

# Constraints & Triggers

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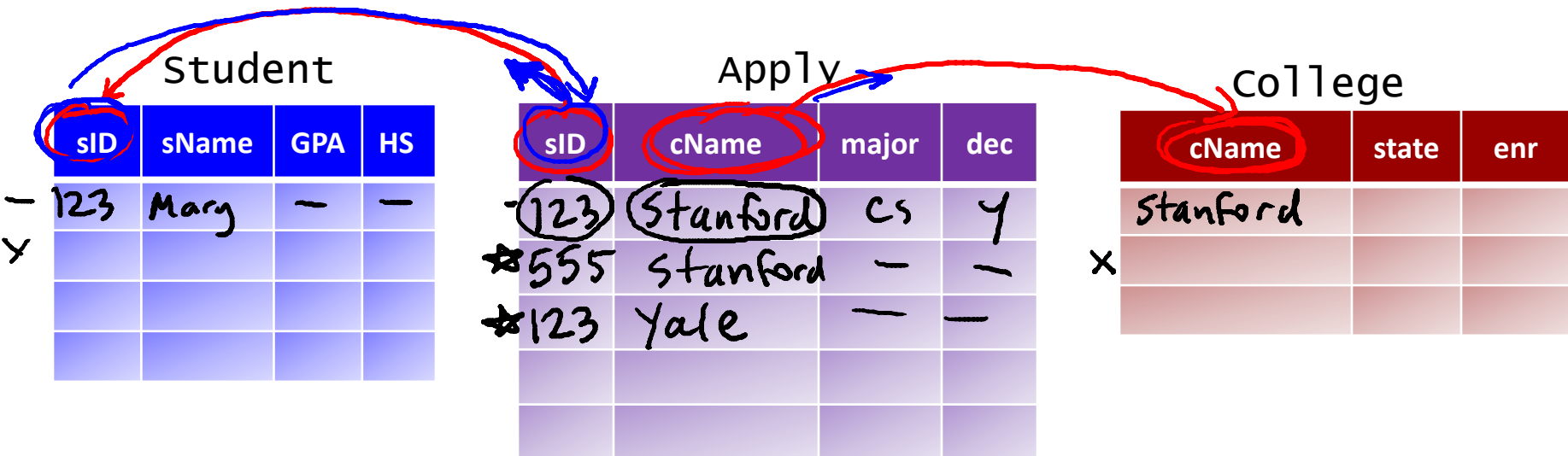
## Referential Integrity

## Integrity Constraints

Impose restrictions on allowable data, beyond those imposed by structure and types

*Referential integrity*  
= Integrity of references  
= No “dangling pointers”

# Simple Example Database



Referential integrity from **R.A** to **S.B**

Each value in column *A* of table *R* must appear in column *B* of table *S*

## Referential integrity from $R.A$ to $S.B$

Each value in column  $A$  of table  $R$  must appear in column  $B$  of table  $S$

- $A$  is called the “foreign key” *Foreign Key constraints*
- $B$  is usually required to be the *primary key* for table  $S$  or at least *unique*
- Multi-attribute foreign keys are allowed

Student

sID	sName	GPA	HS

*Apply state*

sID	cName	major	dec

College

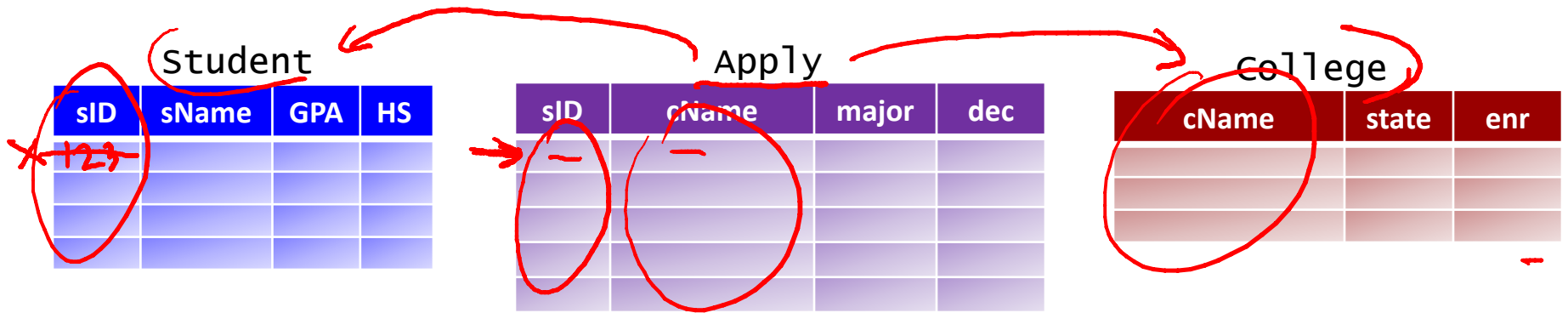
cName	state	enr

# Referential Integrity Enforcement (*R.A* to *S.B*)

Potentially violating modifications:

- Insert into R
- Delete from S
- Update R.A
- Update S.B

*If violation → error*



# Referential Integrity Enforcement (R.A to S.B)

Special actions:

- Delete from S

Restrict (default), Set Null, Cascade

*error*

- Update S.B

Restrict (default), Set Null, Cascade

Student

sID	sName	GPA	HS
123			
456			

Apply

sID	cName	major	dec
→ NULL	<del>Stanford</del>		
	Stanford		

College

cName	state	enr
<del>Stanford</del>		
Stanford		