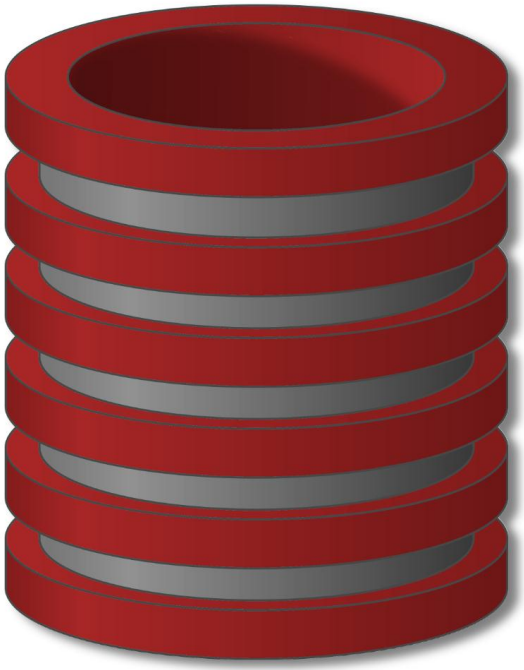


Constraints & Triggers

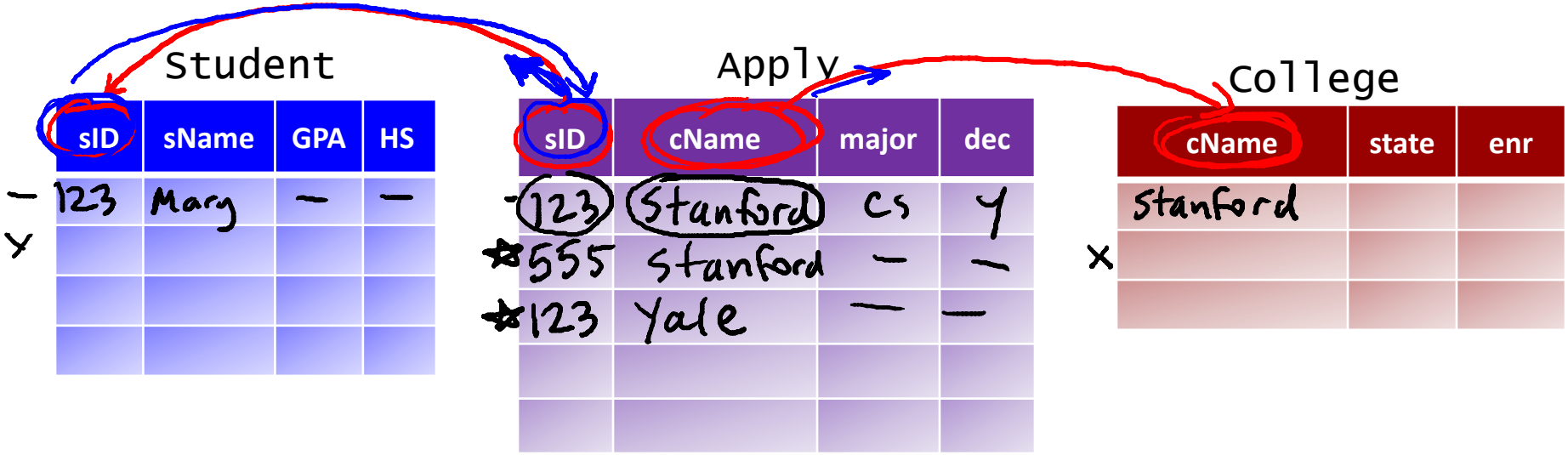
Referential Integrity

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*

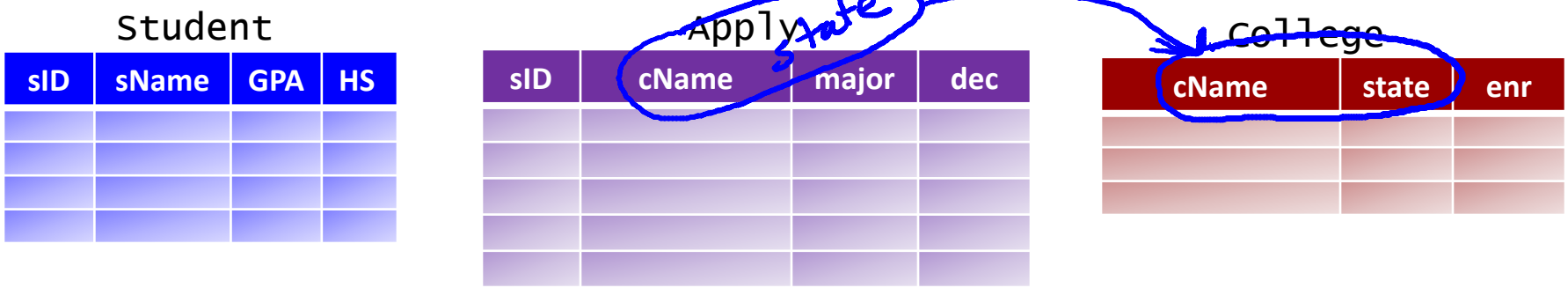
Each value in column *A* of table *R* must appear in column *B* of table *S*

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"
- *B* is usually required to be the *primary key* for table *S* or at least *unique*
- Multi-attribute foreign keys are allowed

Foreign key constraints

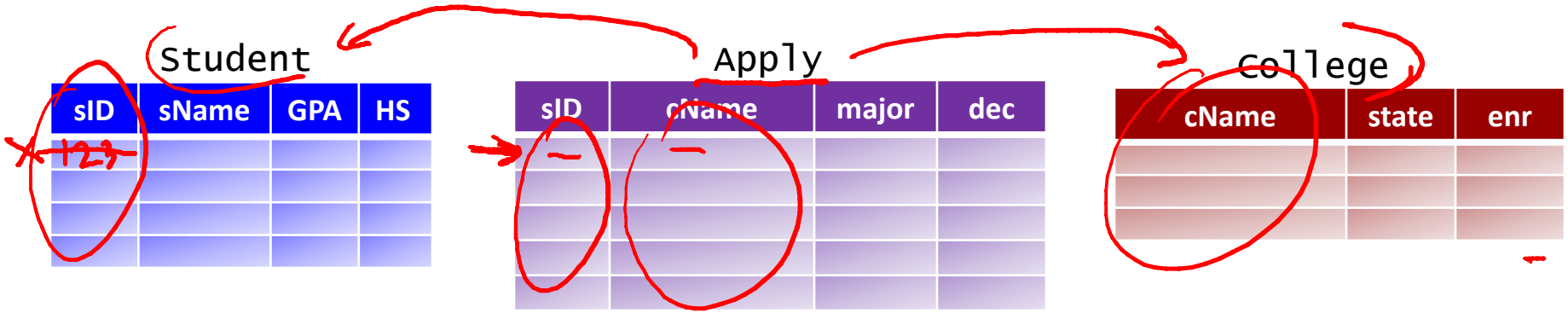


Referential Integrity Enforcement (*R.A* to *S.B*)

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`
- Update S.B
  `Restrict` (default), `Set Null`, `Cascade`