Normalized ERD In Crow's Foot Notation

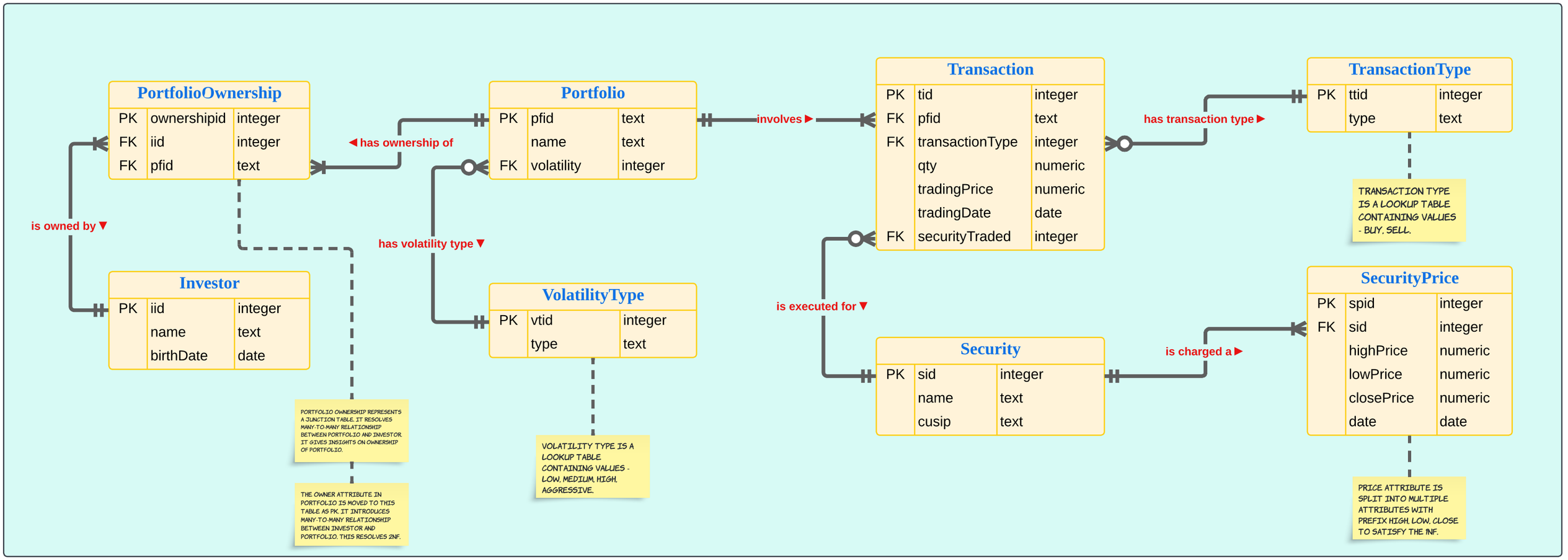

Table	Non-Trivial Functional Dependency
Portfolio	pfid → name, volatility
Investor	iid → name, birthDate
PortfolioOwnership	ownershipid → iid, pfid iid, pfid → ownershipid
VolatilityType	vtid → type
Transaction	tid → pfid, transactionType, qty, tradingPrice, tradingDate, securityTraded pfid, securityTraded, transactionType, tradingDate → qty, tradingPrice
TransactionType	ttid → type
Security	sid → name, cusip
SecurityPrice	spid → sid, highPrice, lowPrice, closePrice, date sid, date -> highPrice, lowPrice, closePrice

Normalization Details

1. All the tables are in **1NF** after the **resolution of price attribute in SecurityPrice** table. Every table has **atomic values for all of its attributes** which gurantees the 1NF.

2. All the tables have **non-key attributes that is fully determined by primary key**. Non-key attributes are completely dependent on the primary keys. **None of the tables include composite keys (introduced surrogate PK) which also gurantees the 2NF.**

3. Portfolio and Transaction tables had transitive depedencies. The **volatility** attribute in **Portfolio** table is **normalised to 3NF** by **introducing a foreign key to VoatilityType** table. The **transactionType** attribute **Transaction** table is **normalized to 3NF** by **introducing a foreign key to TransactionType** table.

4. Tables **PortfolioOwnership, Investor, VolatilityType, TransactionType, Security, SecurityType** are in **3NF** as there are **no transitive dependencies** between the attributes.