Normalisation – in database, is the process of structuring a relational database to minimise data redundancies and improve data integrity.

A database is in its First Normal Form 1NF when:

* All of the key attributes are defined
* There are no repeating groups in the table
* All attributes are dependent on the primary key

A database is in its Second Normal Form 2NF when:

* Including the requirements of the 1NF
* It has no partial dependencies; that is no attribute dependent on only a portion of the primary key.

A database is in its Third Normal Form 3NF when:

* Including the requirements of the 2NF
* It contains no transitive dependencies

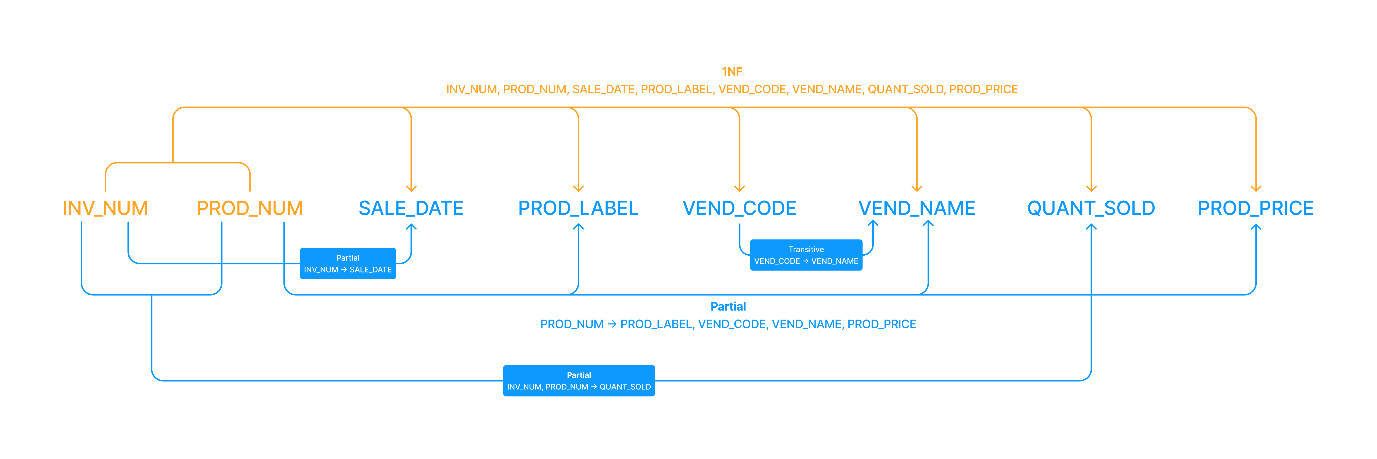


Figure : Initial Database – Dependency Diagram

**Primary Keys:**

INV\_NUM

PROD\_NUM

INV\_NUM\_PROD\_NUM

**Full Dependencies:**

INV\_NUM\_PROD\_NUM **→** SALE\_DATE, PROD\_LABEL, VEND\_CODE, VEND\_NAME, QUANT\_SOLD, PROD\_PRICE

**Partial Dependencies:**

INV\_NUM **→** SALE\_DATE

PROD\_NUM **→** PROD\_LABEL, VEND\_CODE, VEND\_NAME, PROD\_PRICE

INV\_NUM\_PROD\_NUM **→** QUANT\_SOLD

**Transitive Dependencies:**

VEND\_CODE **→** VEND\_NAME

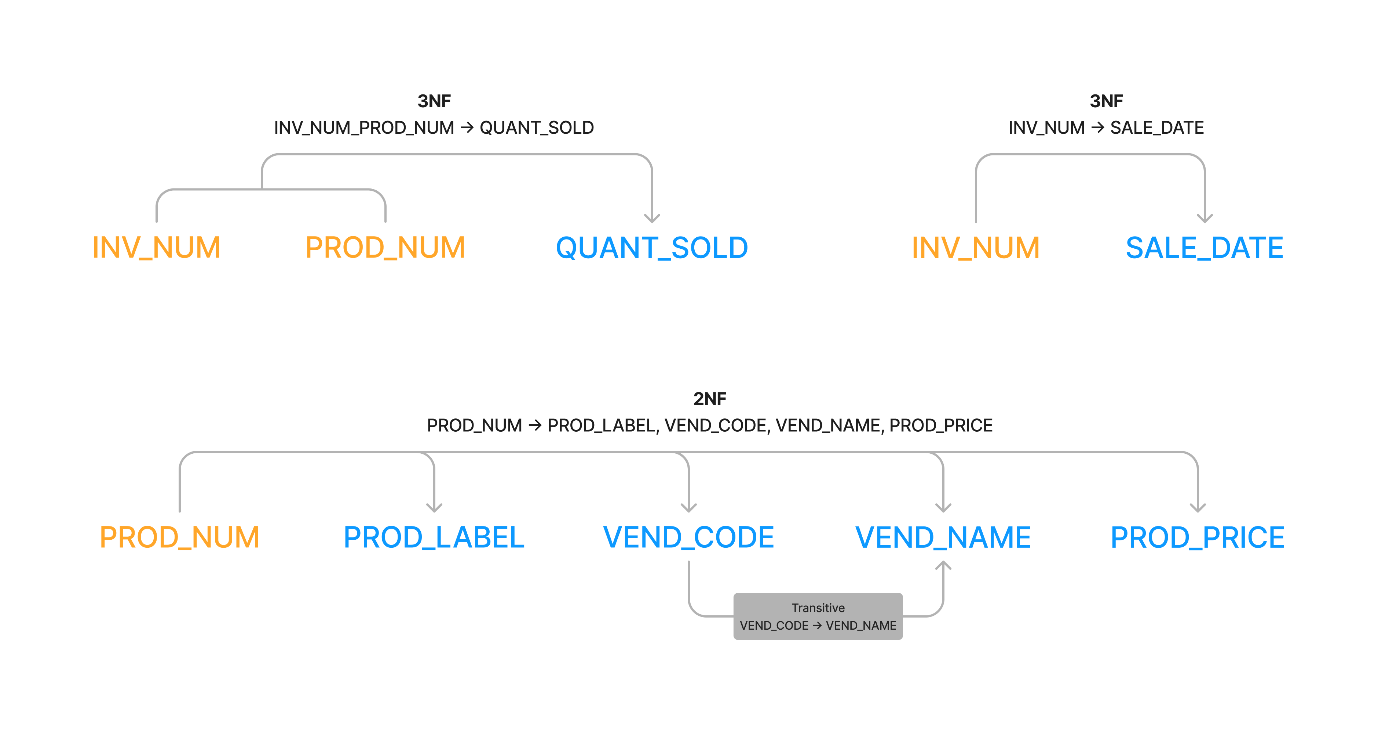


Figure : Removing Partial Dependencies

**2 off Third Normal Form Tables:**

INV\_NUM\_PROD\_NUM **→** QUANT\_SOLD

INV\_NUM **→** SALE\_DATE

**1 off Second Normal Form Table:**

PROD\_NUM **→** PROD\_LABEL, VEND\_CODE, VEND\_NAME, PROD\_PRICE

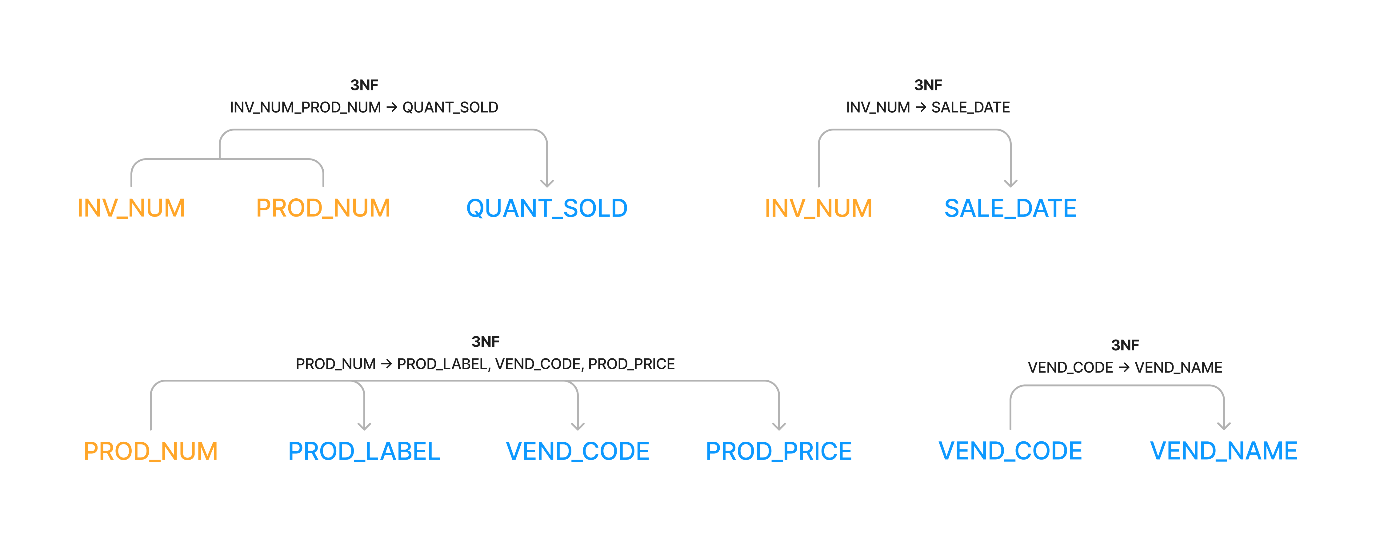
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Figure : Removing Transitive Dependencies

**4 off Third Normal Form Tables:**

INV\_NUM\_PROD\_NUM **→** QUANT\_SOLD

INV\_NUM **→** SALE\_DATE

PROD\_NUM **→** PROD\_LABEL, VEND\_CODE, VEND\_NAME, PROD\_PRICE

VEND\_CODE **→** VEND\_NAME