

Primary, foreign, surrogate: pick the right key.

D8A.ACADEMY/RESOURCES/KEYS-EXPLAINED

THE FOUR

primary	unique + not null
foreign	points at a PK
natural	means something
surrogate	means nothing, id 42

PICK ONE

surrogate for PK	boring wins
emails change	← natural keys rot.
int vs UUID	compact vs distributed

IN SQL

PRIMARY KEY (id)	one per table
REFERENCES users(id)	the FK
ON DELETE CASCADE	← know what it does.

COMPOSITE

(order_id, line_no)	one key, 2 cols
junction tables	many-to-many
UNIQUE (a, b)	pair never repeats

WAREHOUSE

surrogate in dims	SCD needs them
join on surrogates	never on natural
unknown row: -1	late-arriving facts

GOTCHAS

FK but nullable	orphan rows sneak in
no FK at all	joins work... until
dup natural keys	same email, two rows

WORTH MEMORIZING

01 The whole idea in one table

A surrogate PK, a natural key kept honest by UNIQUE, and an FK that refuses orphans.

```
CREATE TABLE orders (
  id          BIGINT GENERATED ALWAYS AS IDENTITY,
  order_no    TEXT NOT NULL UNIQUE, -- natural
  customer_id BIGINT NOT NULL
  REFERENCES customers(id),         -- foreign
  PRIMARY KEY (id)                   -- surrogate
);
```

→ The natural key still earns a UNIQUE constraint. It just does not get the PK job, because business facts change.

02 Trap: CASCADE roulette

ON DELETE decides what happens to children when the parent row dies. Pick it on purpose.

CLAUSE	DELETE A CUSTOMER AND	USE WHEN
CASCADE	all their orders vanish too	true ownership only
RESTRICT	the delete is refused	the safe default
SET NULL	orders lose their customer	links are optional

→ Interview phrasing: CASCADE is not wrong, it is a blast radius. Say you would default to RESTRICT and cascade only inside an aggregate.