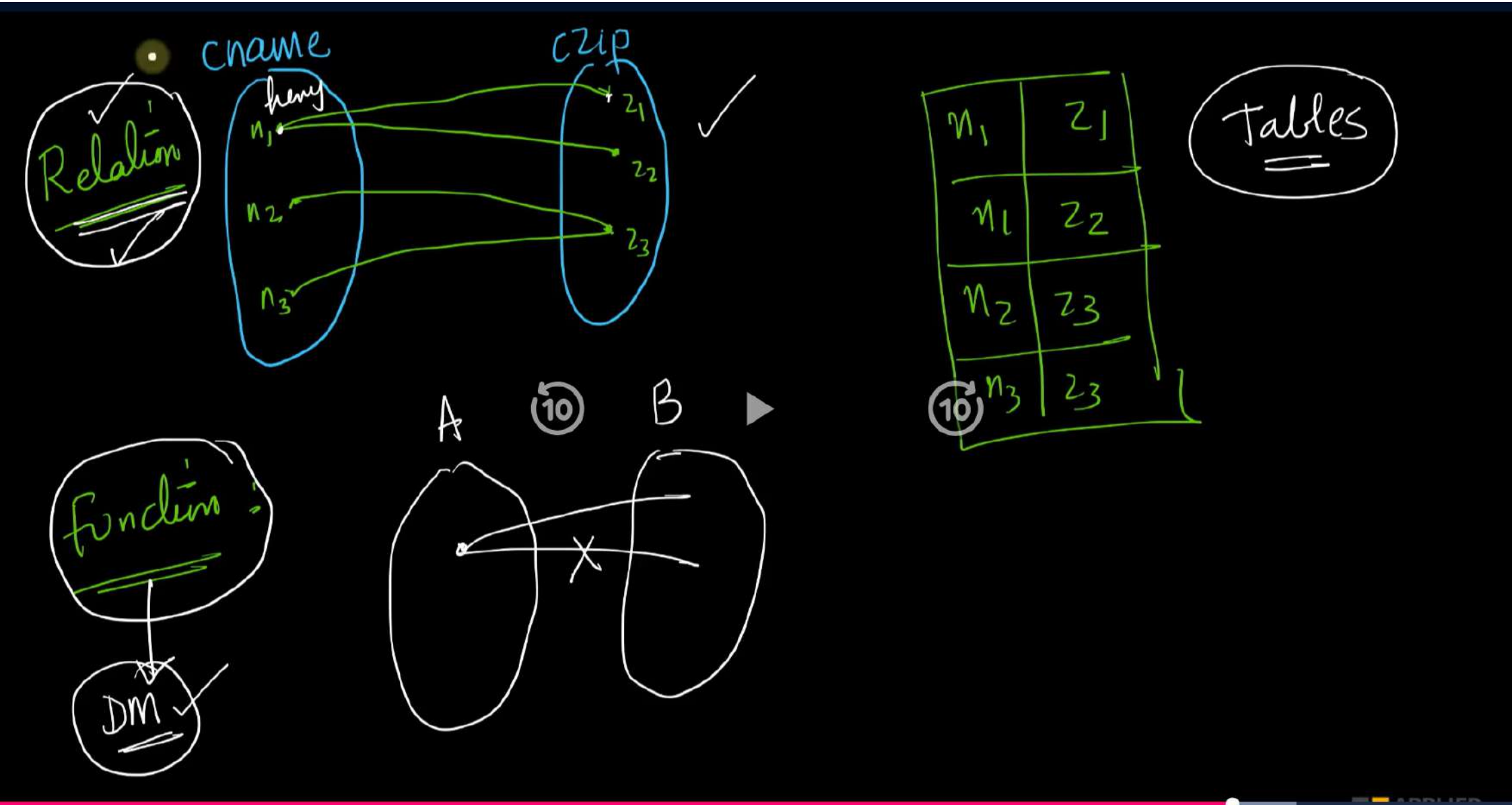


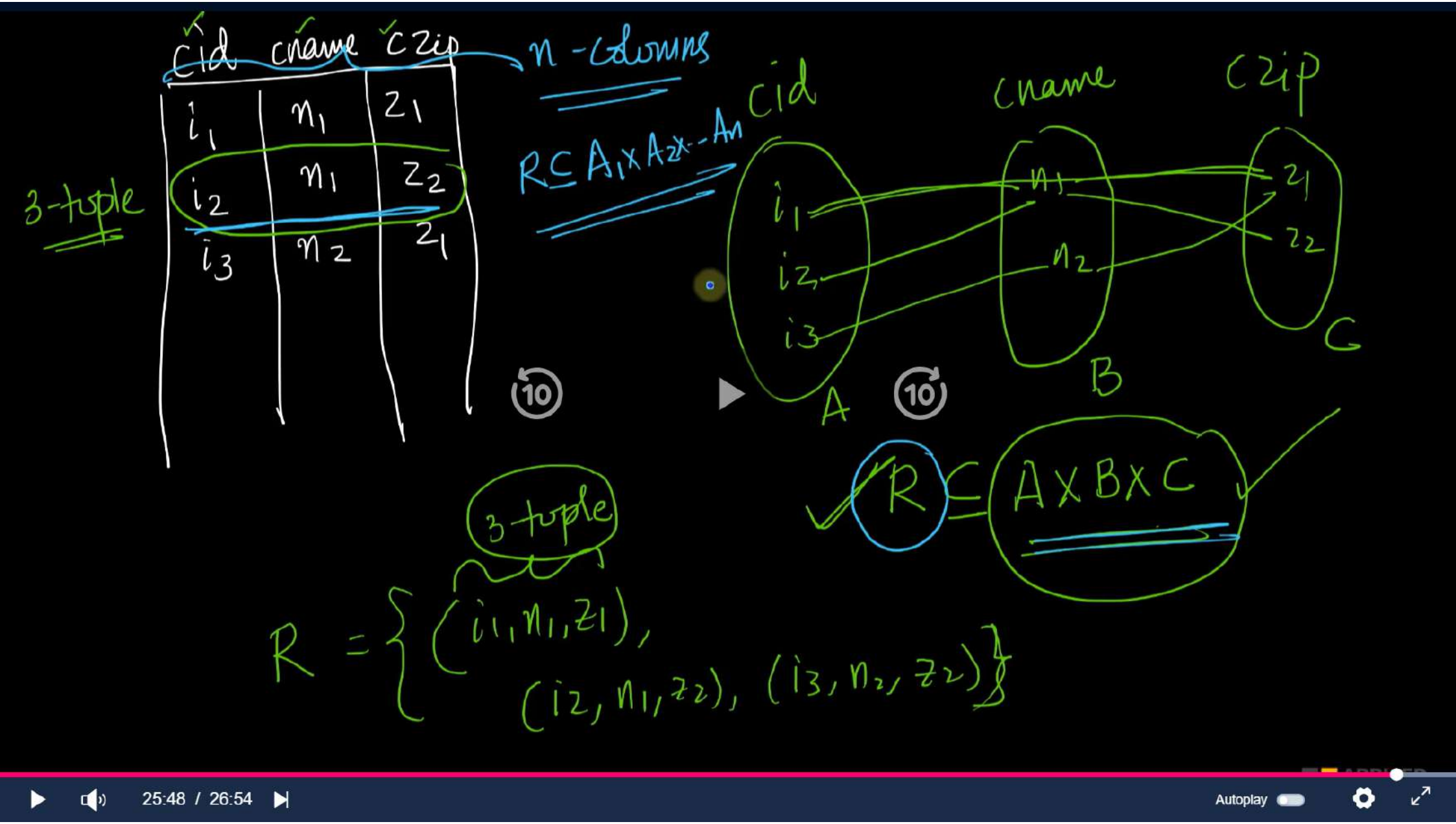
$R \subseteq A \times B$

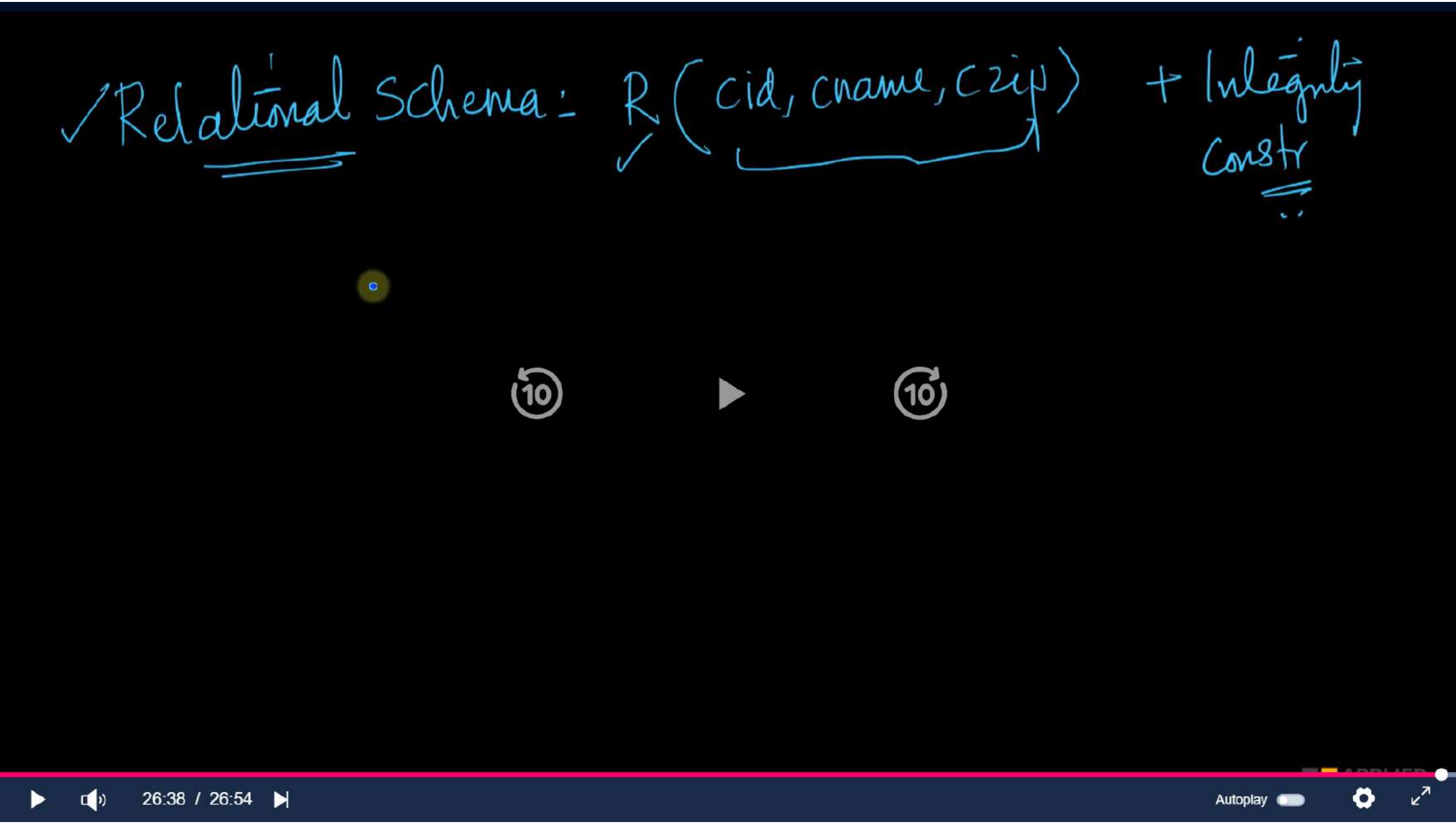
$R = \{ (a_1, b_1), (a_1, \{b_1, b_2\}) \}$ (10)

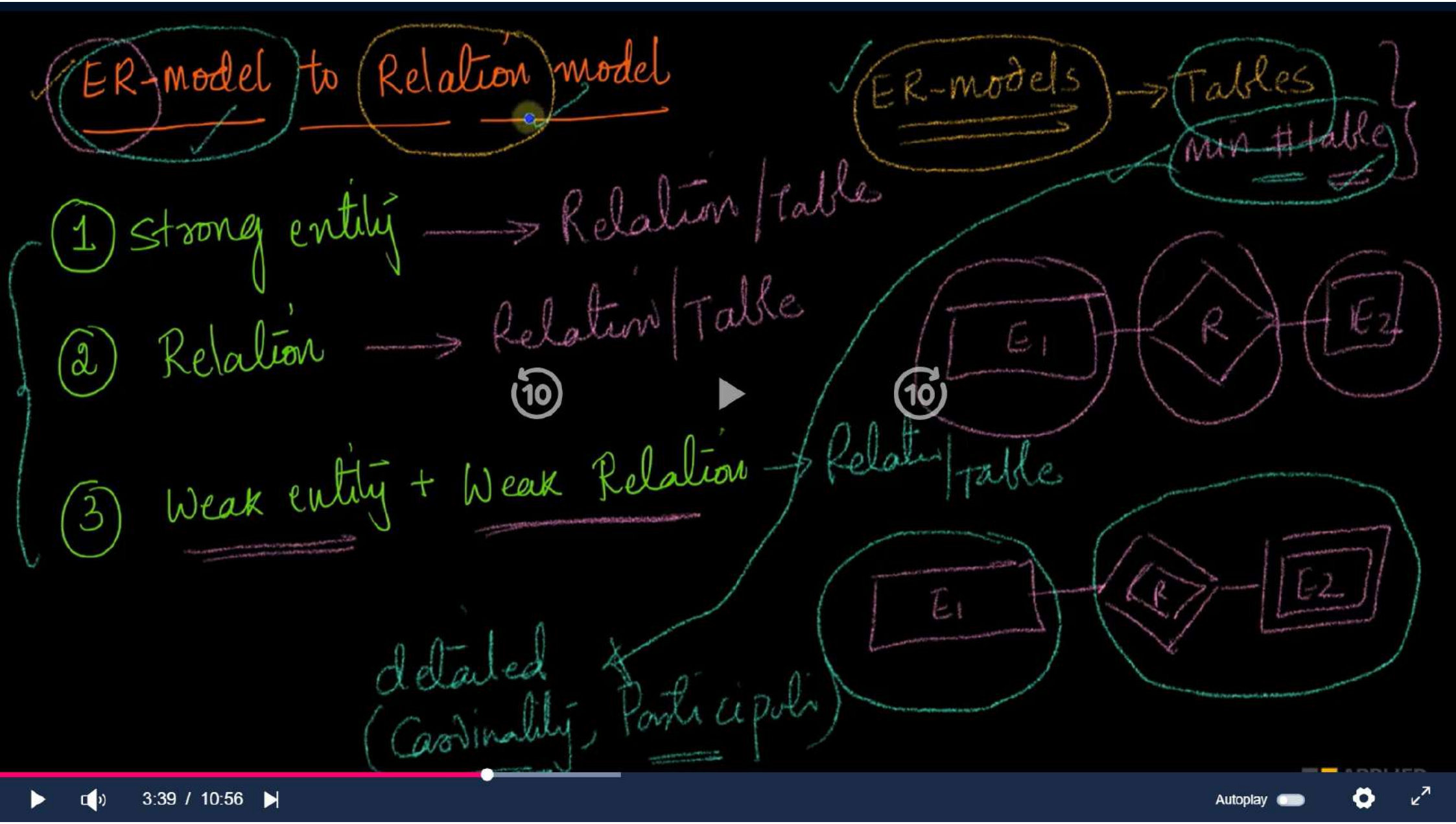
$\{b_1, b_2\} \notin B$

$\{b_1, b_2\} \subset B$



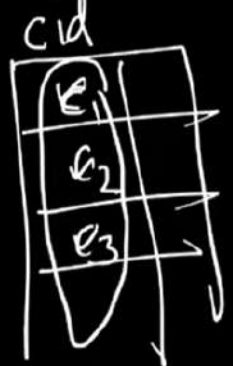



✓Relational Schema: R(cid, cname, czip) + Integrity Constr
10
10
26:38 / 26:54
Autoplay

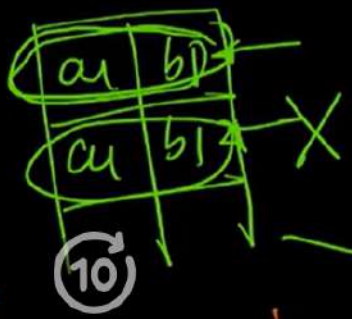

ER-model to Relation model
ER-models → Tables
Min # table
1 strong entity → Relation/Table
2 Relation → Relation/Table
3 Weak entity + Weak Relation → Relation/Table
E1
R
E2
detailed
(Cardinality, Participation)
3:39 / 10:56
Autoplay

✓ Constraints: (Ch 1) → Table, Keys, Constr } ✓

1. Domain Constraints → $c_i \in$ domain of valid values



2. Tuple Uniqueness constraint →

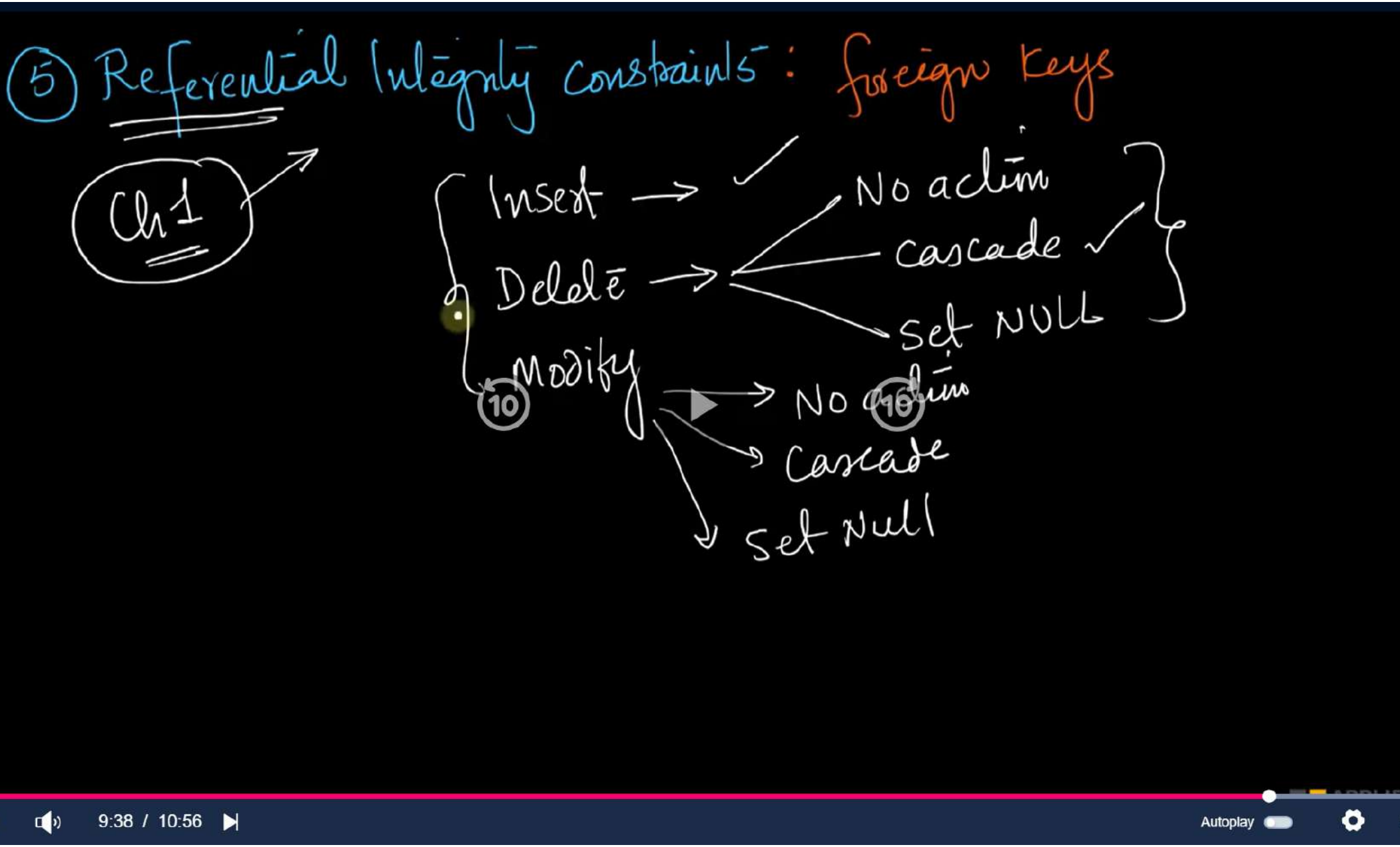


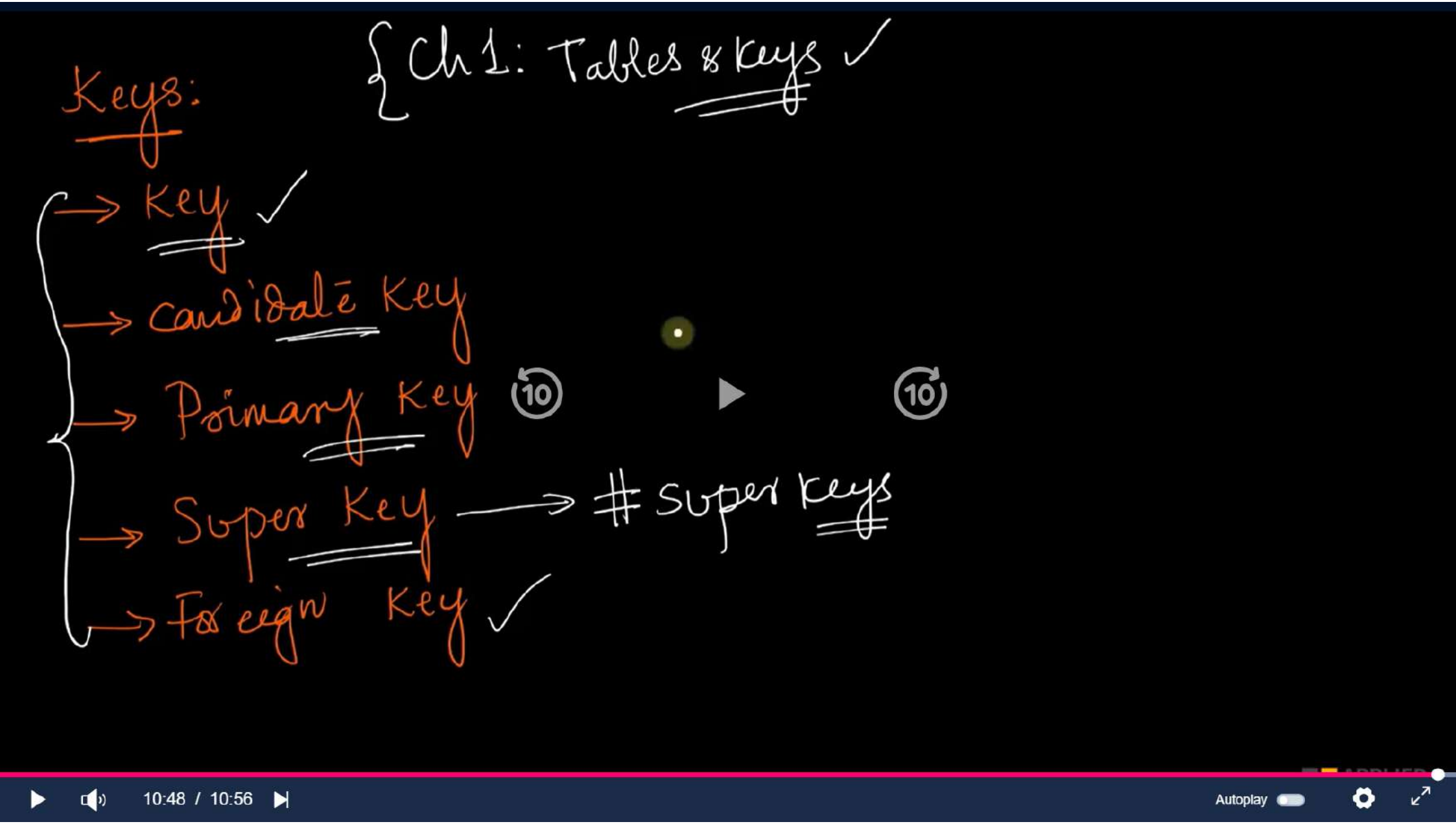
→ Relation : Set

3. Key constraint → Unique for each tuple, multiple keys, may be null

4. Entity Integrity Constraint →

Primary Key → NOT NULL
→ Unique for each tuple




Ch 1: Tables & Keys
Keys:
Key
Candidate Key
Primary Key
Super Key
Super Keys
Foreign Key
10
10
10:48 / 10:56
Autoplay