

```
1 package main
2
3 import (
4     "flag"
5     "fmt"
6     "log"
7     "net"
8     "net/rpc"
9     "strconv"
10    "strings"
11    "sync"
12    "time"
13
14    "github.com/marcelloh/fastdb"
15 )
16
17 type Node struct {
18     id          int
19     peerIds     []int
20     leaderId    int
21
22     electionMutex sync.Mutex
23     isElectionRunning bool
24
25     internalListener net.Listener
26     internalServer   *rpc.Server
27
28     leaderListener net.Listener
29     leaderServer   *rpc.Server
30
31     database *Database
32 }
33
34 type Database struct {
35     db      *fastdb.DB
36     mutex   sync.Mutex
37 }
38
39 type InternalRPC struct {
40     node *Node
41 }
42
43 type LeaderRPC struct {
44     node *Node
45 }
46
47 func main() {
48     nodeID := (flag.Int("id", 1, "Node ID"))
49     peersStr := flag.String("peers", "", "Comma-separated list of peer
50 IDs")
51     flag.Parse()
52     if *peersStr == "" {
```

```
53         log.Fatal("Peers must be specified via -peers")
54     }
55     var peerIDs []int
56     for _, p := range strings.Split(*peersStr, ",") {
57         pid, err := strconv.Atoi(strings.TrimSpace(p))
58         if err != nil {
59             log.Fatalf("Invalid peer ID: %s", p)
60         }
61         if pid != *nodeID {
62             peerIDs = append(peerIDs, pid)
63         }
64     }
65
66     store, err := fastdb.Open(":memory:", 100)
67     if err != nil {
68         message := fmt.Sprintf("[Node %d] Failed to open db", nodeID)
69         log.Fatal(message)
70     }
71     sharedDataBase := Database{db: store}
72     node := &Node{
73         id:      *nodeID,
74         peerIds: peerIDs,
75         leaderId: -1,
76
77         isElectionRunning: false,
78
79         database: &sharedDataBase,
80     }
81
82     node.startInternalServer(&sharedDataBase)
83
84     time.Sleep(5 * time.Second)
85
86     node.startHeartbeatRoutine()
87
88     select {}
89 }
90
```