Entity-Relationship Diagram (Crow's foot Notation) - Investment Management System portfolios portfolio_id users bigint bigint user_id NN varchar(100) NN varchar(120) name enum{ACTIVE, U, NN email citext NN status INACTIVE, ARCHIVED} created_at | timestamptz NN timestamptz created_at (user_id, name) exchange_listing PK, FK instrument_id bigint instrument_id bigint PK symbol PK, FK exchange_id bigint U, NN varchar(40) local_ticker NN varchar(40) varchar(160) FK, NN trade_currency_id enum{STOCK, BOND, FUTURE, OPTION, cash_movements NN type listing_date CRYPTO, FX, OTHER} PK cash_movement_id bigint enum{LISTED, HALTED, status enum{ACTIVE, INACTIVE, FN, NN currency_id DELISTED, PENDING} DELISTED, ARCHIVED} FK, NN account_id (exchange_id, local_ticker) FK, NN |currency_id enum{DEPOSIT, WITHDRAWAL, NN TRANSFER, DIVIDEND, exchanges INTEREST, FEE, OTHER PK exchanges_id bigint enum{PENDING, NN U, NN code varchar(16) COMPLETED, FAILED varchar(120) numeric(18,6) amount prices NN NN country varchar(80) timestamptz orders PK, FK instrument_id timezone varchar(64) order_id PΚ timestamptz enum{ACTIVE, INACTIVE, FK, NN instrument_id NN numeric(18,6) NN DELISTED, SUSPENDED, status FK, NN |account_id NN numeric(18,6) positions ARCHIVED NN enum{BUY, SELL} NN numeric(18,6) position_id enum{MARKET, LIMIT, FK, NN |account_id close numeric(18,6) STOP, STOP_LIMIT, order_type NN volume numeric(28,6) FK, NN |instrument_id |bigint OTHER varchar(80) source NN numeric(28,10) quantity numeric(28,10) quantity numeric(18,6) numeric(18,6) limit_price currencies last_updated |timestamptz enum{PENDING, FILLED, PΚ bigint currency_id (account_id, PARTIALLY_FILLED, NN instrument_id U, NN varchar(10) code CANCELED, REJECTED, varchar(8) FAILED trades varchar(80) name timestamptz placed_at PK trade_id note FK, NN order_id bigint FK, NN |account_id bigint fx_rates NN numeric(28,10) PK, FK | from_currency_id | bigint NN price numeric(18,6) PK, FK to_currency_id **NORMALIZATION** NN numeric(18,6) fees PΚ timestamptz 1NF: All attributes are atomic (no NN numeric(18,6) taxes NN numeric(20,10) rate repeating groups, no multi-values). NN timestamptz executed_at 2NF: Every non-key attribute settlement_date | date depends on the whole PK (no partial enum{EXECUTED, dependency). CANCELED, 3NF: No transitive dependency CORRECTED, FAILED, NN status (non-key depends only on the key). SETTLED, BCNF/4NF: Every determinant is a PARTIALLY_SETTLED candidate key (no multivalued accounts dependencies). PK account_id bigint FK, NN portfolio_id bigint | FK, NN | currency_id | bigint FK, NN broker_id bigint brokers NN varchar(64) account_number bigint broker_id enum{CASH, MARGIN, NN type U, NN varchar(120) FUTURE, CRYPTO, OTHER name enum{ACTIVE, INACTIVE, NN varchar(80) **ENTITIES** country NN status CLOSED, SUSPENDED, NN status enum{ACTIVE, INACTIVE} 1. accounts ARCHIVED 2.brokers timestamptz 3. cash_movements opened_at 4. currencies closed_at timestamptz 5. exchange_listing (broker_id, 6. exchanges account_number, 7. fx_rates currency_id) 8. instruments 9. orders 10. portfolios Author: Remus-Ciprian Cotunoaea 11. positions Version: 1.0 12. prices Date: 03/09/2025 13. trades Notation: Crow's foot ER Model 14. users