

# Bonus Task

## Apache Zookeeper

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Video of zookeeper working:

[https://drive.google.com/file/d/1\\_JZG8BIXycqEizgjSE1MZ7yFBc-rkKa8/view?usp=sharing](https://drive.google.com/file/d/1_JZG8BIXycqEizgjSE1MZ7yFBc-rkKa8/view?usp=sharing)

### Configurations:

- **help** - getting a listing of commands that can be executed from the client

```
[zk: 127.0.0.1:2181(CONNECTED) 0] help
ZooKeeper -server host:port -client-configuration properties-file cmd args
  addWatch [-m mode] path # optional mode is one of [PERSISTENT, PERSISTENT_RECURSIVE] - default is PERSISTENT_RECURSIVE
  addauth scheme auth
  close
  config [-c] [-w] [-s]
  connect host:port
  create [-s] [-e] [-c] [-t ttl] path [data] [acl]
  delete [-v version] path
  deleteall path [-b batch size]
  delquota [-n|-b|-N|-B] path
  get [-s] [-w] path
  getAcl [-s] path
  getAllChildrenNumber path
  getEphemerals path
  history
  listquota path
  ls [-s] [-w] [-R] path
  printwatches on|off
  quit
  reconfig [-s] [-v version] [[-file path] | [-members serverID=host:port1:port2;port3[,...]*]] | [-add serverId=host:port1:port2;
port3[,...]* [-remove serverId[,...]*]
  redo cmdno
  removewatches path [-c|-d|-a] [-l]
  set [-s] [-v version] path data
  setAcl [-s] [-v version] [-R] path acl
  setquota -n|-b|-N|-B val path
  stat [-w] path
  sync path
  version
  whoami
```

- **ls /**: viewing the contents contained in the current znode

```
[zk: 127.0.0.1:2181(CONNECTED) 1] ls /
[ds, ds0000000006, hello, hello0000000003, zk_test, zookeeper]
```

- **ls -s /**: viewing the detailed data of the current znode

```
[zk: 127.0.0.1:2181(CONNECTED) 2] ls -s /
[ds, ds0000000006, hello, hello0000000003, zk_test, zookeeper]
cZxid = 0x0
ctime = Thu Jan 01 03:00:00 EET 1970
mZxid = 0x0
mtime = Thu Jan 01 03:00:00 EET 1970
pZxid = 0x12
cversion = 8
dataVersion = 0
aclVersion = 0
ephemeralOwner = 0x0
dataLength = 0
numChildren = 6
```

- **create path** - creating a persistent directory node with null value

```
[zk: 127.0.0.1:2181(CONNECTED) 3] create /dir
Created /dir
```

- **get -s path** - viewing node information

```
[[zk: 127.0.0.1:2181(CONNECTED) 4] get -s /dir
null
cZxid = 0x15
ctime = Mon Apr 04 19:33:03 EEST 2022
mZxid = 0x15
mtime = Mon Apr 04 19:33:03 EEST 2022
pZxid = 0x15
cversion = 0
dataVersion = 0
aclVersion = 0
ephemeralOwner = 0x0
dataLength = 0
numChildren = 0
```

**Attention!**

- Because it is a non sequentially numbered directory node, the node name is unique, and there will not be a self incrementing number behind it.

```
[[zk: 127.0.0.1:2181(CONNECTED) 5] create /dir "dsproject"
Node already exists: /dir
```

- **create -s path data** - creating persistent sequence number catalog node

```
[[zk: 127.0.0.1:2181(CONNECTED) 6] create -s /dir "dsproject"
Created /dir0000000008
```

We can see that the node number below increases automatically

```
[[zk: 127.0.0.1:2181(CONNECTED) 10] get -s /dir0000000008
dsproject
cZxid = 0x17
ctime = Mon Apr 04 19:38:48 EEST 2022
mZxid = 0x17
mtime = Mon Apr 04 19:38:48 EEST 2022
pZxid = 0x17
cversion = 0
dataVersion = 0
aclVersion = 0
ephemeralOwner = 0x0
dataLength = 9
numChildren = 0
[[zk: 127.0.0.1:2181(CONNECTED) 11] create -s /dir "dsproject"
Created /dir0000000009
[[zk: 127.0.0.1:2181(CONNECTED) 12] create -s /dir "dsproject"
Created /dir0000000010
[[zk: 127.0.0.1:2181(CONNECTED) 13] create -s /dir "dsproject"
Created /dir0000000011
```

**Attention!**

- If creating directory node with **[create -s]**, after quitting you will still be able to access it:

```
[[zk: 127.0.0.1:2181(CONNECTED) 3] quit

WATCHER::

WatchedEvent state:Closed type:None path:null
2022-04-04 19:47:14,774 [myid:] - INFO [main:o.a.z.ZooKeeper@1232] - Session: 0x100038e97140005 closed
2022-04-04 19:47:14,775 [myid:] - INFO [main-EventThread:o.a.z.ClientCnxn$EventThread@568] - EventThread shut down for session: 0x100038e97140005
2022-04-04 19:47:14,776 [myid:] - ERROR [main:o.a.z.u.ServiceUtils@42] - Exiting JVM with code 0
[anhelinalohvina@MacBook-Pro-Anhelina apache-zookeeper-3.8.0-bin % ./bin/zkServer.sh start
/usr/bin/java
ZooKeeper JMX enabled by default
Using config: /Users/anhelinalohvina/Downloads/apache-zookeeper-3.8.0-bin/bin/./conf/zoo.cfg
Starting zookeeper ... STARTED
[anhelinalohvina@MacBook-Pro-Anhelina apache-zookeeper-3.8.0-bin % ./bin/zkCli.sh -server 127.0.0.1:2181
/usr/bin/java
Connecting to 127.0.0.1:2181
```

```
[[zk: 127.0.0.1:2181(CONNECTED) 0] get -s /dir
null
cZxid = 0x15
ctime = Mon Apr 04 19:33:03 EEST 2022
mZxid = 0x15
mtime = Mon Apr 04 19:33:03 EEST 2022
pZxid = 0x15
cversion = 0
dataVersion = 0
aclVersion = 0
ephemeralOwner = 0x0
dataLength = 0
numChildren = 0
```

### However

- **create -e path** - creating **temporary** directory node

```
[[zk: 127.0.0.1:2181(CONNECTED) 1] create -e /temp
Created /temp
[[zk: 127.0.0.1:2181(CONNECTED) 2] get -s /temp
null
cZxid = 0x22
ctime = Mon Apr 04 19:47:01 EEST 2022
mZxid = 0x22
mtime = Mon Apr 04 19:47:01 EEST 2022
pZxid = 0x22
cversion = 0
dataVersion = 0
aclVersion = 0
ephemeralOwner = 0x100038e97140005
dataLength = 0
numChildren = 0
[[zk: 127.0.0.1:2181(CONNECTED) 3] quit
```

After quitting it will NOT be accessible:

```
WatchedEvent state:SyncConnected type:None path:null
[[zk: 127.0.0.1:2181(CONNECTED) 0] get -s /temp
Node does not exist: /temp
```

- **create -e -s path data** - creating temporary sequence number catalog node
- **delete path** - deleting the node

```
[[zk: 127.0.0.1:2181(CONNECTED) 0] ls /
[dir, dir0000000008, dir0000000009, dir0000000010, dir0000000011, dir0000000012, dir0000000013, dir0000000014, dir0000000015, dir0000000016, ds, ds0000000006, hello, hello0000000003, zk_test, zookeeper]
[[zk: 127.0.0.1:2181(CONNECTED) 1] delete /dir
[[zk: 127.0.0.1:2181(CONNECTED) 2] ls /
[dir0000000008, dir0000000009, dir0000000010, dir0000000011, dir0000000012, dir0000000013, dir0000000014, dir0000000015, dir0000000016, ds, ds0000000006, hello, hello0000000003, zk_test, zookeeper]
```

- **stat path** - view status

```
[[zk: 127.0.0.1:2181(CONNECTED) 9] stat /hello
cZxid = 0x6
ctime = Mon Apr 04 18:22:45 EEST 2022
mZxid = 0x6
mtime = Mon Apr 04 18:22:45 EEST 2022
pZxid = 0x6
cversion = 0
dataVersion = 0
aclVersion = 0
ephemeralOwner = 0x0
dataLength = 0
numChildren = 0
```

- **whoami** - see user info

```
[[zk: 127.0.0.1:2181(CONNECTED) 10] whoami
Auth scheme: User
ip: 127.0.0.1
```

- **version** - get zookeeper CLI version

```
[[zk: 127.0.0.1:2181(CONNECTED) 11] version
ZooKeeper CLI version: 3.8.0-5a02a05eddb59aee6ac762f7ea82e92a68eb9c0f, built on 2022-02-25 08:49 UTC
```

- **history** - showing the history about the recent 11 executed commands

```
[[zk: 127.0.0.1:2181(CONNECTED) 12] history
2 - ls /
3 - the node
4 - get path
5 - ls /
6 - ls -s /
7 - get /hello
8 - ls /hello
9 - stat /hello
10 - whoami
11 - version
12 - history
```

- **connect host:port** - Connect a ZooKeeper server

```
2022-04-04 20:11:51,907 [myid:127.0.0.1:2181] - INFO [main-Ser
lete on server localhost/127.0.0.1:2181, session id = 0x100038e
```

WATCHER::

```
WatchedEvent state:SyncConnected type:None path:null
[[zk: 127.0.0.1:2181(CONNECTED) 0]
```

- **deleteall** - delete all nodes under a specific path
- **getAllChildrenNumber /** - Get all numbers of children nodes under a specific path

```
[[zk: 127.0.0.1:2181(CONNECTED) 30] getAllChildrenNumber /
21
```

- **set** - set/update the data on a path