

Lab Exp 13: Redis Sorted Sets – Simple Leaderboard Simulation

Scenario

We simulate a simple game leaderboard using Redis Sorted Sets.

Each player is a member, and their score is the sorted value.

1. Add players with scores (ZADD):

ZADD leaderboard:game1 1500 Alice 1200 Bob 1800 Charlie 1600 David

```
127.0.0.1:6379> ZADD leaderboard:game1 1500 Alice 1200 Bob 1800 Charlie 1600 David
(integer) 4
```

2. View leaderboard (highest to lowest):

ZREVRANGE leaderboard:game1 0 -1 WITHSCORES

```
(integer) 4
127.0.0.1:6379> ZREVRANGE leaderboard:game1 0 -1 WITHSCORES
1) "Charlie"
2) "1800"
3) "David"
4) "1600"
5) "Alice"
6) "1500"
7) "Bob"
8) "1200"
127.0.0.1:6379> ZREVRANGE leaderboard:game1 0 -1
1) "Charlie"
2) "David"
3) "Alice"
4) "Bob"
127.0.0.1:6379> |
```

3. Update a player's score:

ZINCRBY leaderboard:game1 700 Bob

```
127.0.0.1:6379> ZINCRBY leaderboard:game1 700 Bob
"1900"
127.0.0.1:6379> ZREVRANGE leaderboard:game1 0 -1
1) "Bob"
2) "Charlie"
3) "David"
4) "Alice"
127.0.0.1:6379> |
```

4. Get updated leaderboard:

ZREVRANGE leaderboard:game1 0 -1 WITHSCORES

```
127.0.0.1:6379> ZREVRANGE leaderboard:game1 0 -1 WITHSCORES
1) "Bob"
2) "1900"
3) "Charlie"
4) "1800"
5) "David"
6) "1600"
7) "Alice"
8) "1500"
127.0.0.1:6379> |
```

5. Get a player's rank:

ZREVRANK leaderboard:game1 Bob

```
127.0.0.1:6379> ZREVRANK leaderboard:game1 Bob
(integer) 0
127.0.0.1:6379> |
```

Note: Rank is 0-based.

6. Get a player's score:

ZSCORE leaderboard:game1 Alice

```
(integer) 0
127.0.0.1:6379> ZSCORE leaderboard:game1 Alice
"1500"
127.0.0.1:6379> |
```

7. Get top 3 players:

ZREVRANGE leaderboard:game1 0 2 WITHSCORES

```
127.0.0.1:6379> ZREVRANGE leaderboard:game1 0 2 WITHSCORES
1) "Bob"
2) "1900"
3) "Charlie"
4) "1800"
5) "David"
6) "1600"
```

8. Remove a player:

ZREM leaderboard:game1 David

```
127.0.0.1:6379> ZREM leaderboard:game1 David
(integer) 1
```

Summary - Why Redis Sorted Sets are ideal:

- Automatically sorted by score
- Fast rank lookup
- Efficient updates
- Scales well