

```
1 package main
2
3 import (
4     "hash/crc32"
5     "sort"
6 )
7
8 type Hash func(data []byte) uint32
9
10 type Map struct {
11     hash      Hash
12     replicas  int
13     keys      []int // Sorted
14     hashMap   map[int]string
15 }
16
17 func NewConsistentHash(replicas int, fn Hash) *Map {
18     m := &Map{
19         replicas: replicas,
20         hash:     fn,
21         hashMap:  make(map[int]string),
22     }
23     if m.hash == nil {
24         m.hash = crc32.ChecksumIEEE
25     }
26     return m
27 }
28
29 // IsEmpty returns true if there are no items available.
30 func (m *Map) IsEmpty() bool {
31     return len(m.keys) == 0
32 }
33
34 // Add adds some keys to the hash.
35 //func (m *Map) Add(keys ...string) {
36 //    for _, key := range keys {
37 //        for i := 0; i < m.replicas; i++ {
38 //            hash := int(m.hash([]byte(strconv.Itoa(i) + key)))
39 //            m.keys = append(m.keys, hash)
40 //            m.hashMap[hash] = key
41 //        }
42 //    }
43 //    sort.Ints(m.keys)
44 //}
45
46 func (m *Map) Add(keys ...string) {
47     for _, key := range keys {
48         hash := int(m.hash([]byte(key)))
49         m.keys = append(m.keys, hash)
50         m.hashMap[hash] = key
51     }
52     sort.Ints(m.keys)
53 }
```

```
54
55 // Get gets the closest item in the hash to the provided key.
56 func (m *Map) Get(key string) string {
57     if m.IsEmpty() {
58         return ""
59     }
60
61     hash := int(m.hash([]byte(key)))
62
63     // Binary search for appropriate replica.
64     idx := sort.Search(len(m.keys), func(i int) bool { return m.keys[i] >
hash })
65
66     // Means we have cycled back to the first replica.
67     if idx == len(m.keys) {
68         idx = 0
69     }
70
71     return m.hashMap[m.keys[idx]]
72 }
73
```