Redis Data Structures:

1. **Redis data structure to store transactions:**
   1. **Use Case:** Store all Transactions for a specific trader.
   2. **Data Structure:** Redis Hash
   3. **Key:** transactions:trader\_id
   4. **Fields and Values:**
      1. Each Transaction is a field in the hash.
      2. Field: transaction\_id
      3. Value: A JSON-like string or serialized object containing the fields inside transactions table.
2. **Redis Data structure to store PnL:**
   1. **Use Case:** Compute and provide PnL dynamically.
   2. **Data Structure**: Redis Sorted set
   3. **Key:** pnl\_trader\_id
   4. **Members:** Stock symbols the trader has traded.
   5. **Scores:** PnL value for each stock. (Profit = Selling Price \* total items sold – Buying Price \* total items bought).

Redis Commands:

**Initialization Commands:**

1. **Add a transaction:**

HSET transactions:trader\_id transaction\_id '{"stock\_symbol":"AAPL","type":"buy","quantity":10,"price":150,"timestamp":"2024-12-01T10:30:00"}'

1. **Update PnL for a stock:**

PnL = (Selling Price - Buying Price) × Quantity

ZINCRBY pnl:trader\_id PnL\_value stock\_symbol

**Read Commands:**

1. **Get all transactions of a trader:**

HGETALL transactions:trader\_id

1. **Get total PnL for a trader:**

ZRANGE pnl:trader\_id 0 -1 WITHSCORES

**Delete Commands**:

1. HDEL transactions:trader\_id transaction\_id
2. **Remove a stock from PnL tracking:**

ZREM pnl:trader\_id stock\_symbol