

Exercise 1

- Run <https://github.com/eliben/raft/tree/master/part1>
- Document commands, capture screenshots

My works:

- Create file "**log.txt**" in folder "**part1**" - This file will be used for all the test cases to store logs after I run the test commands.
- Open repo - Use "**part1**" as current root folder.

1. TestElectionBasic

- Terminal command:

```
go test -v -race -run TestElectionBasic |& tee ./log.txt
```

- Result:

```
=== RUN TestElectionBasic
20:27:04.745800 [0] listening at [::]:52413
20:27:04.747056 [1] listening at [::]:52414
20:27:04.747056 [2] listening at [::]:52415
20:27:04.752316 [2] election timer started (195ms), term=0
20:27:04.752316 [0] election timer started (197ms), term=0
20:27:04.752316 [1] election timer started (265ms), term=0
20:27:04.952967 [2] becomes Candidate (currentTerm=1); log=[]
20:27:04.952967 [0] becomes Candidate (currentTerm=1); log=[]
20:27:04.952967 [2] election timer started (234ms), term=1
20:27:04.952967 [0] sending RequestVote to 2: {Term:1 CandidateId:0 LastLogIn
20:27:04.952967 [0] sending RequestVote to 1: {Term:1 CandidateId:0 LastLogIn
20:27:04.952967 [2] sending RequestVote to 1: {Term:1 CandidateId:2 LastLogIn
```

20:27:04.952967 [2] sending RequestVote to 0: {Term:1 CandidateId:2 LastLogIn
 20:27:04.952967 [0] election timer started (154ms), term=1
 20:27:04.956590 [2] RequestVote: {Term:1 CandidateId:0 LastLogIndex:0 LastLo
 20:27:04.956590 [0] RequestVote: {Term:1 CandidateId:2 LastLogIndex:0 LastLo
 20:27:04.956590 [2] ... RequestVote reply: &{Term:1 VoteGranted:false}
 20:27:04.956590 [0] ... RequestVote reply: &{Term:1 VoteGranted:false}
 20:27:04.956590 [1] RequestVote: {Term:1 CandidateId:0 LastLogIndex:0 LastLo
 20:27:04.956590 [1] ... term out of date in RequestVote
 20:27:04.956590 [1] becomes Follower with term=1; log=[]
 20:27:04.956590 [1] ... RequestVote reply: &{Term:1 VoteGranted:true}
 20:27:04.956590 [1] election timer started (282ms), term=1
 20:27:04.957257 [0] received RequestVoteReply {Term:1 VoteGranted:false}
 20:27:04.957257 [0] received RequestVoteReply {Term:1 VoteGranted:true}
 20:27:04.957257 [2] received RequestVoteReply {Term:1 VoteGranted:false}
 20:27:04.957257 [0] wins election with 2 votes
 20:27:04.957257 [0] becomes Leader; term=1, log=[]
 20:27:04.957257 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:27:04.957257 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:27:04.958833 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLo
 20:27:04.958833 [1] RequestVote: {Term:1 CandidateId:2 LastLogIndex:0 LastLo
 20:27:04.958833 [2] becomes Follower with term=1; log=[]
 20:27:04.958833 [1] ... RequestVote reply: &{Term:1 VoteGranted:false}
 20:27:04.958833 [2] AppendEntries reply: {Term:1 Success:true}
 20:27:04.958833 [2] election timer started (183ms), term=1
 20:27:04.958833 [2] received RequestVoteReply {Term:1 VoteGranted:false}
 20:27:04.958833 [2] while waiting for reply, state = Follower
 20:27:04.959983 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:27:04.959983 [1] AppendEntries reply: {Term:1 Success:true}
 20:27:04.962522 [1] in election timer term changed from 0 to 1, bailing out
 20:27:04.963162 [0] in election timer state=Leader, bailing out
 20:27:05.007801 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:27:05.007801 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:27:05.009403 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:27:05.009403 [1] AppendEntries reply: {Term:1 Success:true}
 20:27:05.013516 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:27:05.013516 [2] AppendEntries reply: {Term:1 Success:true}

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20:27:05.053529 [0] becomes Dead
20:27:05.054067 [1] becomes Dead
20:27:05.054067 [2] becomes Dead
--- PASS: TestElectionBasic (0.31s)
PASS
20:27:05.057107 [1] in election timer state=Dead, bailing out
20:27:05.059352 [2] in election timer state=Dead, bailing out
20:27:05.063249 [2] in election timer state=Dead, bailing out
ok      github.com/eliben/raft 1.727s

```

2. TestElectionLeaderDisconnect

- Terminal command:

```
go test -v -race -run TestElectionLeaderDisconnect |& tee ./log.txt
```

- Result:

```

=== RUN TestElectionLeaderDisconnect
20:32:58.344744 [0] listening at [::]:52704
20:32:58.346354 [1] listening at [::]:52705
20:32:58.346354 [2] listening at [::]:52706
20:32:58.350894 [0] election timer started (150ms), term=0
20:32:58.350894 [1] election timer started (202ms), term=0
20:32:58.350894 [2] election timer started (164ms), term=0
20:32:58.501448 [0] becomes Candidate (currentTerm=1); log=[]
20:32:58.501448 [0] sending RequestVote to 2: {Term:1 CandidateId:0 LastLogIn
20:32:58.501448 [0] sending RequestVote to 1: {Term:1 CandidateId:0 LastLogIn
20:32:58.501448 [0] election timer started (225ms), term=1
20:32:58.506336 [2] RequestVote: {Term:1 CandidateId:0 LastLogIndex:0 LastLo
20:32:58.506336 [2] ... term out of date in RequestVote
20:32:58.506336 [2] becomes Follower with term=1; log=[]
20:32:58.506336 [2] ... RequestVote reply: &{Term:1 VoteGranted:true}
20:32:58.506336 [2] election timer started (206ms), term=1

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20:32:58.507065 [0] received RequestVoteReply {Term:1 VoteGranted:true}
20:32:58.507065 [0] wins election with 2 votes
20:32:58.507065 [0] becomes Leader; term=1, log=[]
20:32:58.507065 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
20:32:58.507065 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
20:32:58.508099 [1] RequestVote: {Term:1 CandidateId:0 LastLogIndex:0 LastLo
20:32:58.508099 [1] ... term out of date in RequestVote
20:32:58.508099 [1] becomes Follower with term=1; log=[]
20:32:58.508099 [1] ... RequestVote reply: &{Term:1 VoteGranted:true}
20:32:58.508099 [1] election timer started (151ms), term=1
20:32:58.508654 [0] received RequestVoteReply {Term:1 VoteGranted:true}
20:32:58.508654 [0] while waiting for reply, state = Leader
20:32:58.511239 [2] in election timer term changed from 0 to 1, bailing out
20:32:58.511239 [1] in election timer term changed from 0 to 1, bailing out
20:32:58.511755 [0] in election timer state=Leader, bailing out
20:32:58.512799 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
20:32:58.512799 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
20:32:58.512799 [1] AppendEntries reply: {Term:1 Success:true}
20:32:58.512799 [2] AppendEntries reply: {Term:1 Success:true}
20:32:58.557938 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
20:32:58.557938 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
20:32:58.559260 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLo
20:32:58.559260 [2] AppendEntries reply: {Term:1 Success:true}
20:32:58.559260 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
20:32:58.559260 [1] AppendEntries reply: {Term:1 Success:true}
20:32:58.607400 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
20:32:58.607400 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
20:32:58.608578 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLo
20:32:58.608578 [2] AppendEntries reply: {Term:1 Success:true}
20:32:58.609690 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
20:32:58.609690 [1] AppendEntries reply: {Term:1 Success:true}
20:32:58.651053 [TEST] Disconnect 0
20:32:58.657356 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
20:32:58.657356 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
20:32:58.707540 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
20:32:58.707540 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0

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20:32:58.757728 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:32:58.757728 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:32:58.768485 [1] becomes Candidate (currentTerm=2); log=[]
 20:32:58.768485 [1] sending RequestVote to 0: {Term:2 Candidateld:1 LastLogIn
 20:32:58.768485 [1] sending RequestVote to 2: {Term:2 Candidateld:1 LastLogIn
 20:32:58.768485 [1] election timer started (153ms), term=2
 20:32:58.770768 [2] RequestVote: {Term:2 Candidateld:1 LastLogIndex:0 LastLo
 20:32:58.770768 [2] ... term out of date in RequestVote
 20:32:58.770768 [2] becomes Follower with term=2; log=[]
 20:32:58.770768 [2] ... RequestVote reply: &{Term:2 VoteGranted:true}
 20:32:58.770768 [2] election timer started (267ms), term=2
 20:32:58.770768 [1] received RequestVoteReply {Term:2 VoteGranted:true}
 20:32:58.770768 [1] wins election with 2 votes
 20:32:58.771406 [1] becomes Leader; term=2, log=[]
 20:32:58.771406 [1] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:1
 20:32:58.771406 [1] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:1
 20:32:58.776029 [2] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:32:58.776029 [2] AppendEntries reply: {Term:2 Success:true}
 20:32:58.776545 [2] in election timer term changed from 1 to 2, bailing out
 20:32:58.778640 [1] in election timer state=Leader, bailing out
 20:32:58.807517 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:32:58.807517 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:32:58.822075 [1] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:1
 20:32:58.822075 [1] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:1
 20:32:58.823745 [2] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:32:58.823745 [2] AppendEntries reply: {Term:2 Success:true}
 20:32:58.857324 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:32:58.857324 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:32:58.871850 [1] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:1
 20:32:58.871850 [1] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:1
 20:32:58.877611 [2] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:32:58.877611 [2] AppendEntries reply: {Term:2 Success:true}
 20:32:58.907677 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:32:58.907677 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:32:58.921848 [1] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:1
 20:32:58.921848 [1] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:1

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20:32:58.924681 [2] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
20:32:58.924681 [2] AppendEntries reply: {Term:2 Success:true}
20:32:58.957571 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
20:32:58.957571 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
20:32:58.971912 [1] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:1 F
20:32:58.971912 [1] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:1 F
20:32:58.974604 [2] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
20:32:58.974604 [2] AppendEntries reply: {Term:2 Success:true}
20:32:59.002515 [0] becomes Dead
20:32:59.002515 [1] becomes Dead
20:32:59.003131 [2] becomes Dead
--- PASS: TestElectionLeaderDisconnect (0.66s)
=== RUN TestElectionLeaderDisconnectThenReconnect
20:32:59.003666 [0] listening at [::]:52713
20:32:59.004190 [1] listening at [::]:52714
20:32:59.004190 [2] listening at [::]:52715
20:32:59.007382 [1] election timer started (167ms), term=0
20:32:59.007382 [0] election timer started (159ms), term=0
20:32:59.007382 [2] election timer started (269ms), term=0
20:32:59.011214 [2] in election timer state=Dead, bailing out
20:32:59.167892 [0] becomes Candidate (currentTerm=1); log=[]
20:32:59.167892 [0] election timer started (182ms), term=1
20:32:59.167892 [0] sending RequestVote to 1: {Term:1 CandidateId:0 LastLogInc
20:32:59.167892 [0] sending RequestVote to 2: {Term:1 CandidateId:0 LastLogInc
20:32:59.170008 [2] RequestVote: {Term:1 CandidateId:0 LastLogIndex:0 LastLog
20:32:59.170008 [2] ... term out of date in RequestVote
20:32:59.170008 [2] becomes Follower with term=1; log=[]
20:32:59.170008 [2] ... RequestVote reply: &{Term:1 VoteGranted:true}
20:32:59.170008 [2] election timer started (168ms), term=1
20:32:59.170008 [0] received RequestVoteReply {Term:1 VoteGranted:true}
20:32:59.170513 [0] wins election with 2 votes
20:32:59.170513 [0] becomes Leader; term=1, log=[]
20:32:59.170513 [1] RequestVote: {Term:1 CandidateId:0 LastLogIndex:0 LastLog
20:32:59.170513 [1] ... term out of date in RequestVote
20:32:59.170513 [1] becomes Follower with term=1; log=[]
20:32:59.170513 [1] ... RequestVote reply: &{Term:1 VoteGranted:true}

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20:32:59.170513 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:32:59.170513 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:32:59.170513 [1] election timer started (285ms), term=1
 20:32:59.170513 [0] received RequestVoteReply {Term:1 VoteGranted:true}
 20:32:59.170513 [0] while waiting for reply, state = Leader
 20:32:59.172654 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:32:59.172654 [1] AppendEntries reply: {Term:1 Success:true}
 20:32:59.176679 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:32:59.176679 [2] AppendEntries reply: {Term:1 Success:true}
 20:32:59.177780 [1] in election timer term changed from 0 to 1, bailing out
 20:32:59.178366 [0] in election timer state=Leader, bailing out
 20:32:59.178366 [2] in election timer term changed from 0 to 1, bailing out
 20:32:59.220928 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:32:59.220928 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:32:59.222770 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:32:59.222770 [2] AppendEntries reply: {Term:1 Success:true}
 20:32:59.224488 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:32:59.224488 [1] AppendEntries reply: {Term:1 Success:true}
 20:32:59.271126 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:32:59.271126 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:32:59.272907 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:32:59.272907 [2] AppendEntries reply: {Term:1 Success:true}
 20:32:59.276712 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:32:59.276712 [1] AppendEntries reply: {Term:1 Success:true}
 20:32:59.308066 [TEST] Disconnect 0
 20:32:59.320784 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:32:59.320784 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:32:59.372268 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:32:59.372268 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:32:59.420860 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:32:59.420860 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:32:59.450196 [2] becomes Candidate (currentTerm=2); log=[]
 20:32:59.450196 [2] election timer started (274ms), term=2
 20:32:59.450196 [2] sending RequestVote to 0: {Term:2 Candidateld:2 LastLogIn
 20:32:59.450196 [2] sending RequestVote to 1: {Term:2 Candidateld:2 LastLogIn
 20:32:59.456346 [1] RequestVote: {Term:2 Candidateld:2 LastLogIndex:0 LastLo

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20:32:59.456346 [1] ... term out of date in RequestVote
20:32:59.456346 [1] becomes Follower with term=2; log=[]
20:32:59.456346 [1] ... RequestVote reply: {Term:2 VoteGranted:true}
20:32:59.456346 [1] election timer started (233ms), term=2
20:32:59.456952 [2] received RequestVoteReply {Term:2 VoteGranted:true}
20:32:59.456952 [2] wins election with 2 votes
20:32:59.456952 [2] becomes Leader; term=2, log=[]
20:32:59.456952 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
20:32:59.456952 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2
20:32:59.460526 [2] in election timer state=Leader, bailing out
20:32:59.460526 [1] in election timer term changed from 1 to 2, bailing out
20:32:59.462065 [1] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:32:59.462065 [1] AppendEntries reply: {Term:2 Success:true}
20:32:59.470862 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
20:32:59.470862 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
20:32:59.507164 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2
20:32:59.507164 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
20:32:59.511818 [1] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:32:59.511818 [1] AppendEntries reply: {Term:2 Success:true}
20:32:59.522684 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
20:32:59.522684 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
20:32:59.557190 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
20:32:59.557190 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2
20:32:59.559332 [1] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:32:59.559332 [1] AppendEntries reply: {Term:2 Success:true}
20:32:59.570847 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
20:32:59.570847 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
20:32:59.607450 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
20:32:59.607450 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2
20:32:59.612239 [1] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:32:59.612239 [1] AppendEntries reply: {Term:2 Success:true}
20:32:59.620680 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
20:32:59.620680 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
20:32:59.657286 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2
20:32:59.657286 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
20:32:59.659009 [TEST] Reconnect 0

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20:32:59.662867 [1] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:32:59.662867 [1] AppendEntries reply: {Term:2 Success:true}
20:32:59.670895 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
20:32:59.670895 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
20:32:59.673188 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
20:32:59.673188 [1] AppendEntries reply: {Term:2 Success:false}
20:32:59.673812 [0] term out of date in heartbeat reply
20:32:59.673812 [0] becomes Follower with term=2; log=[]
20:32:59.673812 [0] election timer started (272ms), term=2
20:32:59.674860 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
20:32:59.674860 [2] AppendEntries reply: {Term:2 Success:false}
20:32:59.674860 [0] term out of date in heartbeat reply
20:32:59.675374 [0] becomes Follower with term=2; log=[]
20:32:59.675374 [0] election timer started (283ms), term=2
20:32:59.707363 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
20:32:59.707363 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2
20:32:59.710096 [0] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:32:59.710096 [1] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:32:59.710096 [0] AppendEntries reply: {Term:2 Success:true}
20:32:59.710096 [1] AppendEntries reply: {Term:2 Success:true}
20:32:59.757114 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
20:32:59.757114 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2
20:32:59.758802 [1] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:32:59.758802 [1] AppendEntries reply: {Term:2 Success:true}
20:32:59.760476 [0] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLo
20:32:59.760476 [0] AppendEntries reply: {Term:2 Success:true}
20:32:59.807564 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2
20:32:59.807564 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
20:32:59.811331 [1] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:32:59.811668 [1] AppendEntries reply: {Term:2 Success:true}
20:32:59.812912 [0] becomes Dead
20:32:59.812912 [1] becomes Dead
20:32:59.812912 [2] becomes Dead
--- PASS: TestElectionLeaderDisconnectThenReconnect (0.81s)
=== RUN TestElectionLeaderDisconnectThenReconnect5
20:32:59.814060 [0] in election timer state=Dead, bailing out

```

```

20:32:59.815219 [0] listening at [::]:52728
20:32:59.816282 [0] in election timer state=Dead, bailing out
20:32:59.816282 [1] listening at [::]:52729
20:32:59.816282 [2] listening at [::]:52730
20:32:59.816848 [1] in election timer state=Dead, bailing out
20:32:59.816848 [3] listening at [::]:52731
20:32:59.816848 [4] listening at [::]:52732
20:32:59.824547 [3] election timer started (201ms), term=0
20:32:59.824547 [0] election timer started (197ms), term=0
20:32:59.824547 [2] election timer started (281ms), term=0
20:32:59.824547 [4] election timer started (229ms), term=0
20:32:59.824547 [1] election timer started (151ms), term=0
20:32:59.984920 [1] becomes Candidate (currentTerm=1); log=[]
20:32:59.984920 [1] sending RequestVote to 0: {Term:1 Candidateld:1 LastLogIn
20:32:59.984920 [1] sending RequestVote to 4: {Term:1 Candidateld:1 LastLogIn
20:32:59.984920 [1] election timer started (268ms), term=1
20:32:59.984920 [1] sending RequestVote to 3: {Term:1 Candidateld:1 LastLogIn
20:32:59.984920 [1] sending RequestVote to 2: {Term:1 Candidateld:1 LastLogIn
20:32:59.988265 [3] RequestVote: {Term:1 Candidateld:1 LastLogIndex:0 LastLo
20:32:59.988265 [0] RequestVote: {Term:1 Candidateld:1 LastLogIndex:0 LastLo
20:32:59.988265 [0] ... term out of date in RequestVote
20:32:59.988265 [3] ... term out of date in RequestVote
20:32:59.988265 [0] becomes Follower with term=1; log=[]
20:32:59.988265 [3] becomes Follower with term=1; log=[]
20:32:59.988265 [0] ... RequestVote reply: &{Term:1 VoteGranted:true}
20:32:59.988265 [3] ... RequestVote reply: &{Term:1 VoteGranted:true}
20:32:59.988265 [0] election timer started (154ms), term=1
20:32:59.988265 [3] election timer started (251ms), term=1
20:32:59.988265 [1] received RequestVoteReply {Term:1 VoteGranted:true}
20:32:59.988265 [1] received RequestVoteReply {Term:1 VoteGranted:true}
20:32:59.988265 [1] wins election with 3 votes
20:32:59.988265 [1] becomes Leader; term=1, log=[]
20:32:59.988265 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1
20:32:59.988265 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1
20:32:59.989108 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1
20:32:59.989108 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1

```

20:32:59.989108 [2] RequestVote: {Term:1 CandidateId:1 LastLogIndex:0 LastLog
 20:32:59.989108 [2] ... term out of date in RequestVote
 20:32:59.989108 [2] becomes Follower with term=1; log=[]
 20:32:59.989108 [2] ... RequestVote reply: &{Term:1 VoteGranted:true}
 20:32:59.989108 [2] election timer started (171ms), term=1
 20:32:59.989625 [1] received RequestVoteReply {Term:1 VoteGranted:true}
 20:32:59.989625 [1] while waiting for reply, state = Leader
 20:32:59.990139 [4] RequestVote: {Term:1 CandidateId:1 LastLogIndex:0 LastLog
 20:32:59.990139 [4] ... term out of date in RequestVote
 20:32:59.990139 [4] becomes Follower with term=1; log=[]
 20:32:59.990139 [0] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:32:59.990139 [0] AppendEntries reply: {Term:1 Success:true}
 20:32:59.990139 [4] ... RequestVote reply: &{Term:1 VoteGranted:true}
 20:32:59.990720 [4] election timer started (190ms), term=1
 20:32:59.990720 [2] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:32:59.990720 [2] AppendEntries reply: {Term:1 Success:true}
 20:32:59.991939 [1] received RequestVoteReply {Term:1 VoteGranted:true}
 20:32:59.992597 [1] while waiting for reply, state = Leader
 20:32:59.994312 [3] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:32:59.994312 [3] AppendEntries reply: {Term:1 Success:true}
 20:32:59.994859 [0] in election timer term changed from 0 to 1, bailing out
 20:32:59.994859 [2] in election timer term changed from 0 to 1, bailing out
 20:32:59.994859 [3] in election timer term changed from 0 to 1, bailing out
 20:32:59.994859 [4] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:32:59.995508 [4] AppendEntries reply: {Term:1 Success:true}
 20:32:59.995508 [1] in election timer state=Leader, bailing out
 20:32:59.995508 [4] in election timer term changed from 0 to 1, bailing out
 20:33:00.038454 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1
 20:33:00.038454 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1
 20:33:00.038454 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1
 20:33:00.038454 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1
 20:33:00.041013 [3] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:33:00.041013 [3] AppendEntries reply: {Term:1 Success:true}
 20:33:00.041013 [4] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:33:00.041013 [4] AppendEntries reply: {Term:1 Success:true}
 20:33:00.042626 [2] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog

20:33:00.042626 [2] AppendEntries reply: {Term:1 Success:true}
 20:33:00.044309 [0] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:33:00.044309 [0] AppendEntries reply: {Term:1 Success:true}
 20:33:00.088712 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 F
 20:33:00.088712 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1 F
 20:33:00.088712 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 F
 20:33:00.089155 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1 F
 20:33:00.092790 [0] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:33:00.092790 [0] AppendEntries reply: {Term:1 Success:true}
 20:33:00.093914 [4] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:33:00.093914 [4] AppendEntries reply: {Term:1 Success:true}
 20:33:00.093914 [3] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:33:00.093914 [2] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:33:00.093914 [3] AppendEntries reply: {Term:1 Success:true}
 20:33:00.093914 [2] AppendEntries reply: {Term:1 Success:true}
 20:33:00.125412 [TEST] Disconnect 1
 20:33:00.139033 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 F
 20:33:00.139033 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1 F
 20:33:00.139033 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1 F
 20:33:00.139033 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 F
 20:33:00.188921 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 F
 20:33:00.188921 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1 F
 20:33:00.188921 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 F
 20:33:00.188921 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1 F
 20:33:00.238463 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1
 20:33:00.238463 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1
 20:33:00.238463 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1
 20:33:00.238463 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1
 20:33:00.248743 [0] becomes Candidate (currentTerm=2); log=[]
 20:33:00.248743 [0] sending RequestVote to 1: {Term:2 Candidateld:0 LastLogIn
 20:33:00.248743 [0] election timer started (219ms), term=2
 20:33:00.248743 [0] sending RequestVote to 2: {Term:2 Candidateld:0 LastLogIn
 20:33:00.248743 [0] sending RequestVote to 3: {Term:2 Candidateld:0 LastLogIn
 20:33:00.248743 [0] sending RequestVote to 4: {Term:2 Candidateld:0 LastLogIn
 20:33:00.250894 [3] RequestVote: {Term:2 Candidateld:0 LastLogIndex:0 LastLc
 20:33:00.250894 [4] RequestVote: {Term:2 Candidateld:0 LastLogIndex:0 LastLc

20:33:00.250894 [3] ... term out of date in RequestVote
 20:33:00.250894 [4] ... term out of date in RequestVote
 20:33:00.250894 [3] becomes Follower with term=2; log=[]
 20:33:00.250894 [4] becomes Follower with term=2; log=[]
 20:33:00.250894 [3] ... RequestVote reply: &{Term:2 VoteGranted:true}
 20:33:00.250894 [4] ... RequestVote reply: &{Term:2 VoteGranted:true}
 20:33:00.250894 [3] election timer started (182ms), term=2
 20:33:00.250894 [4] in election timer term changed from 1 to 2, bailing out
 20:33:00.250894 [4] election timer started (233ms), term=2
 20:33:00.251513 [0] received RequestVoteReply {Term:2 VoteGranted:true}
 20:33:00.251513 [0] received RequestVoteReply {Term:2 VoteGranted:true}
 20:33:00.251513 [0] wins election with 3 votes
 20:33:00.251513 [0] becomes Leader; term=2, log=[]
 20:33:00.251513 [0] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:0
 20:33:00.251513 [0] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:0
 20:33:00.251513 [0] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:0
 20:33:00.251513 [0] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:0
 20:33:00.252668 [2] RequestVote: {Term:2 CandidateId:0 LastLogIndex:0 LastLo
 20:33:00.252668 [2] ... term out of date in RequestVote
 20:33:00.252668 [2] becomes Follower with term=2; log=[]
 20:33:00.252668 [2] ... RequestVote reply: &{Term:2 VoteGranted:true}
 20:33:00.252668 [2] election timer started (278ms), term=2
 20:33:00.253186 [0] received RequestVoteReply {Term:2 VoteGranted:true}
 20:33:00.253186 [0] while waiting for reply, state = Leader
 20:33:00.254256 [2] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLo
 20:33:00.254256 [2] AppendEntries reply: {Term:2 Success:true}
 20:33:00.255441 [4] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLo
 20:33:00.255441 [3] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLo
 20:33:00.255441 [4] AppendEntries reply: {Term:2 Success:true}
 20:33:00.255441 [3] AppendEntries reply: {Term:2 Success:true}
 20:33:00.258555 [3] in election timer term changed from 1 to 2, bailing out
 20:33:00.259267 [2] in election timer term changed from 1 to 2, bailing out
 20:33:00.259267 [0] in election timer state=Leader, bailing out
 20:33:00.276518 [TEST] Reconnect 1
 20:33:00.288675 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1
 20:33:00.288675 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1

20:33:00.288675 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1
 20:33:00.288675 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1
 20:33:00.290982 [3] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:33:00.290982 [3] AppendEntries reply: {Term:2 Success:false}
 20:33:00.291512 [1] term out of date in heartbeat reply
 20:33:00.291512 [1] becomes Follower with term=2; log=[]
 20:33:00.291512 [1] election timer started (289ms), term=2
 20:33:00.293830 [2] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:33:00.293830 [2] AppendEntries reply: {Term:2 Success:false}
 20:33:00.293830 [1] term out of date in heartbeat reply
 20:33:00.293830 [1] becomes Follower with term=2; log=[]
 20:33:00.293830 [1] election timer started (204ms), term=2
 20:33:00.295020 [4] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:33:00.295020 [0] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:33:00.295020 [0] AppendEntries reply: {Term:2 Success:false}
 20:33:00.295020 [4] AppendEntries reply: {Term:2 Success:false}
 20:33:00.295582 [1] term out of date in heartbeat reply
 20:33:00.295582 [1] becomes Follower with term=2; log=[]
 20:33:00.295582 [1] term out of date in heartbeat reply
 20:33:00.295582 [1] election timer started (186ms), term=2
 20:33:00.295582 [1] becomes Follower with term=2; log=[]
 20:33:00.295582 [1] election timer started (222ms), term=2
 20:33:00.302511 [0] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:0
 20:33:00.302511 [0] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:0
 20:33:00.302511 [0] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:0
 20:33:00.302511 [0] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:0
 20:33:00.303710 [1] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLog
 20:33:00.303710 [1] AppendEntries reply: {Term:2 Success:true}
 20:33:00.305855 [3] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLo
 20:33:00.305855 [3] AppendEntries reply: {Term:2 Success:true}
 20:33:00.307025 [4] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLo
 20:33:00.307025 [4] AppendEntries reply: {Term:2 Success:true}
 20:33:00.307705 [2] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLo
 20:33:00.307705 [2] AppendEntries reply: {Term:2 Success:true}
 20:33:00.352050 [0] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:(
 20:33:00.352050 [0] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:(

20:33:00.352050 [0] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:0
20:33:00.352050 [0] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:0
20:33:00.354588 [2] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0
20:33:00.354588 [2] AppendEntries reply: {Term:2 Success:true}
20:33:00.355702 [1] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0
20:33:00.355702 [1] AppendEntries reply: {Term:2 Success:true}
20:33:00.357378 [4] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0
20:33:00.357378 [3] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0
20:33:00.357378 [4] AppendEntries reply: {Term:2 Success:true}
20:33:00.357378 [3] AppendEntries reply: {Term:2 Success:true}
20:33:00.401723 [0] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:0
20:33:00.401723 [0] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:0
20:33:00.401723 [0] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:0
20:33:00.401723 [0] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:0
20:33:00.403375 [1] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0
20:33:00.403375 [1] AppendEntries reply: {Term:2 Success:true}
20:33:00.404466 [3] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0
20:33:00.404466 [3] AppendEntries reply: {Term:2 Success:true}
20:33:00.406061 [2] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0
20:33:00.406061 [2] AppendEntries reply: {Term:2 Success:true}
20:33:00.406611 [4] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0
20:33:00.406611 [4] AppendEntries reply: {Term:2 Success:true}
20:33:00.433905 [0] becomes Dead
20:33:00.433905 [1] becomes Dead
20:33:00.434423 [2] becomes Dead
20:33:00.434423 [3] becomes Dead
20:33:00.434423 [4] becomes Dead
20:33:00.436128 [1] in election timer state=Dead, bailing out
20:33:00.436128 [1] in election timer state=Dead, bailing out
20:33:00.441295 [3] in election timer state=Dead, bailing out
20:33:00.441295 [4] in election timer state=Dead, bailing out
20:33:00.441974 [1] in election timer state=Dead, bailing out
20:33:00.443160 [2] in election timer state=Dead, bailing out
20:33:00.444379 [1] in election timer state=Dead, bailing out
--- PASS: TestElectionLeaderDisconnectThenReconnect5 (0.67s)

PASS

ok github.com/eliben/raft 3.575s

3. TestElectionLeaderAndAnotherDisconnect

- Terminal command:

```
go test -v -race -run TestElectionLeaderAndAnotherDisconnect | tee ./log.txt
```

- Result:

```
=== RUN TestElectionLeaderAndAnotherDisconnect
20:44:11.032509 [0] listening at [::]:53251
20:44:11.033754 [1] listening at [::]:53252
20:44:11.034286 [2] listening at [::]:53253
20:44:11.039033 [1] election timer started (267ms), term=0
20:44:11.039033 [0] election timer started (224ms), term=0
20:44:11.039033 [2] election timer started (263ms), term=0
20:44:11.269257 [0] becomes Candidate (currentTerm=1); log=[]
20:44:11.269257 [0] sending RequestVote to 1: {Term:1 CandidateId:0 LastLogInc
20:44:11.269257 [0] sending RequestVote to 2: {Term:1 CandidateId:0 LastLogInc
20:44:11.269257 [0] election timer started (208ms), term=1
20:44:11.274067 [2] RequestVote: {Term:1 CandidateId:0 LastLogIndex:0 LastLog
20:44:11.274067 [2] ... term out of date in RequestVote
20:44:11.274067 [2] becomes Follower with term=1; log=[]
20:44:11.274067 [2] ... RequestVote reply: &{Term:1 VoteGranted:true}
20:44:11.274067 [2] election timer started (166ms), term=1
20:44:11.274736 [0] received RequestVoteReply {Term:1 VoteGranted:true}
20:44:11.274736 [0] wins election with 2 votes
20:44:11.274736 [0] becomes Leader; term=1, log=[]
20:44:11.274736 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 I
20:44:11.274736 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
20:44:11.275250 [1] RequestVote: {Term:1 CandidateId:0 LastLogIndex:0 LastLog
20:44:11.275250 [1] ... term out of date in RequestVote
```

20:44:11.275250 [1] becomes Follower with term=1; log=[]
 20:44:11.275250 [1] ... RequestVote reply: &{Term:1 VoteGranted:true}
 20:44:11.275250 [1] election timer started (173ms), term=1
 20:44:11.275764 [0] received RequestVoteReply {Term:1 VoteGranted:true}
 20:44:11.275764 [0] while waiting for reply, state = Leader
 20:44:11.277334 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
 20:44:11.277334 [1] AppendEntries reply: {Term:1 Success:true}
 20:44:11.278509 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
 20:44:11.278509 [2] AppendEntries reply: {Term:1 Success:true}
 20:44:11.279537 [1] in election timer term changed from 0 to 1, bailing out
 20:44:11.279537 [2] in election timer term changed from 0 to 1, bailing out
 20:44:11.279537 [0] in election timer state=Leader, bailing out
 20:44:11.325355 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
 20:44:11.325355 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
 20:44:11.326871 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
 20:44:11.326871 [1] AppendEntries reply: {Term:1 Success:true}
 20:44:11.328147 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
 20:44:11.328147 [2] AppendEntries reply: {Term:1 Success:true}
 20:44:11.339200 [TEST] Disconnect 0
 20:44:11.339933 [TEST] Disconnect 1
 20:44:11.375022 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
 20:44:11.375022 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
 20:44:11.425211 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
 20:44:11.425211 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
 20:44:11.475202 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
 20:44:11.475202 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
 20:44:11.494320 [2] becomes Candidate (currentTerm=2); log=[]
 20:44:11.494320 [2] election timer started (186ms), term=2
 20:44:11.494320 [2] sending RequestVote to 1: {Term:2 Candidateld:2 LastLogIndex:0 LastLogTerm:0}
 20:44:11.494320 [2] sending RequestVote to 0: {Term:2 Candidateld:2 LastLogIndex:0 LastLogTerm:0}
 20:44:11.505495 [1] becomes Candidate (currentTerm=2); log=[]
 20:44:11.505495 [1] sending RequestVote to 2: {Term:2 Candidateld:1 LastLogIndex:0 LastLogTerm:0}
 20:44:11.505495 [1] sending RequestVote to 0: {Term:2 Candidateld:1 LastLogIndex:0 LastLogTerm:0}
 20:44:11.505495 [1] election timer started (159ms), term=2
 20:44:11.524991 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
 20:44:11.524991 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}

20:44:11.574765 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 F
 20:44:11.574765 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:44:11.624963 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 I
 20:44:11.624963 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:44:11.665718 [1] becomes Candidate (currentTerm=3); log=[]
 20:44:11.665718 [1] election timer started (161ms), term=3
 20:44:11.665718 [1] sending RequestVote to 2: {Term:3 Candidateld:1 LastLogInd
 20:44:11.665718 [1] sending RequestVote to 0: {Term:3 Candidateld:1 LastLogInd
 20:44:11.675118 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0 F
 20:44:11.675118 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 P
 20:44:11.684615 [2] becomes Candidate (currentTerm=3); log=[]
 20:44:11.684615 [2] election timer started (195ms), term=3
 20:44:11.684615 [2] sending RequestVote to 0: {Term:3 Candidateld:2 LastLogInc
 20:44:11.684615 [2] sending RequestVote to 1: {Term:3 Candidateld:2 LastLogInc
 20:44:11.724928 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 I
 20:44:11.724928 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:44:11.774797 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 F
 20:44:11.774797 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0 I
 20:44:11.790265 [TEST] Reconnect 1
 20:44:11.824867 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:44:11.824867 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 I
 20:44:11.828691 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLogI
 20:44:11.828691 [1] AppendEntries reply: {Term:3 Success:false}
 20:44:11.830643 [0] term out of date in heartbeat reply
 20:44:11.830643 [0] becomes Follower with term=3; log=[]
 20:44:11.830643 [0] election timer started (266ms), term=3
 20:44:11.835944 [1] becomes Candidate (currentTerm=4); log=[]
 20:44:11.835944 [1] sending RequestVote to 0: {Term:4 Candidateld:1 LastLogInc
 20:44:11.835944 [1] sending RequestVote to 2: {Term:4 Candidateld:1 LastLogInc
 20:44:11.835944 [1] election timer started (280ms), term=4
 20:44:11.840307 [2] RequestVote: {Term:4 Candidateld:1 LastLogIndex:0 LastLog
 20:44:11.840307 [2] ... term out of date in RequestVote
 20:44:11.840307 [2] becomes Follower with term=4; log=[]
 20:44:11.840307 [2] ... RequestVote reply: &{Term:4 VoteGranted:true}
 20:44:11.840307 [2] election timer started (260ms), term=4
 20:44:11.840307 [1] received RequestVoteReply {Term:4 VoteGranted:true}

20:44:11.840814 [1] wins election with 2 votes
20:44:11.840814 [1] becomes Leader; term=4, log=[]
20:44:11.840814 [0] RequestVote: {Term:4 CandidateId:1 LastLogIndex:0 LastLogTerm:0}
20:44:11.840814 [0] ... term out of date in RequestVote
20:44:11.840814 [0] becomes Follower with term=4; log=[]
20:44:11.840814 [1] sending AppendEntries to 2: ni=0, args={Term:4 LeaderId:1 PreLogIndex:0 PreLogTerm:0}
20:44:11.840814 [0] ... RequestVote reply: &{Term:4 VoteGranted:true}
20:44:11.840814 [1] sending AppendEntries to 0: ni=0, args={Term:4 LeaderId:1 PreLogIndex:0 PreLogTerm:0}
20:44:11.840814 [0] in election timer term changed from 3 to 4, bailing out
20:44:11.840814 [0] election timer started (200ms), term=4
20:44:11.841327 [1] received RequestVoteReply {Term:4 VoteGranted:true}
20:44:11.841327 [1] while waiting for reply, state = Leader
20:44:11.843533 [0] AppendEntries: {Term:4 LeaderId:1 PreLogIndex:0 PreLogTerm:0}
20:44:11.843533 [0] AppendEntries reply: {Term:4 Success:true}
20:44:11.845124 [2] in election timer term changed from 3 to 4, bailing out
20:44:11.846202 [1] in election timer state=Leader, bailing out
20:44:11.847024 [2] AppendEntries: {Term:4 LeaderId:1 PreLogIndex:0 PreLogTerm:0}
20:44:11.847024 [2] AppendEntries reply: {Term:4 Success:true}
20:44:11.891448 [1] sending AppendEntries to 2: ni=0, args={Term:4 LeaderId:1 PreLogIndex:0 PreLogTerm:0}
20:44:11.891448 [1] sending AppendEntries to 0: ni=0, args={Term:4 LeaderId:1 PreLogIndex:0 PreLogTerm:0}
20:44:11.894938 [0] AppendEntries: {Term:4 LeaderId:1 PreLogIndex:0 PreLogTerm:0}
20:44:11.894938 [0] AppendEntries reply: {Term:4 Success:true}
20:44:11.895454 [2] AppendEntries: {Term:4 LeaderId:1 PreLogIndex:0 PreLogTerm:0}
20:44:11.895454 [2] AppendEntries reply: {Term:4 Success:true}
20:44:11.940940 [1] sending AppendEntries to 0: ni=0, args={Term:4 LeaderId:1 PreLogIndex:0 PreLogTerm:0}
20:44:11.940940 [1] sending AppendEntries to 2: ni=0, args={Term:4 LeaderId:1 PreLogIndex:0 PreLogTerm:0}
20:44:11.943022 [0] becomes Dead
20:44:11.944648 [2] AppendEntries: {Term:4 LeaderId:1 PreLogIndex:0 PreLogTerm:0}
20:44:11.944648 [2] AppendEntries reply: {Term:4 Success:true}
20:44:11.946163 [1] becomes Dead
20:44:11.946929 [2] becomes Dead
--- PASS: TestElectionLeaderAndAnotherDisconnect (0.92s)
PASS
20:44:11.950874 [2] in election timer state=Dead, bailing out

```
20:44:11.950874 [0] in election timer state=Dead, bailing out
ok      github.com/eliben/raft 2.317s
```

4. TestDisconnectAllThenRestore

- Terminal command:

```
go test -v -race -run TestDisconnectAllThenRestore |& tee ./log.txt
```

- Result:

```
=== RUN TestDisconnectAllThenRestore
20:46:07.957053 [0] listening at [::]:53345
20:46:07.957584 [1] listening at [::]:53346
20:46:07.958116 [2] listening at [::]:53347
20:46:07.961533 [2] election timer started (221ms), term=0
20:46:07.961533 [1] election timer started (160ms), term=0
20:46:07.961533 [0] election timer started (293ms), term=0
20:46:08.061924 [TEST] Disconnect 0
20:46:08.061924 [TEST] Disconnect 1
20:46:08.062573 [TEST] Disconnect 2
20:46:08.122214 [1] becomes Candidate (currentTerm=1); log=[]
20:46:08.122214 [1] election timer started (251ms), term=1
20:46:08.122214 [1] sending RequestVote to 0: {Term:1 CandidateId:1 LastLogInd
20:46:08.122214 [1] sending RequestVote to 2: {Term:1 CandidateId:1 LastLogInd
20:46:08.182571 [2] becomes Candidate (currentTerm=1); log=[]
20:46:08.182571 [2] election timer started (220ms), term=1
20:46:08.182892 [2] sending RequestVote to 0: {Term:1 CandidateId:2 LastLogIn
20:46:08.182892 [2] sending RequestVote to 1: {Term:1 CandidateId:2 LastLogIn
20:46:08.262460 [0] becomes Candidate (currentTerm=1); log=[]
20:46:08.262460 [0] sending RequestVote to 2: {Term:1 CandidateId:0 LastLogIn
20:46:08.262460 [0] sending RequestVote to 1: {Term:1 CandidateId:0 LastLogIn
20:46:08.262460 [0] election timer started (262ms), term=1
20:46:08.382722 [1] becomes Candidate (currentTerm=2); log=[]
```


20:46:08.382722 [1] election timer started (257ms), term=2
 20:46:08.382722 [1] sending RequestVote to 2: {Term:2 Candidateld:1 LastLogIn
 20:46:08.382722 [1] sending RequestVote to 0: {Term:2 Candidateld:1 LastLogIn
 20:46:08.403327 [2] becomes Candidate (currentTerm=2); log=[]
 20:46:08.403327 [2] election timer started (168ms), term=2
 20:46:08.403665 [2] sending RequestVote to 0: {Term:2 Candidateld:2 LastLogIn
 20:46:08.403665 [2] sending RequestVote to 1: {Term:2 Candidateld:2 LastLogIn
 20:46:08.512642 [TEST] Reconnect 0
 20:46:08.514791 [TEST] Reconnect 1
 20:46:08.516111 [TEST] Reconnect 2
 20:46:08.532922 [0] becomes Candidate (currentTerm=2); log=[]
 20:46:08.532922 [0] sending RequestVote to 2: {Term:2 Candidateld:0 LastLogIn
 20:46:08.532922 [0] sending RequestVote to 1: {Term:2 Candidateld:0 LastLogIn
 20:46:08.532922 [0] election timer started (267ms), term=2
 20:46:08.535822 [1] RequestVote: {Term:2 Candidateld:0 LastLogIndex:0 LastLo
 20:46:08.535822 [2] RequestVote: {Term:2 Candidateld:0 LastLogIndex:0 LastLo
 20:46:08.535822 [1] ... RequestVote reply: &{Term:2 VoteGranted:false}
 20:46:08.535822 [2] ... RequestVote reply: &{Term:2 VoteGranted:false}
 20:46:08.536485 [0] received RequestVoteReply {Term:2 VoteGranted:false}
 20:46:08.536485 [0] received RequestVoteReply {Term:2 VoteGranted:false}
 20:46:08.573964 [2] becomes Candidate (currentTerm=3); log=[]
 20:46:08.573964 [2] sending RequestVote to 0: {Term:3 Candidateld:2 LastLogIn
 20:46:08.573964 [2] election timer started (283ms), term=3
 20:46:08.573964 [2] sending RequestVote to 1: {Term:3 Candidateld:2 LastLogIn
 20:46:08.578307 [0] RequestVote: {Term:3 Candidateld:2 LastLogIndex:0 LastLo
 20:46:08.578307 [0] ... term out of date in RequestVote
 20:46:08.578307 [0] becomes Follower with term=3; log=[]
 20:46:08.578307 [0] ... RequestVote reply: &{Term:3 VoteGranted:true}
 20:46:08.578307 [0] election timer started (212ms), term=3
 20:46:08.578878 [2] received RequestVoteReply {Term:3 VoteGranted:true}
 20:46:08.578878 [1] RequestVote: {Term:3 Candidateld:2 LastLogIndex:0 LastLo
 20:46:08.578878 [2] wins election with 2 votes
 20:46:08.578878 [2] becomes Leader; term=3, log=[]
 20:46:08.578878 [1] ... term out of date in RequestVote
 20:46:08.578878 [1] becomes Follower with term=3; log=[]
 20:46:08.578878 [2] sending AppendEntries to 1: ni=0, args={Term:3 LeaderId:2

```

20:46:08.578878 [1] ... RequestVote reply: &{Term:3 VoteGranted:true}
20:46:08.578878 [2] sending AppendEntries to 0: ni=0, args={Term:3 LeaderId:2
20:46:08.578878 [1] election timer started (281ms), term=3
20:46:08.579404 [2] received RequestVoteReply {Term:3 VoteGranted:true}
20:46:08.579404 [2] while waiting for reply, state = Leader
20:46:08.582006 [1] AppendEntries: {Term:3 LeaderId:2 PrevLogIndex:0 PrevLo
20:46:08.582006 [1] AppendEntries reply: {Term:3 Success:true}
20:46:08.583218 [1] in election timer term changed from 2 to 3, bailing out
20:46:08.583218 [0] in election timer term changed from 2 to 3, bailing out
20:46:08.584254 [2] in election timer state=Leader, bailing out
20:46:08.584818 [0] AppendEntries: {Term:3 LeaderId:2 PrevLogIndex:0 PrevLo
20:46:08.584818 [0] AppendEntries reply: {Term:3 Success:true}
20:46:08.629445 [2] sending AppendEntries to 1: ni=0, args={Term:3 LeaderId:2
20:46:08.629445 [2] sending AppendEntries to 0: ni=0, args={Term:3 LeaderId:
20:46:08.632172 [0] AppendEntries: {Term:3 LeaderId:2 PrevLogIndex:0 PrevLo
20:46:08.632172 [0] AppendEntries reply: {Term:3 Success:true}
20:46:08.632774 [1] AppendEntries: {Term:3 LeaderId:2 PrevLogIndex:0 PrevLo
20:46:08.632774 [1] AppendEntries reply: {Term:3 Success:true}
20:46:08.666475 [0] becomes Dead
20:46:08.667076 [1] becomes Dead
20:46:08.667076 [2] becomes Dead
--- PASS: TestDisconnectAllThenRestore (0.71s)
PASS
20:46:08.668643 [0] in election timer state=Dead, bailing out
20:46:08.669155 [1] in election timer state=Dead, bailing out
ok      github.com/eliben/raft 2.173s

```

5. TestElectionLeaderDisconnectThenReconnect

- Terminal command:

```
go test -v -race -run TestElectionLeaderDisconnectThenReconnect |& tee ./log.tx
```

- Result:

```

=== RUN TestElectionLeaderDisconnectThenReconnect
20:50:08.901412 [0] listening at [::]:53536
20:50:08.902019 [1] listening at [::]:53537
20:50:08.902541 [2] listening at [::]:53538
20:50:08.906364 [2] election timer started (257ms), term=0
20:50:08.906364 [0] election timer started (248ms), term=0
20:50:08.906364 [1] election timer started (166ms), term=0
20:50:09.076920 [1] becomes Candidate (currentTerm=1); log=[]
20:50:09.077281 [1] election timer started (229ms), term=1
20:50:09.077281 [1] sending RequestVote to 0: {Term:1 CandidateId:1 LastLogInd
20:50:09.077281 [1] sending RequestVote to 2: {Term:1 CandidateId:1 LastLogInd
20:50:09.083586 [2] RequestVote: {Term:1 CandidateId:1 LastLogIndex:0 LastLo
20:50:09.083586 [2] ... term out of date in RequestVote
20:50:09.083586 [0] RequestVote: {Term:1 CandidateId:1 LastLogIndex:0 LastLo
20:50:09.083929 [0] ... term out of date in RequestVote
20:50:09.083929 [2] becomes Follower with term=1; log=[]
20:50:09.083929 [0] becomes Follower with term=1; log=[]
20:50:09.083929 [2] ... RequestVote reply: &{Term:1 VoteGranted:true}
20:50:09.084448 [0] ... RequestVote reply: &{Term:1 VoteGranted:true}
20:50:09.084448 [2] election timer started (229ms), term=1
20:50:09.084448 [0] election timer started (203ms), term=1
20:50:09.085634 [1] received RequestVoteReply {Term:1 VoteGranted:true}
20:50:09.086267 [1] wins election with 2 votes
20:50:09.086267 [1] becomes Leader; term=1, log=[]
20:50:09.086267 [1] received RequestVoteReply {Term:1 VoteGranted:true}
20:50:09.086267 [1] while waiting for reply, state = Leader
20:50:09.086267 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1
20:50:09.086267 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1
20:50:09.086821 [0] in election timer term changed from 0 to 1, bailing out
20:50:09.086821 [2] in election timer term changed from 0 to 1, bailing out
20:50:09.087382 [1] in election timer state=Leader, bailing out
20:50:09.093281 [2] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
20:50:09.093649 [2] AppendEntries reply: {Term:1 Success:true}
20:50:09.094166 [0] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
20:50:09.094166 [0] AppendEntries reply: {Term:1 Success:true}

```

20:50:09.136452 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 F
 20:50:09.136452 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 F
 20:50:09.138202 [0] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:09.138202 [0] AppendEntries reply: {Term:1 Success:true}
 20:50:09.138795 [2] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:09.138795 [2] AppendEntries reply: {Term:1 Success:true}
 20:50:09.186506 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 F
 20:50:09.186506 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 F
 20:50:09.188227 [0] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:09.188227 [0] AppendEntries reply: {Term:1 Success:true}
 20:50:09.190579 [2] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:09.190579 [2] AppendEntries reply: {Term:1 Success:true}
 20:50:09.207545 [TEST] Disconnect 1
 20:50:09.236486 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1
 20:50:09.236486 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1
 20:50:09.287088 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1
 20:50:09.287088 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1
 20:50:09.336581 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 F
 20:50:09.336581 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 F
 20:50:09.386887 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1
 20:50:09.386887 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1
 20:50:09.395090 [0] becomes Candidate (currentTerm=2); log=[]
 20:50:09.395090 [0] election timer started (175ms), term=2
 20:50:09.395090 [0] sending RequestVote to 1: {Term:2 Candidateld:0 LastLogI
 20:50:09.395090 [0] sending RequestVote to 2: {Term:2 Candidateld:0 LastLogI
 20:50:09.399349 [2] RequestVote: {Term:2 Candidateld:0 LastLogIndex:0 LastLc
 20:50:09.399349 [2] ... term out of date in RequestVote
 20:50:09.399349 [2] becomes Follower with term=2; log=[]
 20:50:09.399349 [2] ... RequestVote reply: &{Term:2 VoteGranted:true}
 20:50:09.399349 [2] election timer started (181ms), term=2
 20:50:09.399981 [0] received RequestVoteReply {Term:2 VoteGranted:true}
 20:50:09.399981 [0] wins election with 2 votes
 20:50:09.400521 [0] becomes Leader; term=2, log=[]
 20:50:09.400521 [0] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:0
 20:50:09.400521 [0] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:C
 20:50:09.402638 [2] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLo

20:50:09.402638 [2] AppendEntries reply: {Term:2 Success:true}
 20:50:09.404886 [2] in election timer term changed from 1 to 2, bailing out
 20:50:09.405440 [0] in election timer state=Leader, bailing out
 20:50:09.436704 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1
 20:50:09.436704 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1
 20:50:09.450702 [0] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:0
 20:50:09.450702 [0] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:0
 20:50:09.455811 [2] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLog
 20:50:09.455811 [2] AppendEntries reply: {Term:2 Success:true}
 20:50:09.486549 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1
 20:50:09.486549 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1
 20:50:09.501010 [0] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:0
 20:50:09.501010 [0] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:0
 20:50:09.503466 [2] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLo
 20:50:09.503466 [2] AppendEntries reply: {Term:2 Success:true}
 20:50:09.537093 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1
 20:50:09.537093 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1
 20:50:09.551334 [0] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:0
 20:50:09.551334 [0] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:0
 20:50:09.554804 [2] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLo
 20:50:09.554804 [2] AppendEntries reply: {Term:2 Success:true}
 20:50:09.558368 [TEST] Reconnect 1
 20:50:09.586814 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1
 20:50:09.586814 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1
 20:50:09.589160 [0] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:09.589160 [0] AppendEntries reply: {Term:2 Success:false}
 20:50:09.589160 [1] term out of date in heartbeat reply
 20:50:09.589160 [1] becomes Follower with term=2; log=[]
 20:50:09.589160 [1] election timer started (191ms), term=2
 20:50:09.591969 [2] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:09.591969 [2] AppendEntries reply: {Term:2 Success:false}
 20:50:09.592621 [1] term out of date in heartbeat reply
 20:50:09.592621 [1] becomes Follower with term=2; log=[]
 20:50:09.592621 [1] election timer started (244ms), term=2
 20:50:09.601228 [0] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:0
 20:50:09.601228 [0] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:0


```

20:50:09.603135 [2] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
20:50:09.603135 [2] AppendEntries reply: {Term:2 Success:true}
20:50:09.606692 [1] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
20:50:09.606692 [1] AppendEntries reply: {Term:2 Success:true}
20:50:09.650771 [0] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
20:50:09.650771 [0] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
20:50:09.652556 [2] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
20:50:09.652556 [2] AppendEntries reply: {Term:2 Success:true}
20:50:09.652556 [1] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
20:50:09.652556 [1] AppendEntries reply: {Term:2 Success:true}
20:50:09.701149 [0] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
20:50:09.701149 [0] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
20:50:09.703536 [2] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
20:50:09.703536 [1] AppendEntries: {Term:2 LeaderId:0 PrevLogIndex:0 PrevLogTerm:0}
20:50:09.703536 [2] AppendEntries reply: {Term:2 Success:true}
20:50:09.703953 [1] AppendEntries reply: {Term:2 Success:true}
20:50:09.712225 [0] becomes Dead
20:50:09.712225 [1] becomes Dead
20:50:09.712225 [2] becomes Dead
--- PASS: TestElectionLeaderDisconnectThenReconnect (0.81s)
20:50:09.712782 [1] in election timer state=Dead, bailing out
=== RUN TestElectionLeaderDisconnectThenReconnect5
20:50:09.717183 [0] listening at [::]:53549
20:50:09.717183 [1] listening at [::]:53550
20:50:09.717800 [2] listening at [::]:53551
20:50:09.718344 [3] listening at [::]:53552
20:50:09.718344 [4] listening at [::]:53553
20:50:09.719426 [1] in election timer state=Dead, bailing out
20:50:09.719426 [2] in election timer state=Dead, bailing out
20:50:09.729061 [0] election timer started (179ms), term=0
20:50:09.729061 [3] election timer started (270ms), term=0
20:50:09.729061 [1] election timer started (211ms), term=0
20:50:09.729061 [2] election timer started (197ms), term=0
20:50:09.729061 [4] election timer started (280ms), term=0
20:50:09.909718 [0] becomes Candidate (currentTerm=1); log=[]
20:50:09.910332 [0] sending RequestVote to 1: {Term:1 CandidateId:0 LastLogIndex:0}

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20:50:09.910332 [0] sending RequestVote to 3: {Term:1 Candidateld:0 LastLogIn
 20:50:09.910332 [0] sending RequestVote to 2: {Term:1 Candidateld:0 LastLogIn
 20:50:09.910332 [0] election timer started (278ms), term=1
 20:50:09.910332 [0] sending RequestVote to 4: {Term:1 Candidateld:0 LastLogIn
 20:50:09.914995 [4] RequestVote: {Term:1 Candidateld:0 LastLogIndex:0 LastLo
 20:50:09.914995 [4] ... term out of date in RequestVote
 20:50:09.914995 [4] becomes Follower with term=1; log=[]
 20:50:09.914995 [4] ... RequestVote reply: &{Term:1 VoteGranted:true}
 20:50:09.914995 [4] election timer started (201ms), term=1
 20:50:09.915805 [3] RequestVote: {Term:1 Candidateld:0 LastLogIndex:0 LastLo
 20:50:09.915805 [3] ... term out of date in RequestVote
 20:50:09.915805 [3] becomes Follower with term=1; log=[]
 20:50:09.915805 [3] ... RequestVote reply: &{Term:1 VoteGranted:true}
 20:50:09.915805 [3] election timer started (274ms), term=1
 20:50:09.916346 [0] received RequestVoteReply {Term:1 VoteGranted:true}
 20:50:09.916941 [2] RequestVote: {Term:1 Candidateld:0 LastLogIndex:0 LastLo
 20:50:09.916941 [0] received RequestVoteReply {Term:1 VoteGranted:true}
 20:50:09.916941 [2] ... term out of date in RequestVote
 20:50:09.916941 [0] wins election with 3 votes
 20:50:09.916941 [2] becomes Follower with term=1; log=[]
 20:50:09.916941 [0] becomes Leader; term=1, log=[]
 20:50:09.916941 [2] ... RequestVote reply: &{Term:1 VoteGranted:true}
 20:50:09.917480 [2] election timer started (240ms), term=1
 20:50:09.917480 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:50:09.917480 [0] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:0
 20:50:09.917480 [0] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:0
 20:50:09.917480 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:50:09.918615 [1] RequestVote: {Term:1 Candidateld:0 LastLogIndex:0 LastLog
 20:50:09.918615 [1] ... term out of date in RequestVote
 20:50:09.918615 [1] becomes Follower with term=1; log=[]
 20:50:09.918615 [0] received RequestVoteReply {Term:1 VoteGranted:true}
 20:50:09.918615 [1] ... RequestVote reply: &{Term:1 VoteGranted:true}
 20:50:09.919167 [0] while waiting for reply, state = Leader
 20:50:09.919167 [3] in election timer term changed from 0 to 1, bailing out
 20:50:09.919167 [1] in election timer term changed from 0 to 1, bailing out
 20:50:09.919167 [4] in election timer term changed from 0 to 1, bailing out

20:50:09.919167 [2] in election timer term changed from 0 to 1, bailing out
 20:50:09.919167 [1] election timer started (188ms), term=1
 20:50:09.919727 [0] received RequestVoteReply {Term:1 VoteGranted:true}
 20:50:09.919727 [0] while waiting for reply, state = Leader
 20:50:09.921426 [0] in election timer state=Leader, bailing out
 20:50:09.921426 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:50:09.921426 [1] AppendEntries reply: {Term:1 Success:true}
 20:50:09.923602 [4] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLo
 20:50:09.923602 [4] AppendEntries reply: {Term:1 Success:true}
 20:50:09.924412 [3] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:50:09.924412 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:50:09.924412 [3] AppendEntries reply: {Term:1 Success:true}
 20:50:09.924412 [2] AppendEntries reply: {Term:1 Success:true}
 20:50:09.967022 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:50:09.967022 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:50:09.967022 [0] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:0
 20:50:09.967022 [0] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:0
 20:50:09.968342 [4] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLo
 20:50:09.968342 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:50:09.968342 [4] AppendEntries reply: {Term:1 Success:true}
 20:50:09.968342 [1] AppendEntries reply: {Term:1 Success:true}
 20:50:09.970050 [3] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLo
 20:50:09.970050 [3] AppendEntries reply: {Term:1 Success:true}
 20:50:09.971829 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:50:09.971829 [2] AppendEntries reply: {Term:1 Success:true}
 20:50:10.017386 [0] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:0
 20:50:10.017386 [0] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:0
 20:50:10.017386 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:50:10.017386 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:50:10.024376 [4] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:50:10.024376 [4] AppendEntries reply: {Term:1 Success:true}
 20:50:10.024376 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:50:10.024885 [2] AppendEntries reply: {Term:1 Success:true}
 20:50:10.024885 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:50:10.025475 [1] AppendEntries reply: {Term:1 Success:true}
 20:50:10.025475 [3] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog

20:50:10.025475 [3] AppendEntries reply: {Term:1 Success:true}
 20:50:10.031907 [TEST] Disconnect 0
 20:50:10.067283 [0] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:0
 20:50:10.067283 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:50:10.067283 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:50:10.067283 [0] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:0
 20:50:10.117421 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0 P
 20:50:10.117421 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 P
 20:50:10.117421 [0] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:0 P
 20:50:10.117421 [0] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:0 P
 20:50:10.167031 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0 F
 20:50:10.167031 [0] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:0 F
 20:50:10.167031 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 P
 20:50:10.167031 [0] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:0 F
 20:50:10.217546 [0] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:0
 20:50:10.217546 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:50:10.217546 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 I
 20:50:10.217546 [0] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:0
 20:50:10.220494 [1] becomes Candidate (currentTerm=2); log=[]
 20:50:10.220494 [1] sending RequestVote to 2: {Term:2 Candidateld:1 LastLogIn
 20:50:10.220494 [1] sending RequestVote to 0: {Term:2 Candidateld:1 LastLogIn
 20:50:10.220494 [1] sending RequestVote to 3: {Term:2 Candidateld:1 LastLogIn
 20:50:10.220494 [1] sending RequestVote to 4: {Term:2 Candidateld:1 LastLogIn
 20:50:10.220494 [1] election timer started (284ms), term=2
 20:50:10.222908 [3] RequestVote: {Term:2 Candidateld:1 LastLogIndex:0 LastLo
 20:50:10.222908 [3] ... term out of date in RequestVote
 20:50:10.222908 [3] becomes Follower with term=2; log=[]
 20:50:10.222908 [3] ... RequestVote reply: &{Term:2 VoteGranted:true}
 20:50:10.222908 [3] election timer started (194ms), term=2
 20:50:10.223480 [4] RequestVote: {Term:2 Candidateld:1 LastLogIndex:0 LastLo
 20:50:10.223480 [4] ... term out of date in RequestVote
 20:50:10.223480 [4] becomes Follower with term=2; log=[]
 20:50:10.223480 [4] ... RequestVote reply: &{Term:2 VoteGranted:true}
 20:50:10.223782 [1] received RequestVoteReply {Term:2 VoteGranted:true}
 20:50:10.223782 [4] election timer started (204ms), term=2
 20:50:10.224420 [1] received RequestVoteReply {Term:2 VoteGranted:true}

20:50:10.224420 [1] wins election with 3 votes
 20:50:10.224420 [1] becomes Leader; term=2, log=[]
 20:50:10.224420 [1] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:1
 20:50:10.224420 [1] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:1
 20:50:10.224420 [1] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:1
 20:50:10.224420 [1] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:1
 20:50:10.225476 [4] in election timer term changed from 1 to 2, bailing out
 20:50:10.225476 [2] RequestVote: {Term:2 Candidateld:1 LastLogIndex:0 LastLog
 20:50:10.225476 [2] ... term out of date in RequestVote
 20:50:10.225476 [2] becomes Follower with term=2; log=[]
 20:50:10.225476 [2] ... RequestVote reply: {Term:2 VoteGranted:true}
 20:50:10.225476 [2] election timer started (209ms), term=2
 20:50:10.226043 [3] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.226043 [3] AppendEntries reply: {Term:2 Success:true}
 20:50:10.226043 [1] received RequestVoteReply {Term:2 VoteGranted:true}
 20:50:10.226043 [1] while waiting for reply, state = Leader
 20:50:10.226595 [3] in election timer term changed from 1 to 2, bailing out
 20:50:10.227121 [2] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.227121 [2] AppendEntries reply: {Term:2 Success:true}
 20:50:10.227657 [2] in election timer term changed from 1 to 2, bailing out
 20:50:10.230787 [1] in election timer state=Leader, bailing out
 20:50:10.230787 [4] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.230787 [4] AppendEntries reply: {Term:2 Success:true}
 20:50:10.267570 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
 20:50:10.267570 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
 20:50:10.267570 [0] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:0
 20:50:10.267570 [0] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:0
 20:50:10.274553 [1] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:1
 20:50:10.274553 [1] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:1
 20:50:10.274553 [1] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:1
 20:50:10.274553 [1] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:1
 20:50:10.276364 [3] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.276364 [3] AppendEntries reply: {Term:2 Success:true}
 20:50:10.278079 [2] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.278079 [2] AppendEntries reply: {Term:2 Success:true}
 20:50:10.279453 [4] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog

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20:50:10.279453 [4] AppendEntries reply: {Term:2 Success:true}
20:50:10.317100 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0 F
20:50:10.317100 [0] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:0 I
20:50:10.317100 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0 I
20:50:10.317100 [0] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:0 I
20:50:10.325053 [1] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:1
20:50:10.325053 [1] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:1
20:50:10.325053 [1] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:1
20:50:10.325053 [1] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:1
20:50:10.329122 [4] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
20:50:10.329122 [4] AppendEntries reply: {Term:2 Success:true}
20:50:10.329648 [3] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
20:50:10.329648 [3] AppendEntries reply: {Term:2 Success:true}
20:50:10.331216 [2] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
20:50:10.331216 [2] AppendEntries reply: {Term:2 Success:true}
20:50:10.333968 [TEST] Reconnect 0
20:50:10.367600 [0] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:0
20:50:10.367600 [0] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:0
20:50:10.367600 [0] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:0
20:50:10.367600 [0] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:0
20:50:10.373156 [3] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
20:50:10.373156 [3] AppendEntries reply: {Term:2 Success:false}
20:50:10.373673 [0] term out of date in heartbeat reply
20:50:10.373673 [4] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
20:50:10.373673 [0] becomes Follower with term=2; log=[]
20:50:10.373673 [4] AppendEntries reply: {Term:2 Success:false}
20:50:10.373673 [1] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
20:50:10.373673 [0] election timer started (195ms), term=2
20:50:10.373673 [1] AppendEntries reply: {Term:2 Success:false}
20:50:10.374226 [0] term out of date in heartbeat reply
20:50:10.374226 [0] becomes Follower with term=2; log=[]
20:50:10.374226 [0] term out of date in heartbeat reply
20:50:10.374226 [0] becomes Follower with term=2; log=[]
20:50:10.374226 [0] election timer started (155ms), term=2
20:50:10.374226 [0] election timer started (219ms), term=2
20:50:10.374744 [1] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:1 I

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20:50:10.374744 [1] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:1
 20:50:10.374744 [1] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:1
 20:50:10.374744 [1] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:1
 20:50:10.374744 [2] AppendEntries: {Term:1 LeaderId:0 PrevLogIndex:0 PrevLog
 20:50:10.374744 [2] AppendEntries reply: {Term:2 Success:false}
 20:50:10.375283 [0] term out of date in heartbeat reply
 20:50:10.375283 [0] becomes Follower with term=2; log=[]
 20:50:10.375283 [0] election timer started (154ms), term=2
 20:50:10.375991 [4] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.375991 [4] AppendEntries reply: {Term:2 Success:true}
 20:50:10.377048 [3] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.377048 [3] AppendEntries reply: {Term:2 Success:true}
 20:50:10.378081 [2] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.378081 [2] AppendEntries reply: {Term:2 Success:true}
 20:50:10.378643 [0] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.378643 [0] AppendEntries reply: {Term:2 Success:true}
 20:50:10.425017 [1] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:1
 20:50:10.425017 [1] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:1
 20:50:10.425017 [1] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:1
 20:50:10.425017 [1] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:1
 20:50:10.427348 [2] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.427348 [0] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.427348 [2] AppendEntries reply: {Term:2 Success:true}
 20:50:10.427348 [0] AppendEntries reply: {Term:2 Success:true}
 20:50:10.429541 [3] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.429541 [3] AppendEntries reply: {Term:2 Success:true}
 20:50:10.430372 [4] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.430372 [4] AppendEntries reply: {Term:2 Success:true}
 20:50:10.475018 [1] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:1
 20:50:10.475018 [1] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:1
 20:50:10.475018 [1] sending AppendEntries to 2: ni=0, args={Term:2 LeaderId:1
 20:50:10.475018 [1] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:1
 20:50:10.477355 [0] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.477355 [0] AppendEntries reply: {Term:2 Success:true}
 20:50:10.478492 [3] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
 20:50:10.478492 [3] AppendEntries reply: {Term:2 Success:true}


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20:50:10.480652 [4] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
20:50:10.480652 [4] AppendEntries reply: {Term:2 Success:true}
20:50:10.481208 [2] AppendEntries: {Term:2 LeaderId:1 PrevLogIndex:0 PrevLog
20:50:10.481208 [2] AppendEntries reply: {Term:2 Success:true}
20:50:10.492527 [0] becomes Dead
20:50:10.492527 [1] becomes Dead
20:50:10.493055 [2] becomes Dead
20:50:10.493055 [3] becomes Dead
20:50:10.493055 [4] becomes Dead
20:50:10.494106 [0] in election timer state=Dead, bailing out
20:50:10.494106 [4] in election timer state=Dead, bailing out
20:50:10.494741 [0] in election timer state=Dead, bailing out
20:50:10.494741 [0] in election timer state=Dead, bailing out
20:50:10.495330 [0] in election timer state=Dead, bailing out
20:50:10.495855 [2] in election timer state=Dead, bailing out
20:50:10.503444 [3] in election timer state=Dead, bailing out
--- PASS: TestElectionLeaderDisconnectThenReconnect5 (0.83s)
PASS
ok      github.com/eliben/raft 3.316s

```

6. TestElectionLeaderDisconnectThenReconnect5

- Terminal command:

```
go test -v -race -run TestElectionLeaderDisconnectThenReconnect5 |& tee ./log.t
```

- Result:

```

=== RUN   TestElectionLeaderDisconnectThenReconnect5
20:53:20.835917 [0] listening at [::]:53737
20:53:20.837074 [1] listening at [::]:53738
20:53:20.837074 [2] listening at [::]:53739
20:53:20.837074 [3] listening at [::]:53740
20:53:20.838126 [4] listening at [::]:53741

```

20:53:20.850718 [0] election timer started (218ms), term=0
 20:53:20.850718 [3] election timer started (191ms), term=0
 20:53:20.850718 [4] election timer started (299ms), term=0
 20:53:20.850718 [1] election timer started (179ms), term=0
 20:53:20.850718 [2] election timer started (204ms), term=0
 20:53:21.030818 [1] becomes Candidate (currentTerm=1); log=[]
 20:53:21.030818 [1] sending RequestVote to 0: {Term:1 CandidateId:1 LastLogInd
 20:53:21.030818 [1] election timer started (151ms), term=1
 20:53:21.030818 [1] sending RequestVote to 3: {Term:1 CandidateId:1 LastLogInd
 20:53:21.030818 [1] sending RequestVote to 4: {Term:1 CandidateId:1 LastLogInd
 20:53:21.030818 [1] sending RequestVote to 2: {Term:1 CandidateId:1 LastLogInd
 20:53:21.034647 [3] RequestVote: {Term:1 CandidateId:1 LastLogIndex:0 LastLog
 20:53:21.034647 [3] ... term out of date in RequestVote
 20:53:21.034647 [3] becomes Follower with term=1; log=[]
 20:53:21.034647 [4] RequestVote: {Term:1 CandidateId:1 LastLogIndex:0 LastLog
 20:53:21.034647 [3] ... RequestVote reply: &{Term:1 VoteGranted:true}
 20:53:21.034647 [4] ... term out of date in RequestVote
 20:53:21.034647 [4] becomes Follower with term=1; log=[]
 20:53:21.034647 [3] election timer started (283ms), term=1
 20:53:21.034647 [4] ... RequestVote reply: &{Term:1 VoteGranted:true}
 20:53:21.034647 [4] election timer started (235ms), term=1
 20:53:21.035310 [1] received RequestVoteReply {Term:1 VoteGranted:true}
 20:53:21.035310 [0] RequestVote: {Term:1 CandidateId:1 LastLogIndex:0 LastLog
 20:53:21.035310 [2] RequestVote: {Term:1 CandidateId:1 LastLogIndex:0 LastLog
 20:53:21.035310 [2] ... term out of date in RequestVote
 20:53:21.035310 [1] received RequestVoteReply {Term:1 VoteGranted:true}
 20:53:21.035310 [2] becomes Follower with term=1; log=[]
 20:53:21.035310 [0] ... term out of date in RequestVote
 20:53:21.035310 [1] wins election with 3 votes
 20:53:21.035310 [2] ... RequestVote reply: &{Term:1 VoteGranted:true}
 20:53:21.035310 [1] becomes Leader; term=1, log=[]
 20:53:21.035310 [0] becomes Follower with term=1; log=[]
 20:53:21.035310 [2] election timer started (183ms), term=1
 20:53:21.035310 [0] ... RequestVote reply: &{Term:1 VoteGranted:true}
 20:53:21.035310 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.035310 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 F

20:53:21.035310 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.035310 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.035824 [0] election timer started (260ms), term=1
 20:53:21.035824 [1] received RequestVoteReply {Term:1 VoteGranted:true}
 20:53:21.035824 [1] while waiting for reply, state = Leader
 20:53:21.035824 [1] received RequestVoteReply {Term:1 VoteGranted:true}
 20:53:21.036406 [1] while waiting for reply, state = Leader
 20:53:21.039959 [3] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:53:21.039959 [0] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:53:21.039959 [3] AppendEntries reply: {Term:1 Success:true}
 20:53:21.039959 [0] AppendEntries reply: {Term:1 Success:true}
 20:53:21.040635 [4] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:53:21.040635 [4] AppendEntries reply: {Term:1 Success:true}
 20:53:21.041152 [1] in election timer state=Leader, bailing out
 20:53:21.041152 [3] in election timer term changed from 0 to 1, bailing out
 20:53:21.041152 [2] in election timer term changed from 0 to 1, bailing out
 20:53:21.041152 [4] in election timer term changed from 0 to 1, bailing out
 20:53:21.041152 [0] in election timer term changed from 0 to 1, bailing out
 20:53:21.041696 [2] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:53:21.041696 [2] AppendEntries reply: {Term:1 Success:true}
 20:53:21.085607 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.085607 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.085607 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.085607 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.086723 [3] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:53:21.086723 [3] AppendEntries reply: {Term:1 Success:true}
 20:53:21.087766 [4] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:53:21.087766 [4] AppendEntries reply: {Term:1 Success:true}
 20:53:21.088814 [2] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:53:21.088814 [2] AppendEntries reply: {Term:1 Success:true}
 20:53:21.089855 [0] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLog
 20:53:21.089855 [0] AppendEntries reply: {Term:1 Success:true}
 20:53:21.135929 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.135929 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.135929 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.135929 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 F

20:53:21.138673 [2] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLogT
 20:53:21.138673 [2] AppendEntries reply: {Term:1 Success:true}
 20:53:21.139310 [0] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLogT
 20:53:21.139310 [4] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLogT
 20:53:21.139310 [0] AppendEntries reply: {Term:1 Success:true}
 20:53:21.139310 [4] AppendEntries reply: {Term:1 Success:true}
 20:53:21.141360 [3] AppendEntries: {Term:1 LeaderId:1 PrevLogIndex:0 PrevLogT
 20:53:21.141360 [3] AppendEntries reply: {Term:1 Success:true}
 20:53:21.151385 [TEST] Disconnect 1
 20:53:21.186022 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.186022 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.186022 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.186022 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1 F
 20:53:21.235350 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.235350 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.235350 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.235350 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.285595 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.285595 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.285595 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.285595 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.325809 [2] becomes Candidate (currentTerm=2); log=[]
 20:53:21.325809 [2] sending RequestVote to 4: {Term:2 Candidateld:2 LastLogIn
 20:53:21.325809 [2] sending RequestVote to 3: {Term:2 Candidateld:2 LastLogIn
 20:53:21.325809 [2] sending RequestVote to 1: {Term:2 Candidateld:2 LastLogIn
 20:53:21.325809 [2] sending RequestVote to 0: {Term:2 Candidateld:2 LastLogIn
 20:53:21.325809 [2] election timer started (155ms), term=2
 20:53:21.330010 [0] RequestVote: {Term:2 Candidateld:2 LastLogIndex:0 LastLo
 20:53:21.330010 [3] RequestVote: {Term:2 Candidateld:2 LastLogIndex:0 LastLo
 20:53:21.330010 [0] ... term out of date in RequestVote
 20:53:21.330010 [3] ... term out of date in RequestVote
 20:53:21.330010 [0] becomes Follower with term=2; log=[]
 20:53:21.330010 [3] becomes Follower with term=2; log=[]
 20:53:21.330010 [0] ... RequestVote reply: &{Term:2 VoteGranted:true}
 20:53:21.330010 [3] ... RequestVote reply: &{Term:2 VoteGranted:true}
 20:53:21.330010 [3] election timer started (191ms), term=2

20:53:21.330010 [0] election timer started (231ms), term=2
 20:53:21.330684 [2] received RequestVoteReply {Term:2 VoteGranted:true}
 20:53:21.330684 [2] received RequestVoteReply {Term:2 VoteGranted:true}
 20:53:21.330684 [2] wins election with 3 votes
 20:53:21.330684 [2] becomes Leader; term=2, log=[]
 20:53:21.330684 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
 20:53:21.330684 [2] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:2
 20:53:21.330684 [2] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:2
 20:53:21.330684 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2
 20:53:21.331742 [4] RequestVote: {Term:2 CandidateId:2 LastLogIndex:0 LastLog
 20:53:21.331742 [4] ... term out of date in RequestVote
 20:53:21.331742 [4] becomes Follower with term=2; log=[]
 20:53:21.331742 [4] ... RequestVote reply: &{Term:2 VoteGranted:true}
 20:53:21.331742 [4] election timer started (299ms), term=2
 20:53:21.332258 [2] received RequestVoteReply {Term:2 VoteGranted:true}
 20:53:21.332258 [2] while waiting for reply, state = Leader
 20:53:21.332258 [4] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
 20:53:21.332258 [4] AppendEntries reply: {Term:2 Success:true}
 20:53:21.333301 [3] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
 20:53:21.333301 [3] AppendEntries reply: {Term:2 Success:true}
 20:53:21.334919 [3] in election timer term changed from 1 to 2, bailing out
 20:53:21.334919 [4] in election timer term changed from 1 to 2, bailing out
 20:53:21.335565 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1
 20:53:21.335565 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1
 20:53:21.335565 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1
 20:53:21.335565 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1
 20:53:21.336123 [0] in election timer term changed from 1 to 2, bailing out
 20:53:21.336123 [2] in election timer state=Leader, bailing out
 20:53:21.336677 [0] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
 20:53:21.336677 [0] AppendEntries reply: {Term:2 Success:true}
 20:53:21.381316 [2] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:2
 20:53:21.381316 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2
 20:53:21.381316 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
 20:53:21.381316 [2] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:2
 20:53:21.382571 [0] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
 20:53:21.382571 [0] AppendEntries reply: {Term:2 Success:true}

20:53:21.384691 [3] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLogIndex:
 20:53:21.384691 [3] AppendEntries reply: {Term:2 Success:true}
 20:53:21.385832 [4] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLogIndex:
 20:53:21.385832 [4] AppendEntries reply: {Term:2 Success:true}
 20:53:21.385832 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.385832 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.385832 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.385832 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.431364 [2] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:2
 20:53:21.431364 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2
 20:53:21.431364 [2] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:2
 20:53:21.431364 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
 20:53:21.432557 [4] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLogIndex:
 20:53:21.432557 [4] AppendEntries reply: {Term:2 Success:true}
 20:53:21.432557 [3] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLogIndex:
 20:53:21.432557 [3] AppendEntries reply: {Term:2 Success:true}
 20:53:21.435680 [1] sending AppendEntries to 4: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.435680 [1] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.435680 [1] sending AppendEntries to 2: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.435680 [1] sending AppendEntries to 3: ni=0, args={Term:1 LeaderId:1 I
 20:53:21.436812 [0] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLogIndex:
 20:53:21.436812 [0] AppendEntries reply: {Term:2 Success:true}
 20:53:21.453781 [TEST] Reconnect 1
 20:53:21.481129 [2] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:2
 20:53:21.481129 [2] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:2
 20:53:21.481129 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2 I
 20:53:21.481129 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
 20:53:21.482425 [0] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLogIndex:
 20:53:21.482425 [0] AppendEntries reply: {Term:2 Success:true}
 20:53:21.483474 [1] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLogIndex:
 20:53:21.483474 [4] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLogIndex:
 20:53:21.483474 [1] ... term out of date in AppendEntries
 20:53:21.483474 [4] AppendEntries reply: {Term:2 Success:true}
 20:53:21.483474 [1] becomes Follower with term=2; log=[]
 20:53:21.483474 [1] AppendEntries reply: {Term:2 Success:true}
 20:53:21.483474 [1] election timer started (181ms), term=2

```

20:53:21.485586 [3] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:53:21.485586 [3] AppendEntries reply: {Term:2 Success:true}
20:53:21.531508 [2] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:2
20:53:21.531508 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2
20:53:21.531508 [2] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:2
20:53:21.531508 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
20:53:21.532739 [3] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:53:21.532739 [3] AppendEntries reply: {Term:2 Success:true}
20:53:21.534346 [4] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:53:21.534346 [4] AppendEntries reply: {Term:2 Success:true}
20:53:21.535980 [1] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:53:21.535980 [1] AppendEntries reply: {Term:2 Success:true}
20:53:21.537071 [0] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:53:21.537071 [0] AppendEntries reply: {Term:2 Success:true}
20:53:21.581149 [2] sending AppendEntries to 0: ni=0, args={Term:2 LeaderId:2
20:53:21.581149 [2] sending AppendEntries to 3: ni=0, args={Term:2 LeaderId:2
20:53:21.581149 [2] sending AppendEntries to 4: ni=0, args={Term:2 LeaderId:2
20:53:21.581149 [2] sending AppendEntries to 1: ni=0, args={Term:2 LeaderId:2
20:53:21.582378 [1] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:53:21.582378 [0] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:53:21.582378 [1] AppendEntries reply: {Term:2 Success:true}
20:53:21.582378 [0] AppendEntries reply: {Term:2 Success:true}
20:53:21.586530 [3] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:53:21.586530 [4] AppendEntries: {Term:2 LeaderId:2 PrevLogIndex:0 PrevLog
20:53:21.586530 [3] AppendEntries reply: {Term:2 Success:true}
20:53:21.586530 [4] AppendEntries reply: {Term:2 Success:true}
20:53:21.610404 [0] becomes Dead
20:53:21.610404 [1] becomes Dead
20:53:21.610923 [2] becomes Dead
20:53:21.610923 [3] becomes Dead
20:53:21.610923 [4] becomes Dead
20:53:21.612012 [4] in election timer state=Dead, bailing out
20:53:21.613581 [1] in election timer state=Dead, bailing out
20:53:21.620169 [3] in election timer state=Dead, bailing out
20:53:21.620169 [0] in election timer state=Dead, bailing out
--- PASS: TestElectionLeaderDisconnectThenReconnect5 (0.83s)

```

PASS

ok github.com/eliben/raft 2.253s

7. TestElectionFollowerComesBack

- Terminal command:

```
go test -v -race -run TestElectionFollowerComesBack |& tee ./log.txt
```

- Result:

```
=== RUN TestElectionFollowerComesBack
20:59:49.235174 [0] listening at [::]:54108
20:59:49.236347 [1] listening at [::]:54110
20:59:49.237689 [2] listening at [::]:54111
20:59:49.242697 [0] election timer started (249ms), term=0
20:59:49.242697 [2] election timer started (189ms), term=0
20:59:49.242697 [1] election timer started (228ms), term=0
20:59:49.432950 [2] becomes Candidate (currentTerm=1); log=[]
20:59:49.432950 [2] sending RequestVote to 0: {Term:1 CandidateId:2 LastLogIn
20:59:49.432950 [2] sending RequestVote to 1: {Term:1 CandidateId:2 LastLogIn
20:59:49.432950 [2] election timer started (164ms), term=1
20:59:49.436317 [0] RequestVote: {Term:1 CandidateId:2 LastLogIndex:0 LastLo
20:59:49.436317 [0] ... term out of date in RequestVote
20:59:49.436317 [0] becomes Follower with term=1; log=[]
20:59:49.436317 [0] ... RequestVote reply: &{Term:1 VoteGranted:true}
20:59:49.436317 [0] election timer started (174ms), term=1
20:59:49.437432 [1] RequestVote: {Term:1 CandidateId:2 LastLogIndex:0 LastLo
20:59:49.437432 [1] ... term out of date in RequestVote
20:59:49.437432 [1] becomes Follower with term=1; log=[]
20:59:49.437432 [1] ... RequestVote reply: &{Term:1 VoteGranted:true}
20:59:49.437432 [1] election timer started (228ms), term=1
20:59:49.437432 [2] received RequestVoteReply {Term:1 VoteGranted:true}
20:59:49.438000 [2] wins election with 2 votes
```

20:59:49.438000 [2] becomes Leader; term=1, log=[]
 20:59:49.438000 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:49.438000 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:49.438000 [2] received RequestVoteReply {Term:1 VoteGranted:true}
 20:59:49.438000 [2] while waiting for reply, state = Leader
 20:59:49.441300 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:49.441300 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:49.442971 [0] in election timer term changed from 0 to 1, bailing out
 20:59:49.442971 [1] in election timer term changed from 0 to 1, bailing out
 20:59:49.442971 [2] in election timer state=Leader, bailing out
 20:59:49.444062 [0] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLo
 20:59:49.444062 [0] AppendEntries reply: {Term:1 Success:true}
 20:59:49.488225 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:49.488225 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:49.492371 [0] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:49.492371 [0] AppendEntries reply: {Term:1 Success:true}
 20:59:49.493003 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:49.493003 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:49.538517 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:49.538517 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:49.540338 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:49.540338 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:49.543539 [TEST] Disconnect 0
 20:59:49.543539 [0] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLo
 20:59:49.543539 [0] AppendEntries reply: {Term:1 Success:true}
 20:59:49.588561 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:49.588561 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:49.594467 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:49.594467 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:49.638572 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:49.638572 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:49.642276 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:49.642276 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:49.688852 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:49.688852 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:49.690556 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog

20:59:49.690556 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:49.726704 [0] becomes Candidate (currentTerm=2); log=[]
 20:59:49.726704 [0] election timer started (210ms), term=2
 20:59:49.726704 [0] sending RequestVote to 1: {Term:2 Candidateld:0 LastLogIn
 20:59:49.726704 [0] sending RequestVote to 2: {Term:2 Candidateld:0 LastLogIn
 20:59:49.738595 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:49.738595 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:49.740437 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:49.740437 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:49.788671 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:49.788671 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:49.793430 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:49.793430 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:49.838039 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:49.838039 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:49.842000 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:49.842000 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:49.888429 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:49.888429 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:49.891296 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:49.891296 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:49.936954 [0] becomes Candidate (currentTerm=3); log=[]
 20:59:49.936954 [0] sending RequestVote to 1: {Term:3 Candidateld:0 LastLogIn
 20:59:49.936954 [0] sending RequestVote to 2: {Term:3 Candidateld:0 LastLogIn
 20:59:49.936954 [0] election timer started (239ms), term=3
 20:59:49.938077 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:49.938077 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:49.942955 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:49.942955 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:49.988638 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:49.988638 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:49.991439 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:49.991439 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:50.038273 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:50.038273 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:50.044258 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog

20:59:50.044258 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:50.088581 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:50.088581 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:50.092314 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:50.092314 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:50.138911 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2 P
 20:59:50.138911 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2 F
 20:59:50.141942 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:50.141942 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:50.177515 [0] becomes Candidate (currentTerm=4); log=[]
 20:59:50.177515 [0] sending RequestVote to 1: {Term:4 Candidateld:0 LastLogInc
 20:59:50.177863 [0] sending RequestVote to 2: {Term:4 Candidateld:0 LastLogIn
 20:59:50.177863 [0] election timer started (282ms), term=4
 20:59:50.188371 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2 I
 20:59:50.188371 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2 F
 20:59:50.191430 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:50.191430 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:50.195081 [TEST] Reconnect 0
 20:59:50.238031 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:59:50.238031 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:59:50.240482 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:59:50.240482 [1] AppendEntries reply: {Term:1 Success:true}
 20:59:50.243668 [0] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLo
 20:59:50.243668 [0] AppendEntries reply: {Term:4 Success:false}
 20:59:50.244658 [2] term out of date in heartbeat reply
 20:59:50.244658 [2] becomes Follower with term=4; log=[]
 20:59:50.244658 [2] election timer started (150ms), term=4
 20:59:50.394867 [2] becomes Candidate (currentTerm=5); log=[]
 20:59:50.394867 [2] sending RequestVote to 0: {Term:5 Candidateld:2 LastLogIn
 20:59:50.394867 [2] election timer started (164ms), term=5
 20:59:50.394867 [2] sending RequestVote to 1: {Term:5 Candidateld:2 LastLogIn
 20:59:50.396563 [1] RequestVote: {Term:5 Candidateld:2 LastLogIndex:0 LastLo
 20:59:50.396563 [0] RequestVote: {Term:5 Candidateld:2 LastLogIndex:0 LastLo
 20:59:50.396563 [1] ... term out of date in RequestVote
 20:59:50.396563 [0] ... term out of date in RequestVote
 20:59:50.396563 [1] becomes Follower with term=5; log=[]

20:59:50.396563 [0] becomes Follower with term=5; log=[]
20:59:50.396563 [1] ... RequestVote reply: &{Term:5 VoteGranted:true}
20:59:50.396563 [0] ... RequestVote reply: &{Term:5 VoteGranted:true}
20:59:50.396563 [1] election timer started (215ms), term=5
20:59:50.396563 [0] election timer started (293ms), term=5
20:59:50.396563 [2] received RequestVoteReply {Term:5 VoteGranted:true}
20:59:50.396563 [2] wins election with 2 votes
20:59:50.396563 [2] becomes Leader; term=5, log=[]
20:59:50.397183 [2] received RequestVoteReply {Term:5 VoteGranted:true}
20:59:50.397183 [2] while waiting for reply, state = Leader
20:59:50.397183 [2] sending AppendEntries to 0: ni=0, args={Term:5 LeaderId:2
20:59:50.397183 [2] sending AppendEntries to 1: ni=0, args={Term:5 LeaderId:2
20:59:50.397699 [1] in election timer term changed from 1 to 5, bailing out
20:59:50.398217 [0] in election timer term changed from 4 to 5, bailing out
20:59:50.399274 [0] AppendEntries: {Term:5 LeaderId:2 PrevLogIndex:0 PrevLo
20:59:50.399274 [0] AppendEntries reply: {Term:5 Success:true}
20:59:50.400418 [1] AppendEntries: {Term:5 LeaderId:2 PrevLogIndex:0 PrevLo
20:59:50.400418 [1] AppendEntries reply: {Term:5 Success:true}
20:59:50.404964 [2] in election timer state=Leader, bailing out
20:59:50.446878 [2] sending AppendEntries to 1: ni=0, args={Term:5 LeaderId:2
20:59:50.446878 [2] sending AppendEntries to 0: ni=0, args={Term:5 LeaderId:2
20:59:50.451534 [0] AppendEntries: {Term:5 LeaderId:2 PrevLogIndex:0 PrevLo
20:59:50.451534 [0] AppendEntries reply: {Term:5 Success:true}
20:59:50.451534 [1] AppendEntries: {Term:5 LeaderId:2 PrevLogIndex:0 PrevLo
20:59:50.451534 [1] AppendEntries reply: {Term:5 Success:true}
20:59:50.496709 [2] sending AppendEntries to 0: ni=0, args={Term:5 LeaderId:2
20:59:50.496709 [2] sending AppendEntries to 1: ni=0, args={Term:5 LeaderId:2
20:59:50.499345 [0] AppendEntries: {Term:5 LeaderId:2 PrevLogIndex:0 PrevLo
20:59:50.499345 [0] AppendEntries reply: {Term:5 Success:true}
20:59:50.501535 [1] AppendEntries: {Term:5 LeaderId:2 PrevLogIndex:0 PrevLo
20:59:50.501535 [1] AppendEntries reply: {Term:5 Success:true}
20:59:50.503035 [0] becomes Dead
20:59:50.503035 [1] becomes Dead
20:59:50.503603 [2] becomes Dead
20:59:50.507188 [1] in election timer state=Dead, bailing out
20:59:50.507188 [0] in election timer state=Dead, bailing out

```
--- PASS: TestElectionFollowerComesBack (1.32s)
PASS
ok  github.com/eliben/raft 2.730s
```

8. TestElectionDisconnectLoop

- Terminal command:

```
go test -v -race -run TestElectionDisconnectLoop |& tee ./log.txt
```

- Result:

```
=== RUN TestElectionDisconnectLoop
20:58:43.119856 [0] listening at [::]:54025
20:58:43.120953 [1] listening at [::]:54026
20:58:43.121521 [2] listening at [::]:54027
20:58:43.125850 [1] election timer started (198ms), term=0
20:58:43.125850 [0] election timer started (256ms), term=0
20:58:43.125850 [2] election timer started (165ms), term=0
20:58:43.296913 [2] becomes Candidate (currentTerm=1); log=[]
20:58:43.297221 [2] election timer started (187ms), term=1
20:58:43.297221 [2] sending RequestVote to 0: {Term:1 CandidateId:2 LastLogIndex:0 LastLogTerm:0}
20:58:43.297221 [2] sending RequestVote to 1: {Term:1 CandidateId:2 LastLogIndex:0 LastLogTerm:0}
20:58:43.303003 [0] RequestVote: {Term:1 CandidateId:2 LastLogIndex:0 LastLogTerm:0}
20:58:43.303003 [0] ... term out of date in RequestVote
20:58:43.303003 [0] becomes Follower with term=1; log=[]
20:58:43.303003 [0] ... RequestVote reply: &{Term:1 VoteGranted:true}
20:58:43.303003 [0] election timer started (182ms), term=1
20:58:43.303554 [1] RequestVote: {Term:1 CandidateId:2 LastLogIndex:0 LastLogTerm:0}
20:58:43.303554 [1] ... term out of date in RequestVote
20:58:43.303554 [1] becomes Follower with term=1; log=[]
20:58:43.303554 [1] ... RequestVote reply: &{Term:1 VoteGranted:true}
20:58:43.303554 [2] received RequestVoteReply {Term:1 VoteGranted:true}
20:58:43.303554 [2] wins election with 2 votes
```

20:58:43.303554 [1] election timer started (291ms), term=1
 20:58:43.303554 [2] becomes Leader; term=1, log=[]
 20:58:43.303554 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:58:43.303554 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:58:43.304069 [2] received RequestVoteReply {Term:1 VoteGranted:true}
 20:58:43.304069 [2] while waiting for reply, state = Leader
 20:58:43.306628 [1] in election timer term changed from 0 to 1, bailing out
 20:58:43.306628 [0] in election timer term changed from 0 to 1, bailing out
 20:58:43.307619 [0] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:58:43.307619 [0] AppendEntries reply: {Term:1 Success:true}
 20:58:43.307619 [2] in election timer state=Leader, bailing out
 20:58:43.308140 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:58:43.308140 [1] AppendEntries reply: {Term:1 Success:true}
 20:58:43.354238 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:58:43.354238 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:58:43.359018 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:58:43.359018 [1] AppendEntries reply: {Term:1 Success:true}
 20:58:43.360145 [0] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:58:43.360145 [0] AppendEntries reply: {Term:1 Success:true}
 20:58:43.404043 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:58:43.404043 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:58:43.406757 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:58:43.406757 [1] AppendEntries reply: {Term:1 Success:true}
 20:58:43.407328 [0] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:58:43.407328 [0] AppendEntries reply: {Term:1 Success:true}
 20:58:43.426219 [TEST] Disconnect 2
 20:58:43.426898 [TEST] Disconnect 0
 20:58:43.453980 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:58:43.453980 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:58:43.503978 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:58:43.503978 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:58:43.554164 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:58:43.554164 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:58:43.593282 [0] becomes Candidate (currentTerm=2); log=[]
 20:58:43.593282 [0] election timer started (183ms), term=2
 20:58:43.593282 [0] sending RequestVote to 2: {Term:2 CandidateId:0 LastLogI

20:58:43.593282 [0] sending RequestVote to 1: {Term:2 Candidateld:0 LastLogI
 20:58:43.603575 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:58:43.603575 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:58:43.653644 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:58:43.653644 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:58:43.703833 [1] becomes Candidate (currentTerm=2); log=[]
 20:58:43.703833 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:58:43.703833 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:58:43.703833 [1] election timer started (251ms), term=2
 20:58:43.703833 [1] sending RequestVote to 0: {Term:2 Candidateld:1 LastLogIn
 20:58:43.703833 [1] sending RequestVote to 2: {Term:2 Candidateld:1 LastLogIn
 20:58:43.738101 [TEST] Reconnect 0
 20:58:43.740463 [TEST] Reconnect 2
 20:58:43.753739 [2] sending AppendEntries to 0: ni=0, args={Term:1 LeaderId:2
 20:58:43.753739 [2] sending AppendEntries to 1: ni=0, args={Term:1 LeaderId:2
 20:58:43.758283 [1] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:58:43.758283 [1] AppendEntries reply: {Term:2 Success:false}
 20:58:43.758969 [2] term out of date in heartbeat reply
 20:58:43.758969 [2] becomes Follower with term=2; log=[]
 20:58:43.758969 [2] election timer started (275ms), term=2
 20:58:43.760019 [0] AppendEntries: {Term:1 LeaderId:2 PrevLogIndex:0 PrevLog
 20:58:43.760019 [0] AppendEntries reply: {Term:2 Success:false}
 20:58:43.760556 [2] term out of date in heartbeat reply
 20:58:43.760556 [2] becomes Follower with term=2; log=[]
 20:58:43.760556 [2] election timer started (260ms), term=2
 20:58:43.783926 [0] becomes Candidate (currentTerm=3); log=[]
 20:58:43.784478 [0] sending RequestVote to 2: {Term:3 Candidateld:0 LastLogI
 20:58:43.784478 [0] sending RequestVote to 1: {Term:3 Candidateld:0 LastLogIn
 20:58:43.784478 [0] election timer started (290ms), term=3
 20:58:43.786654 [1] RequestVote: {Term:3 Candidateld:0 LastLogIndex:0 LastLo
 20:58:43.786654 [1] ... term out of date in RequestVote
 20:58:43.786654 [1] becomes Follower with term=3; log=[]
 20:58:43.786654 [1] ... RequestVote reply: {Term:3 VoteGranted:true}
 20:58:43.787161 [1] election timer started (279ms), term=3
 20:58:43.787769 [0] received RequestVoteReply {Term:3 VoteGranted:true}
 20:58:43.787769 [0] wins election with 2 votes


```

20:58:43.787769 [0] becomes Leader; term=3, log=[]
20:58:43.787769 [0] sending AppendEntries to 2: ni=0, args={Term:3 LeaderId:0
20:58:43.787769 [0] sending AppendEntries to 1: ni=0, args={Term:3 LeaderId:0
20:58:43.789478 [2] RequestVote: {Term:3 CandidateId:0 LastLogIndex:0 LastLo
20:58:43.789478 [2] ... term out of date in RequestVote
20:58:43.789478 [2] becomes Follower with term=3; log=[]
20:58:43.789478 [2] ... RequestVote reply: &{Term:3 VoteGranted:true}
20:58:43.789478 [2] in election timer term changed from 2 to 3, bailing out
20:58:43.789478 [2] election timer started (222ms), term=3
20:58:43.790112 [0] received RequestVoteReply {Term:3 VoteGranted:true}
20:58:43.790112 [0] while waiting for reply, state = Leader
20:58:43.790629 [2] AppendEntries: {Term:3 LeaderId:0 PrevLogIndex:0 PrevLo
20:58:43.790629 [2] AppendEntries reply: {Term:3 Success:true}
20:58:43.790629 [2] in election timer term changed from 2 to 3, bailing out
20:58:43.792655 [1] AppendEntries: {Term:3 LeaderId:0 PrevLogIndex:0 PrevLo
20:58:43.792655 [1] AppendEntries reply: {Term:3 Success:true}
20:58:43.794833 [1] in election timer term changed from 2 to 3, bailing out
20:58:43.794833 [0] in election timer state=Leader, bailing out
20:58:43.838011 [0] sending AppendEntries to 2: ni=0, args={Term:3 LeaderId:0
20:58:43.838011 [0] sending AppendEntries to 1: ni=0, args={Term:3 LeaderId:0
20:58:43.839669 [1] AppendEntries: {Term:3 LeaderId:0 PrevLogIndex:0 PrevLo
20:58:43.839669 [1] AppendEntries reply: {Term:3 Success:true}
20:58:43.843754 [2] AppendEntries: {Term:3 LeaderId:0 PrevLogIndex:0 PrevLo
20:58:43.843754 [2] AppendEntries reply: {Term:3 Success:true}
20:58:43.888199 [0] sending AppendEntries to 1: ni=0, args={Term:3 LeaderId:0
20:58:43.888199 [0] sending AppendEntries to 2: ni=0, args={Term:3 LeaderId:0
20:58:43.889917 [1] AppendEntries: {Term:3 LeaderId:0 PrevLogIndex:0 PrevLo
20:58:43.889917 [1] AppendEntries reply: {Term:3 Success:true}
20:58:43.892091 [TEST] Disconnect 0
20:58:43.892670 [TEST] Disconnect 1
20:58:43.892670 [2] AppendEntries: {Term:3 LeaderId:0 PrevLogIndex:0 PrevLo
20:58:43.892670 [2] AppendEntries reply: {Term:3 Success:true}
20:58:43.938311 [0] sending AppendEntries to 1: ni=0, args={Term:3 LeaderId:0
20:58:43.938311 [0] sending AppendEntries to 2: ni=0, args={Term:3 LeaderId:0
20:58:43.987821 [0] sending AppendEntries to 1: ni=0, args={Term:3 LeaderId:0
20:58:43.987821 [0] sending AppendEntries to 2: ni=0, args={Term:3 LeaderId:0

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20:58:44.037816 [0] sending AppendEntries to 2: ni=0, args={Term:3 LeaderId:0
 20:58:44.037816 [0] sending AppendEntries to 1: ni=0, args={Term:3 LeaderId:0
 20:58:44.087992 [0] sending AppendEntries to 1: ni=0, args={Term:3 LeaderId:0
 20:58:44.087992 [0] sending AppendEntries to 2: ni=0, args={Term:3 LeaderId:0
 20:58:44.120422 [2] becomes Candidate (currentTerm=4); log=[]
 20:58:44.120422 [2] election timer started (165ms), term=4
 20:58:44.120422 [2] sending RequestVote to 1: {Term:4 Candidateld:2 LastLogIn
 20:58:44.120422 [2] sending RequestVote to 0: {Term:4 Candidateld:2 LastLogIn
 20:58:44.138399 [0] sending AppendEntries to 1: ni=0, args={Term:3 LeaderId:0
 20:58:44.138399 [0] sending AppendEntries to 2: ni=0, args={Term:3 LeaderId:0
 20:58:44.177733 [1] becomes Candidate (currentTerm=4); log=[]
 20:58:44.177733 [1] election timer started (236ms), term=4
 20:58:44.177733 [1] sending RequestVote to 0: {Term:4 Candidateld:1 LastLogIn
 20:58:44.177733 [1] sending RequestVote to 2: {Term:4 Candidateld:1 LastLogIn
 20:58:44.188171 [0] sending AppendEntries to 1: ni=0, args={Term:3 LeaderId:0
 20:58:44.188171 [0] sending AppendEntries to 2: ni=0, args={Term:3 LeaderId:0
 20:58:44.203768 [TEST] Reconnect 1
 20:58:44.207983 [TEST] Reconnect 0
 20:58:44.238302 [0] sending AppendEntries to 1: ni=0, args={Term:3 LeaderId:0
 20:58:44.238302 [0] sending AppendEntries to 2: ni=0, args={Term:3 LeaderId:0
 20:58:44.241075 [1] AppendEntries: {Term:3 LeaderId:0 PrevLogIndex:0 PrevLog
 20:58:44.241075 [1] AppendEntries reply: {Term:4 Success:false}
 20:58:44.241672 [0] term out of date in heartbeat reply
 20:58:44.242207 [0] becomes Follower with term=4; log=[]
 20:58:44.242207 [2] AppendEntries: {Term:3 LeaderId:0 PrevLogIndex:0 PrevLo
 20:58:44.242207 [0] election timer started (273ms), term=4
 20:58:44.242207 [2] AppendEntries reply: {Term:4 Success:false}
 20:58:44.242735 [0] term out of date in heartbeat reply
 20:58:44.242735 [0] becomes Follower with term=4; log=[]
 20:58:44.242735 [0] election timer started (185ms), term=4
 20:58:44.290849 [2] becomes Candidate (currentTerm=5); log=[]
 20:58:44.290849 [2] sending RequestVote to 1: {Term:5 Candidateld:2 LastLogIn
 20:58:44.290849 [2] sending RequestVote to 0: {Term:5 Candidateld:2 LastLogIn
 20:58:44.290849 [2] election timer started (230ms), term=5
 20:58:44.294152 [1] RequestVote: {Term:5 Candidateld:2 LastLogIndex:0 LastLo
 20:58:44.294152 [1] ... term out of date in RequestVote

20:58:44.294152 [1] becomes Follower with term=5; log=[]
 20:58:44.294152 [1] ... RequestVote reply: &{Term:5 VoteGranted:true}
 20:58:44.294152 [1] election timer started (290ms), term=5
 20:58:44.294770 [2] received RequestVoteReply {Term:5 VoteGranted:true}
 20:58:44.294770 [2] wins election with 2 votes
 20:58:44.294770 [2] becomes Leader; term=5, log=[]
 20:58:44.294770 [2] sending AppendEntries to 0: ni=0, args={Term:5 LeaderId:2
 20:58:44.294770 [2] sending AppendEntries to 1: ni=0, args={Term:5 LeaderId:2
 20:58:44.295825 [0] RequestVote: {Term:5 CandidatId:2 LastLogIndex:0 LastLo
 20:58:44.295825 [0] ... term out of date in RequestVote
 20:58:44.295825 [0] becomes Follower with term=5; log=[]
 20:58:44.295825 [0] ... RequestVote reply: &{Term:5 VoteGranted:true}
 20:58:44.295825 [0] election timer started (226ms), term=5
 20:58:44.296355 [2] received RequestVoteReply {Term:5 VoteGranted:true}
 20:58:44.296355 [2] while waiting for reply, state = Leader
 20:58:44.299945 [1] in election timer term changed from 4 to 5, bailing out
 20:58:44.299945 [0] AppendEntries: {Term:5 LeaderId:2 PrevLogIndex:0 PrevLo
 20:58:44.301810 [0] AppendEntries reply: {Term:5 Success:true}
 20:58:44.301810 [2] in election timer state=Leader, bailing out
 20:58:44.301810 [1] AppendEntries: {Term:5 LeaderId:2 PrevLogIndex:0 PrevLog
 20:58:44.301810 [1] AppendEntries reply: {Term:5 Success:true}
 20:58:44.302322 [0] in election timer term changed from 4 to 5, bailing out
 20:58:44.302846 [0] in election timer term changed from 4 to 5, bailing out
 20:58:44.345548 [2] sending AppendEntries to 0: ni=0, args={Term:5 LeaderId:2
 20:58:44.345548 [2] sending AppendEntries to 1: ni=0, args={Term:5 LeaderId:2
 20:58:44.347622 [1] AppendEntries: {Term:5 LeaderId:2 PrevLogIndex:0 PrevLo
 20:58:44.347622 [1] AppendEntries reply: {Term:5 Success:true}
 20:58:44.349935 [0] AppendEntries: {Term:5 LeaderId:2 PrevLogIndex:0 PrevLo
 20:58:44.349935 [0] AppendEntries reply: {Term:5 Success:true}
 20:58:44.359862 [TEST] Disconnect 2
 20:58:44.360435 [TEST] Disconnect 0
 20:58:44.395288 [2] sending AppendEntries to 0: ni=0, args={Term:5 LeaderId:2
 20:58:44.395288 [2] sending AppendEntries to 1: ni=0, args={Term:5 LeaderId:2
 20:58:44.445208 [2] sending AppendEntries to 0: ni=0, args={Term:5 LeaderId:2
 20:58:44.445208 [2] sending AppendEntries to 1: ni=0, args={Term:5 LeaderId:2
 20:58:44.495407 [2] sending AppendEntries to 1: ni=0, args={Term:5 LeaderId:2

20:58:44.495407 [2] sending AppendEntries to 0: ni=0, args={Term:5 LeaderId:2
 20:58:44.545119 [2] sending AppendEntries to 0: ni=0, args={Term:5 LeaderId:2
 20:58:44.545119 [2] sending AppendEntries to 1: ni=0, args={Term:5 LeaderId:2
 20:58:44.576274 [0] becomes Candidate (currentTerm=6); log=[]
 20:58:44.576274 [0] sending RequestVote to 1: {Term:6 Candidateld:0 LastLogIn
 20:58:44.576274 [0] election timer started (161ms), term=6
 20:58:44.576274 [0] sending RequestVote to 2: {Term:6 Candidateld:0 LastLogIn
 20:58:44.595227 [2] sending AppendEntries to 1: ni=0, args={Term:5 LeaderId:2
 20:58:44.595227 [2] sending AppendEntries to 0: ni=0, args={Term:5 LeaderId:2
 20:58:44.644589 [1] becomes Candidate (currentTerm=6); log=[]
 20:58:44.644589 [1] election timer started (289ms), term=6
 20:58:44.644589 [1] sending RequestVote to 0: {Term:6 Candidateld:1 LastLogIn
 20:58:44.644589 [1] sending RequestVote to 2: {Term:6 Candidateld:1 LastLogIn
 20:58:44.645323 [2] sending AppendEntries to 0: ni=0, args={Term:5 LeaderId:2
 20:58:44.645323 [2] sending AppendEntries to 1: ni=0, args={Term:5 LeaderId:2
 20:58:44.671338 [TEST] Reconnect 0
 20:58:44.673713 [TEST] Reconnect 2
 20:58:44.695498 [2] sending AppendEntries to 0: ni=0, args={Term:5 LeaderId:2
 20:58:44.695498 [2] sending AppendEntries to 1: ni=0, args={Term:5 LeaderId:2
 20:58:44.700611 [0] AppendEntries: {Term:5 LeaderId:2 PrevLogIndex:0 PrevLog
 20:58:44.700611 [0] AppendEntries reply: {Term:6 Success:false}
 20:58:44.701260 [2] term out of date in heartbeat reply
 20:58:44.701260 [2] becomes Follower with term=6; log=[]
 20:58:44.701260 [1] AppendEntries: {Term:5 LeaderId:2 PrevLogIndex:0 PrevLog
 20:58:44.701260 [2] election timer started (226ms), term=6
 20:58:44.701260 [1] AppendEntries reply: {Term:6 Success:false}
 20:58:44.701796 [2] term out of date in heartbeat reply
 20:58:44.701796 [2] becomes Follower with term=6; log=[]
 20:58:44.701796 [2] election timer started (199ms), term=6
 20:58:44.746943 [0] becomes Candidate (currentTerm=7); log=[]
 20:58:44.746943 [0] election timer started (197ms), term=7
 20:58:44.746943 [0] sending RequestVote to 1: {Term:7 Candidateld:0 LastLogIn
 20:58:44.746943 [0] sending RequestVote to 2: {Term:7 Candidateld:0 LastLogIn
 20:58:44.752815 [2] RequestVote: {Term:7 Candidateld:0 LastLogIndex:0 LastLo
 20:58:44.752815 [2] ... term out of date in RequestVote
 20:58:44.752815 [1] RequestVote: {Term:7 Candidateld:0 LastLogIndex:0 LastLo

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20:58:44.752815 [2] becomes Follower with term=7; log=[]
20:58:44.752815 [1] ... term out of date in RequestVote
20:58:44.752815 [1] becomes Follower with term=7; log=[]
20:58:44.752815 [1] ... RequestVote reply: &{Term:7 VoteGranted:true}
20:58:44.752815 [2] ... RequestVote reply: &{Term:7 VoteGranted:true}
20:58:44.752815 [1] election timer started (217ms), term=7
20:58:44.752815 [2] election timer started (257ms), term=7
20:58:44.753560 [0] received RequestVoteReply {Term:7 VoteGranted:true}
20:58:44.753560 [0] wins election with 2 votes
20:58:44.753560 [0] becomes Leader; term=7, log=[]
20:58:44.753560 [0] received RequestVoteReply {Term:7 VoteGranted:true}
20:58:44.753560 [0] while waiting for reply, state = Leader
20:58:44.753560 [0] sending AppendEntries to 2: ni=0, args={Term:7 LeaderId:0
20:58:44.753560 [0] sending AppendEntries to 1: ni=0, args={Term:7 LeaderId:0
20:58:44.754635 [1] in election timer term changed from 6 to 7, bailing out
20:58:44.757206 [0] in election timer state=Leader, bailing out
20:58:44.757206 [1] AppendEntries: {Term:7 LeaderId:0 PrevLogIndex:0 PrevLog
20:58:44.757206 [1] AppendEntries reply: {Term:7 Success:true}
20:58:44.758857 [2] AppendEntries: {Term:7 LeaderId:0 PrevLogIndex:0 PrevLo
20:58:44.758857 [2] AppendEntries reply: {Term:7 Success:true}
20:58:44.761499 [2] in election timer term changed from 6 to 7, bailing out
20:58:44.762533 [2] in election timer term changed from 6 to 7, bailing out
20:58:44.803918 [0] sending AppendEntries to 2: ni=0, args={Term:7 LeaderId:0
20:58:44.803918 [0] sending AppendEntries to 1: ni=0, args={Term:7 LeaderId:0
20:58:44.805543 [1] AppendEntries: {Term:7 LeaderId:0 PrevLogIndex:0 PrevLo
20:58:44.805543 [1] AppendEntries reply: {Term:7 Success:true}
20:58:44.809311 [2] AppendEntries: {Term:7 LeaderId:0 PrevLogIndex:0 PrevLo
20:58:44.809311 [2] AppendEntries reply: {Term:7 Success:true}
20:58:44.824933 [TEST] Disconnect 0
20:58:44.825500 [TEST] Disconnect 1
20:58:44.853847 [0] sending AppendEntries to 2: ni=0, args={Term:7 LeaderId:0
20:58:44.853847 [0] sending AppendEntries to 1: ni=0, args={Term:7 LeaderId:0
20:58:44.904090 [0] sending AppendEntries to 1: ni=0, args={Term:7 LeaderId:0
20:58:44.904090 [0] sending AppendEntries to 2: ni=0, args={Term:7 LeaderId:0
20:58:44.954262 [0] sending AppendEntries to 1: ni=0, args={Term:7 LeaderId:0
20:58:44.954262 [0] sending AppendEntries to 2: ni=0, args={Term:7 LeaderId:0

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20:58:45.004270 [0] sending AppendEntries to 2: ni=0, args={Term:7 LeaderId:0
 20:58:45.004270 [0] sending AppendEntries to 1: ni=0, args={Term:7 LeaderId:0
 20:58:45.023315 [1] becomes Candidate (currentTerm=8); log=[]
 20:58:45.023315 [1] sending RequestVote to 2: {Term:8 Candidateld:1 LastLogIn
 20:58:45.023315 [1] sending RequestVote to 0: {Term:8 Candidateld:1 LastLogIn
 20:58:45.023315 [1] election timer started (251ms), term=8
 20:58:45.054118 [0] sending AppendEntries to 1: ni=0, args={Term:7 LeaderId:0
 20:58:45.054118 [0] sending AppendEntries to 2: ni=0, args={Term:7 LeaderId:0
 20:58:45.073372 [2] becomes Candidate (currentTerm=8); log=[]
 20:58:45.073372 [2] sending RequestVote to 0: {Term:8 Candidateld:2 LastLogIn
 20:58:45.073372 [2] sending RequestVote to 1: {Term:8 Candidateld:2 LastLogIn
 20:58:45.073372 [2] election timer started (238ms), term=8
 20:58:45.103562 [0] sending AppendEntries to 1: ni=0, args={Term:7 LeaderId:0
 20:58:45.103562 [0] sending AppendEntries to 2: ni=0, args={Term:7 LeaderId:0
 20:58:45.136436 [TEST] Reconnect 1
 20:58:45.138670 [TEST] Reconnect 0
 20:58:45.153762 [0] sending AppendEntries to 1: ni=0, args={Term:7 LeaderId:0
 20:58:45.153762 [0] sending AppendEntries to 2: ni=0, args={Term:7 LeaderId:0
 20:58:45.158042 [2] AppendEntries: {Term:7 LeaderId:0 PrevLogIndex:0 PrevLog
 20:58:45.158042 [2] AppendEntries reply: {Term:8 Success:false}
 20:58:45.158546 [0] term out of date in heartbeat reply
 20:58:45.158546 [0] becomes Follower with term=8; log=[]
 20:58:45.158546 [0] election timer started (261ms), term=8
 20:58:45.159056 [1] AppendEntries: {Term:7 LeaderId:0 PrevLogIndex:0 PrevLog
 20:58:45.159056 [1] AppendEntries reply: {Term:8 Success:false}
 20:58:45.159056 [0] term out of date in heartbeat reply
 20:58:45.159056 [0] becomes Follower with term=8; log=[]
 20:58:45.159564 [0] election timer started (297ms), term=8
 20:58:45.283537 [1] becomes Candidate (currentTerm=9); log=[]
 20:58:45.283537 [1] sending RequestVote to 2: {Term:9 Candidateld:1 LastLogIn
 20:58:45.283537 [1] sending RequestVote to 0: {Term:9 Candidateld:1 LastLogIn
 20:58:45.283537 [1] election timer started (294ms), term=9
 20:58:45.286593 [0] RequestVote: {Term:9 Candidateld:1 LastLogIndex:0 LastLo
 20:58:45.286593 [0] ... term out of date in RequestVote
 20:58:45.286593 [0] becomes Follower with term=9; log=[]
 20:58:45.286593 [0] ... RequestVote reply: &{Term:9 VoteGranted:true}

20:58:45.286593 [0] election timer started (199ms), term=9
 20:58:45.287248 [1] received RequestVoteReply {Term:9 VoteGranted:true}
 20:58:45.287248 [1] wins election with 2 votes
 20:58:45.287248 [1] becomes Leader; term=9, log=[]
 20:58:45.287248 [1] sending AppendEntries to 0: ni=0, args={Term:9 LeaderId:1
 20:58:45.287248 [1] sending AppendEntries to 2: ni=0, args={Term:9 LeaderId:1
 20:58:45.288315 [2] RequestVote: {Term:9 CandidateId:1 LastLogIndex:0 LastLogTerm:0}
 20:58:45.288315 [2] ... term out of date in RequestVote
 20:58:45.288315 [2] becomes Follower with term=9; log=[]
 20:58:45.288315 [2] ... RequestVote reply: &{Term:9 VoteGranted:true}
 20:58:45.288315 [2] election timer started (190ms), term=9
 20:58:45.288831 [0] in election timer term changed from 8 to 9, bailing out
 20:58:45.289388 [1] received RequestVoteReply {Term:9 VoteGranted:true}
 20:58:45.289388 [1] while waiting for reply, state = Leader
 20:58:45.289935 [TEST] Disconnect 1
 20:58:45.289935 [0] in election timer term changed from 8 to 9, bailing out
 20:58:45.291064 [2] AppendEntries: {Term:9 LeaderId:1 PrevLogIndex:0 PrevLogTerm:0}
 20:58:45.291064 [2] AppendEntries reply: {Term:9 Success:true}
 20:58:45.291064 [0] AppendEntries: {Term:9 LeaderId:1 PrevLogIndex:0 PrevLogTerm:0}
 20:58:45.291064 [0] AppendEntries reply: {Term:9 Success:true}
 20:58:45.291064 [TEST] Disconnect 2
 20:58:45.293788 [2] in election timer term changed from 8 to 9, bailing out
 20:58:45.293788 [1] in election timer state=Leader, bailing out
 20:58:45.338126 [1] sending AppendEntries to 2: ni=0, args={Term:9 LeaderId:1
 20:58:45.338126 [1] sending AppendEntries to 0: ni=0, args={Term:9 LeaderId:1
 20:58:45.387727 [1] sending AppendEntries to 2: ni=0, args={Term:9 LeaderId:1
 20:58:45.387727 [1] sending AppendEntries to 0: ni=0, args={Term:9 LeaderId:1
 20:58:45.437751 [1] sending AppendEntries to 0: ni=0, args={Term:9 LeaderId:1
 20:58:45.438273 [1] sending AppendEntries to 2: ni=0, args={Term:9 LeaderId:1
 20:58:45.487918 [1] sending AppendEntries to 0: ni=0, args={Term:9 LeaderId:1
 20:58:45.487918 [1] sending AppendEntries to 2: ni=0, args={Term:9 LeaderId:1
 20:58:45.488516 [2] becomes Candidate (currentTerm=10); log=[]
 20:58:45.488516 [2] sending RequestVote to 1: {Term:10 CandidateId:2 LastLogIndex:0 LastLogTerm:0}
 20:58:45.488516 [2] sending RequestVote to 0: {Term:10 CandidateId:2 LastLogIndex:0 LastLogTerm:0}
 20:58:45.488516 [2] election timer started (220ms), term=10
 20:58:45.496757 [0] becomes Candidate (currentTerm=10); log=[]

20:58:45.496757 [0] election timer started (284ms), term=10
 20:58:45.496757 [0] sending RequestVote to 1: {Term:10 Candidateld:0 LastLogI
 20:58:45.496757 [0] sending RequestVote to 2: {Term:10 Candidateld:0 LastLogI
 20:58:45.537598 [1] sending AppendEntries to 0: ni=0, args={Term:9 LeaderId:1
 20:58:45.537598 [1] sending AppendEntries to 2: ni=0, args={Term:9 LeaderId:1
 20:58:45.587730 [1] sending AppendEntries to 2: ni=0, args={Term:9 LeaderId:1
 20:58:45.587730 [1] sending AppendEntries to 0: ni=0, args={Term:9 LeaderId:1
 20:58:45.602044 [TEST] Reconnect 2
 20:58:45.603786 [TEST] Reconnect 1
 20:58:45.637414 [1] sending AppendEntries to 2: ni=0, args={Term:9 LeaderId:1
 20:58:45.637414 [1] sending AppendEntries to 0: ni=0, args={Term:9 LeaderId:1
 20:58:45.640895 [0] AppendEntries: {Term:9 LeaderId:1 PrevLogIndex:0 PrevLo
 20:58:45.640895 [0] AppendEntries reply: {Term:10 Success:false}
 20:58:45.640895 [1] term out of date in heartbeat reply
 20:58:45.640895 [1] becomes Follower with term=10; log=[]
 20:58:45.640895 [1] election timer started (154ms), term=10
 20:58:45.642542 [2] AppendEntries: {Term:9 LeaderId:1 PrevLogIndex:0 PrevLo
 20:58:45.642542 [2] AppendEntries reply: {Term:10 Success:false}
 20:58:45.642542 [1] term out of date in heartbeat reply
 20:58:45.643240 [1] becomes Follower with term=10; log=[]
 20:58:45.643240 [1] election timer started (153ms), term=10
 20:58:45.708810 [2] becomes Candidate (currentTerm=11); log=[]
 20:58:45.708810 [2] sending RequestVote to 0: {Term:11 Candidateld:2 LastLogI
 20:58:45.708810 [2] sending RequestVote to 1: {Term:11 Candidateld:2 LastLogIn
 20:58:45.708810 [2] election timer started (222ms), term=11
 20:58:45.711451 [1] RequestVote: {Term:11 Candidateld:2 LastLogIndex:0 LastLog
 20:58:45.711451 [1] ... term out of date in RequestVote
 20:58:45.711451 [1] becomes Follower with term=11; log=[]
 20:58:45.711451 [1] ... RequestVote reply: &{Term:11 VoteGranted:true}
 20:58:45.711451 [1] election timer started (274ms), term=11
 20:58:45.712128 [2] received RequestVoteReply {Term:11 VoteGranted:true}
 20:58:45.712128 [2] wins election with 2 votes
 20:58:45.712128 [2] becomes Leader; term=11, log=[]
 20:58:45.712128 [2] sending AppendEntries to 1: ni=0, args={Term:11 LeaderId:2
 20:58:45.712128 [2] sending AppendEntries to 0: ni=0, args={Term:11 LeaderId:2
 20:58:45.712920 [0] RequestVote: {Term:11 Candidateld:2 LastLogIndex:0 LastLc

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20:58:45.712920 [0] ... term out of date in RequestVote
20:58:45.712920 [0] becomes Follower with term=11; log=[]
20:58:45.712920 [0] ... RequestVote reply: &{Term:11 VoteGranted:true}
20:58:45.712920 [0] election timer started (220ms), term=11
20:58:45.713436 [1] in election timer term changed from 10 to 11, bailing out
20:58:45.713436 [2] received RequestVoteReply {Term:11 VoteGranted:true}
20:58:45.713436 [2] while waiting for reply, state = Leader
20:58:45.715477 [1] AppendEntries: {Term:11 LeaderId:2 PrevLogIndex:0 PrevLogTerm:10}
20:58:45.715477 [0] AppendEntries: {Term:11 LeaderId:2 PrevLogIndex:0 PrevLogTerm:10}
20:58:45.715477 [1] AppendEntries reply: {Term:11 Success:true}
20:58:45.715477 [0] AppendEntries reply: {Term:11 Success:true}
20:58:45.717127 [0] in election timer term changed from 10 to 11, bailing out
20:58:45.719291 [2] in election timer state=Leader, bailing out
20:58:45.721421 [1] in election timer term changed from 10 to 11, bailing out
20:58:45.755988 [0] becomes Dead
20:58:45.755988 [1] becomes Dead
20:58:45.755988 [2] becomes Dead
20:58:45.761591 [1] in election timer state=Dead, bailing out
20:58:45.763245 [0] in election timer state=Dead, bailing out
--- PASS: TestElectionDisconnectLoop (2.69s)
PASS
ok      github.com/eliben/raft 4.101s
```