1

Relatório da Atividade 4: Raft

Isabelle Ferreira de Oliveira CES-27 - Engenharia da Computação 2020 Instituto Tecnológico de Aeronáutica (ITA) São José dos Campos, Brasil isabelle.ferreira3000@gmail.com

Resumo

Esse relatório documenta um trabalho com o protocolo Raft para consenso distribuído. Não será trabalhado com log replication.

Index Terms

Raft, Golang, sistema distribuído

I. IMPLEMENTAÇÃO

A. Ao receber um AppendEntry (heartbeat)

Subsection text here.

- 1) Follower:
- 2) Candidate:
- 3) Leader:
- B. Ao receber um RequestVote

Subsubsection text here.

- 1) Follower:
- 2) Candidate:
- 3) Leader:
- C. Ao receber um Reply

Subsubsection text here.

- 1) Follower:
- 2) Candidate:
- 3) Leader:

II. RESULTADOS E CONCLUSÕES

The conclusion goes here.

Figura 1. Funcionamento normal para os 5 processos.

```
    □ isabelle@isabelle-Inspiron-5448: ~/Graduacao/hirata-juliana-CES-27/Lab4/src/labRaft/run 83x15

    □ isabelle@isabelle-Inspiron-5448: ~/Graduacao/hirata-juliana-CES-27/Lab4/src/labRaft/run 78>
                                                                                                                                                                 Reseting election timeout.
Accept AppendEntry from 'localhost:3003'
                                                                                                                                                                                                                                                                                                                                                                                                                                                   019/10/07 11:14:07 [CANDIDATE] VoteCount: 3
019/10/07 11:14:07 [CANDIDATE] Becoming leader
019/10/07 11:14:07 [LEADER] Run Logic.
          19/18/87 11:14:10 [FOLLOWER] Run Logic.
19/18/87 11:14:10 [FOLLOWER] Reseting election timeout.
19/18/87 11:14:10 [FOLLOWER] Reseting election timeout.
19/18/87 11:14:10 [FOLLOWER] Run Logic.
19/18/87 11:14:10 [FOLLOWER] Reseting election timeout.
19/18/87 11:14:10 [FOLLOWER] Reseting election timeout.
19/18/87 11:14:10 [FOLLOWER] Reseting election timeout.
19/18/87 11:14:10 [FOLLOWER] Run Logic.
19/18/87 11:14:11 [FOLLOWER] Run Logic.
19/18/87 11:14:11 [FOLLOWER] Update old term '1' to new term '2' from 'local
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 gnal: interrupt
abelle@isabelle-Inspiron-5448 ~/Graduacao/hirata-juliana-CES-27/Lab4/src/l
                                                                                                                                                                                                                                                                                                                                                                                                                                            or.3002
19/10/07 11:14:11 [FOLLOWER] Reseting election timeout.
19/10/07 11:14:11 [FOLLOWER] Vote accepted to 'localhost:3002' for term '2'
19/10/07 11:14:11 [FOLLOWER] Run Logic.
                                                                                                                                                                                                                                                                                                                                                                                                                                                ost.3002 .
019/10/07 11:14:13 [FOLLOWER] Reseting election timeout.
019/10/07 11:14:13 [FOLLOWER] Accept AppendEntry from 'localhost:3002'
019/10/07 11:14:13 [FOLLOWER] Run Logic.
        19/10/07 11:14:11 [FOLLOWER] Run Logic.
19/10/07 11:14:11 [FOLLOWER] Reseting election timeout.
19/10/07 11:14:11 [FOLLOWER] Accept AppendEntry from 'localhost:3002'.
19/10/07 11:14:11 [FOLLOWER] Run Logic.
19/10/07 11:14:11 [FOLLOWER] Reseting election timeout.
19/10/07 11:14:11 [FOLLOWER] Accept AppendEntry from 'localhost:3002'.
19/10/07 11:14:11 [FOLLOWER] Run Logic.
19/10/07 11:14:11 [FOLLOWER] Reseting election timeout.
19/10/07 11:14:11 [FOLLOWER] Reseting election timeout.
                                                                                                                                                                                                                                                                                                                                                                                                                                              page in the property of t
                                                 @isabelle-Inspiron-5448: ~/Graduacao/hirata-juliana-CES-27/Lab4/src/labRaftz
7 11:14:10 [FOLLOWER] Reseting election timeout.
7 11:14:10 [FOLLOWER] Reseting election timeout.
7 11:14:10 [FOLLOWER] Reseting election timeout.
7 11:14:10 [FOLLOWER] Run Logic.
7 11:14:10 [FOLLOWER] Reseting election timeout.
7 11:14:10 [FOLLOWER] Run Logic.
7 11:14:10 [FOLLOWER] Run Logic.
7 11:14:10 [FOLLOWER] Reseting election timeout.
7 11:14:10 [FOLLOWER] Run Logic.
7 11:14:10 [FOLLOWER] Run Logic.
7 11:14:10 [FOLLOWER] Run Logic.
7 11:14:11 [FOLLOWER] Run Logic.
7 11:14:11 [FOLLOWER] Run Logic.
7 11:14:11 [CANDIDATE] Run Logic.
7 11:14:11 [CANDIDATE] Running for term '2'.
7 11:14:11 [CANDIDATE] Running for term '2'.
7 11:14:11 [CANDIDATE] Vote granted by 'localhost:3001'.
7 11:14:11 [CANDIDATE] Vote granted by 'localhost:3005'.
 📑 isabelle@isabelle-Inspiron-5448: ~/Graduacao/hirata-juliana-CES-27/Lab4/src/labRaft/run 78:
                                                                                                                                                                                                                                                                                                                                                                                                                                            3002'.
2019/10/07 11:14:11 [FOLLOWER] Reseting election timeout.
2019/10/07 11:14:11 [FOLLOWER] Vote accepted to 'localhost:3002' for term '2'.
2019/10/07 11:14:11 [FOLLOWER] Run Logic.
2019/10/07 11:14:11 [FOLLOWER] Reseting election timeout.
2019/10/07 11:14:11 [FOLLOWER] Accept AppendEntry from 'localhost:3002'.
2019/10/07 11:14:11 [FOLLOWER] Run Logic.
2019/10/07 11:14:11 [FOLLOWER] Reseting election timeout.
                                                                                                                                                                                                                                                                                                                                                                                                                                                          isabelle@isabelle-Inspiron-5448: ~/Graduacao/hirata-juliana-CES-27/Lab4/src/labRaft/run 83x14
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 002'.

019/10/07 11:14:11 [FOLLOWER] Reseting election timeout.
019/10/07 11:14:11 [FOLLOWER] Vote accepted to 'localhost:3002' for term '2'.
019/10/07 11:14:11 [FOLLOWER] Run Logic.
019/10/07 11:14:11 [FOLLOWER] Reseting election timeout.
019/10/07 11:14:11 [FOLLOWER] Accept AppendEntry from 'localhost:3002'.
019/10/07 11:14:11 [FOLLOWER] Run Logic.
019/10/07 11:14:11 [FOLLOWER] Reseting election timeout.
```

Figura 2. Funcionamento após a falha no leader, seguido de retomada do processo.

```
🛱 isabelle@isabelle-Inspiron-5448: ~/Graduacao/hirata-juliana-CES-27/Lab4/src/labRaft/run 78) 🏗 isabelle@isabelle-Inspiron-5448: ~/Graduacao/hirata-juliana-CES-27/Lab4/src/labRaft/run 83x21
                                                                                                             Run Logic.
Running for term 'l'.
Vote granted by 'localhost:3002'.
VoteCount: 2
Vote denied to 'localhost:3003' for term 'l'.
                                    10:23:34 [CANDIDATE]
10:23:34 [CANDIDATE]
                                                                                                                                                                                                                                                                                                                                                                                                      Reseting election timeout.
Accept AppendEntry from 'localhost:3001'.
        19/10/07 10:23:34 [CANDIDATE]
19/10/07 10:23:34 [CANDIDATE]
19/10/07 10:23:36 [CANDIDATE]
                                                                                                                                                                                                                                                                                                                              10:23:39 [FOLLOWER] Run Logic.
10:23:39 [FOLLOWER] Reseting election timeout.
10:23:39 [FOLLOWER] Accept AppendEntry from 'localhost:3001'.
      19/10/07 10:23:36 [CANDIDATE] Vote denied to 'localhost:3003' fi 19/10/07 10:23:36 [CANDIDATE] Run Logic.
19/10/07 10:23:36 [CANDIDATE] Running for term '2'.
19/10/07 10:23:36 [CANDIDATE] Vote granted by 'localhost:3003'.
19/10/07 10:23:36 [CANDIDATE] VoteCount: 2
19/10/07 10:23:36 [CANDIDATE] VoteCount: 2
19/10/07 10:23:36 [CANDIDATE] VoteCount: 3
19/10/07 10:23:36 [CANDIDATE] Becoming leader.
19/10/07 10:23:36 [CANDIDATE] Run Logic.
                                                                                                                                                                                                                                                                                               19/10/07 10:23:39 [FOLLOWER] Run Logi
                                                                                                                                                                                                                                                                                                         10/07 10:23:39 [FOLLOWER] Reseting election timeout.
/10/07 10:23:39 [FOLLOWER] Accept AppendEntry from 'localhost:3001'.
/10/07 10:23:39 [FOLLOWER] Run Logic.
                                                                                                                                                                                                                                                                                                          '10/07 10:23:41 [FOLLOWER] Update old term '2' to new term '3' from 'localhost
                                                                                                                                                                                                                                                                                                19/10/97 10:23:41 [FOLLOWER] Reseting election timeout.
19/10/07 10:23:41 [FOLLOWER] Roseting election timeout.
19/10/07 10:23:41 [FOLLOWER] Run Logic.
19/10/07 10:23:41 [FOLLOWER] Reseting election timeout.
19/10/07 10:23:41 [FOLLOWER] Accept AppendEntry from 'localhost:3003'.
19/10/07 10:23:41 [FOLLOWER] Run Logic.
19/10/07 10:23:41 [FOLLOWER] Reseting election timeout.
19/10/07 10:23:41 [FOLLOWER] Accept AppendEntry from 'localhost:3003'.
19/10/07 10:23:41 [FOLLOWER] Roseting election timeout.
              10/07 10.23.30 (ECNOCK) Kan Leggar
nal: interrupt
sbelle@isabelle-Inspiron-5448 ~/Graduacao/hirata-juliana-CES-27/Lab4/src/l
⊞ isabelle@isabelle-Inspiron-5448; ~/Graduacao/hirata-juliana-CES-27/Lab4/src/labRaft/run 78;
        19/10/07 10:23:39 [FOLLOWER] Reseting election timeout.
19/10/07 10:23:39 [FOLLOWER] Accept AppendEntry from 'localhost:3001'.
19/10/07 10:23:39 [FOLLOWER] Run Logic.
19/10/07 10:23:39 [FOLLOWER] Reseting election timeout.
19/10/07 10:23:39 [FOLLOWER] Accept AppendEntry from 'localhost:3001'.
19/10/07 10:23:39 [FOLLOWER] Auclogic.
19/10/07 10:23:39 [FOLLOWER] Wun Logic.
19/10/07 10:23:41 [FOLLOWER] Update old term '2' to new term '3' from 'local
                                                                                                                                                                                                                                                                                        |* | sabelle@isabelle-Inspiron-5448: ~/Graduacao/hirata-juliana-CES-27/Lab4/src/labRaft/run 83x25 2019/10/07 10:23:39 [FOLLOWER] Reseting election timeout. 2019/10/07 10:23:39 [FOLLOWER] Run Logic. 2019/10/07 10:23:39 [FOLLOWER] Run Logic. 2019/10/07 10:23:39 [FOLLOWER] Run Logic. 2019/10/07 10:23:39 [FOLLOWER] Reseting election timeout. 2019/10/07 10:23:39 [FOLLOWER] Accept AppendEntry from 'localhost:3001'. 2019/10/07 10:23:39 [FOLLOWER] Run Logic. 2019/10/07 10:23:39 [FOLLOWER] Run Logic. 2019/10/07 10:23:39 [FOLLOWER] Reseting election timeout. 2019/10/07 10:23:39 [FOLLOWER] Reseting election timeout. 2019/10/07 10:23:39 [FOLLOWER] Reseting election timeout. 2019/10/07 10:23:39 [FOLLOWER] Run Logic. 2019/10/07 10:23:39 [FOLLOWER] Run Logic. 2019/10/07 10:23:39 [FOLLOWER] Reseting election timeout. 2019/10/07 10:23:39 [FOLLOWER] Run Logic. 2019/10/07 10:23:39 [FOLLOWER] Run Logic. 2019/10/07 10:23:39 [FOLLOWER] Run Logic. 2019/10/07 10:23:34 [FOLLOWER] Run Logic. 2019/10/07 10:23:34 [FOLLOWER] Run Logic. 2019/10/07 10:23:34 [FOLLOWER] Update old term '2' to new term '3' from 'localhost: 3003'.
                                 . 10:23:41 [FOLLOWER] Reseting election timeout.
10:23:41 [FOLLOWER] Vote accepted to 'localhost:3003' for term '3'
10:23:41 [FOLLOWER] Run Logic.
10:23:41 [FOLLOWER] Reseting election timeout.
10:23:41 [FOLLOWER] Accept AppendEntry from 'localhost:3003'.
'10:23:41 [FOLLOWER] Accept AppendEntry from 'localhost:3003'.
'10:23:41 [FOLLOWER] Reseting election timeout.
'10:23:41 [FOLLOWER] Accept AppendEntry from 'localhost:3003'.
🔛 isabelle@isabelle-Inspiron-5448: ~/Graduacao/hirata-juliana-CES-27/Lab4/src/labRaft/run 78>
      3003'.
2019/10/07 10:23:41 [FOLLOWER] Reseting election timeout.
2019/10/07 10:23:41 [FOLLOWER] Vote accepted to 'localhost:3003' for term '3'.
2019/10/07 10:23:41 [FOLLOWER] Run Logic.
2019/10/07 10:23:41 [FOLLOWER] Reseting election timeout.
2019/10/07 10:23:41 [FOLLOWER] Accept AppendEntry from 'localhost:3003'.
2019/10/07 10:23:41 [FOLLOWER] Run Logic.
2019/10/07 10:23:41 [FOLLOWER] Reseting election timeout.
2019/10/07 10:23:41 [FOLLOWER] Accept AppendEntry from 'localhost:3003'.
2019/10/07 10:23:41 [FOLLOWER] Run Logic.
                                   10:23:41 [CANDIDATE] Becoming leader
10:23:41 [LEADER] Run Logic.
                                                                                                                                                                                                                                                                                                                                                                                                    Reseting election timeout.
Accept AppendEntry from 'localhost:3003'
```

Figura 3. Funcionamento após a falha no leader.

Figura 4. Funcionamento após a falha no próximo leader.

Figura 5. Funcionamento após a falha no terceiro leader. Note que o sistema não consegue mais decidir por um novo leader.