



Build your own Redis

Learn about TCP servers, the Redis protocol and more



Start Building



This challenge is free until 1 June 2024!

Redis is an in-memory data structure store often used as a database, cache, message broker and streaming engine. In this challenge you'll build your own Redis server that is capable of serving basic commands, reading RDB files and more.

Along the way, you'll learn about TCP servers, the Redis Protocol and more.

Stages

- | | |
|----------------------------------|-----------|
| Bind to a port | VERY EASY |
| Respond to PING | EASY |
| Respond to multiple PINGs | EASY |
| Handle concurrent clients | MEDIUM |
| Implement the ECHO command | MEDIUM |
| Implement the SET & GET commands | MEDIUM |
| Expiry | MEDIUM |

Replication

- | | |
|--------------------------|------|
| Configure listening port | EASY |
| The INFO command | EASY |










➤ The INFO command on a replica	MEDIUM
➤ Initial Replication ID and Offset	EASY
➤ Send handshake (1/3)	EASY
➤ Send handshake (2/3)	EASY
➤ Send handshake (3/3)	MEDIUM
➤ Receive handshake (1/2)	EASY
➤ Receive handshake (2/2)	EASY
➤ Empty RDB Transfer	EASY
➤ Single-replica propagation	MEDIUM
➤ Multi Replica Command Propagation	HARD
➤ Command Processing	HARD
➤ ACKs with no commands	EASY
➤ ACKs with commands	MEDIUM
➤ WAIT with no replicas	MEDIUM
➤ WAIT with no commands	MEDIUM
➤ WAIT with multiple commands	HARD

RDB Persistence














➤ RDB file config	EASY
➤ Read a key	MEDIUM
➤ Read a string value	MEDIUM
➤ Read multiple keys	MEDIUM
➤ Read multiple string values	MEDIUM
➤ Read value with expiry	MEDIUM

Transactions

➤ The INCR command (1/3)	EASY
➤ The INCR command (2/3)	EASY

 The INCR command (3/3)	EASY
 The MULTI command	EASY
 The EXEC command	EASY
 Empty transaction	HARD
 Queueing commands	MEDIUM
 Executing a transaction	HARD
 The DISCARD command	EASY
 Failures within transactions	MEDIUM
 Multiple transactions	MEDIUM

Streams

 The TYPE command	EASY
 Create a stream	MEDIUM
 Validating entry IDs	EASY
 Partially auto-generated IDs	MEDIUM
 Fully auto-generated IDs	MEDIUM
 Query entries from stream	MEDIUM
 Query with -	EASY
 Query with +	EASY
 Query single stream using XREAD	MEDIUM
 Query multiple streams using XREAD	MEDIUM
 Blocking reads	HARD
 Blocking reads without timeout	MEDIUM
 Blocking reads using \$	EASY

“

The Redis challenge was extremely fun. I ended up having to read the Redis Protocol specification doc pretty carefully in its entirety! The result felt like lightly-guided independent study, if that makes sense. (Which, again, was lots of fun)

**Charles Guo**

Software Engineer, Stripe



I think the instant feedback right there in the git push is really cool. Didn't even know that was possible!

**Patrick Burris**

Senior Software Developer, CenturyLink



Programming challenges for seasoned developers.



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