[Real_estate] candidate key

Property-id, Province, local_property_id, Price_index, Price/m², tax_rate

FD1

FD2

[Image 0x0 to 596x842]

FD3

FD4

INVF

2NF X

- Stores data about properties.
- Each property has a unique id within province, which together with province makes a candidate key.
- Price_index determines Price/m² (Price per m²), e.g. AAA → 19000 $/m²
- Province determines the tax rate.

⇒ This table is in 1NF [or let's assume so]

But FD3 violates 2NF criteria, since tax_rate is dependent on a part of a candidate key.

2NF Normalization

* Take the problematic FD out into a new table.

[Property_Price]

property-id, Province, local_property_id, price_index, price/m²

FD1

FD2

FD4

[Image 0x0 to 596x842]

2.NF V

3.NF X

[Province_tax]

Province, tax_rate

2.NF V

3.NF V

* The left-hand side of the FD becomes the key in the newly formed table.
3NF Normalization

In [property-price] table, FD \( Y \rightarrow X \) is between two none-prime attributes.

* Again, take the problematic FD, here FD \( Y \rightarrow X \) out and form a new table.

\[
\text{[Property]}\\
\text{property-id, province, local_property-id, price-index}
\]

\[
\text{[Price]}\\
\text{price-index, price/m²}
\]

* Again, the left hand side of the FD in the newly formed table becomes the key.

So, the original table was broken down into three separate tables as following:

\[
\text{[Real_estate]} \quad 1NF
\]

\[
\text{[Property_Price]} \quad 2NF
\]

\[
\text{[Property]} \quad \text{[Price]} \quad \text{[Province_tax]} \quad 3NF
\]

\[
\text{BCNF / BCNF}
\]