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Aula Prática 5 - Relatório

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Santo André - SP

2020

1.1) Variável ZK do run_leader.bat modificada

```
set ZK="C:\Users\PC\Desktop\zookeeper\zookeeper-3.4.14"
set CP_ZK=.;%ZK%\zookeeper-3.4.14.jar;%ZK%\lib\slf4j-log4j12-1.7.25.jar;%ZK%\lib\slf4j-api-1.7.25.jar;%ZK%\lib\log4j-1.2.17.jar
javac -cp %CP_ZK% *.java
@echo ***** Leader election test
java -cp %CP_ZK% -Dlog4j.configuration=file:%ZK%\conf\log4j.properties SyncPrimitive localhost
```

1.2) Executando o primeiro run_leader. Como nenhum outro estava sendo executado, ele é o líder.

```
2020-11-24 16:02:52,924 [myid:] - INFO [main:Environment@100] - Client environment:java.home=D:\Programs\Java\jdk-13.0.1
2020-11-24 16:02:52,925 [myid:] - INFO [main:Environment@100] - Client environment:java.class.path=.;C:\Users\PC\Desktop\zookeeper\zookeeper-3.4.14\zookeeper-3.4.14.jar;C:\Users\PC\Desktop\zookeeper\zookeeper-3.4.14\lib\slf4j-log4j12-1.7.25.jar;C:\Users\PC\Desktop\zookeeper\zookeeper-3.4.14\lib\slf4j-api-1.7.25.jar;C:\Users\PC\Desktop\zookeeper\zookeeper-3.4.14\lib\log4j-1.2.17.jar
2020-11-24 16:02:52,925 [myid:] - INFO [main:Environment@100] - Client environment:java.library.path=D:\Programs\Java\jdk-13.0.1\bin;C:\Windows\Sun\Java\bin;C:\Windows\system32;C:\Windows;C:\Program Files (x86)\Common Files\Intel\Shared Libraries\redist\intel64\compiler;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\iCLS\;C:\Program Files\Intel\Intel(R) Management Engine Components\iCLS\;C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem;C:\Windows\System32\WindowsPowerShell\v1.0\;C:\Windows\System32\OpenSSH\;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\DAL;C:\Program Files\Intel\Intel(R) Management Engine Components\DAL;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\IPT;C:\Program Files\Intel\Intel(R) Management Engine Components\IPT;C:\Program Files\NVIDIA Corporation\PhysX\Common;C:\Program Files\NVIDIA Corporation\NVIDIA NVDLISR;D:\Programs\Java\jdk-13.0.1\bin;C:\Users\PC\AppData\Local\Microsoft\WindowsApps\;C:\Users\PC\AppData\Local\Programs\Microsoft VS Code\bin;C:\Users\PC\AppData\Local\atom\bin;C:\Users\PC\AppData\Local\GitHubDesktop\bin;.
2020-11-24 16:02:52,926 [myid:] - INFO [main:Environment@100] - Client environment:java.io.tmpdir=C:\Users\PC\AppData\Local\Temp\
2020-11-24 16:02:52,926 [myid:] - INFO [main:Environment@100] - Client environment:java.compiler=<NA>
2020-11-24 16:02:52,926 [myid:] - INFO [main:Environment@100] - Client environment:os.name=Windows 10
2020-11-24 16:02:52,926 [myid:] - INFO [main:Environment@100] - Client environment:os.arch=amd64
2020-11-24 16:02:52,926 [myid:] - INFO [main:Environment@100] - Client environment:os.version=10.0
2020-11-24 16:02:52,927 [myid:] - INFO [main:Environment@100] - Client environment:user.name=PC
2020-11-24 16:02:52,927 [myid:] - INFO [main:Environment@100] - Client environment:user.home=C:\Users\PC
2020-11-24 16:02:52,927 [myid:] - INFO [main:Environment@100] - Client environment:user.dir=C:\Users\PC\Desktop\zookeeper\Codigos5
2020-11-24 16:02:52,928 [myid:] - INFO [main:ZooKeeper@442] - Initiating client connection, connectString=localhost sessionTimeout=3000 watcher=SyncPrimitive$Leader@71f2a7d5
Finished starting ZK: State=CONNECTING sessionId:0x0 local:null remoteserver:null lastZxid:0 xid:1 sent:0 rcv:0 queuedpkts:0 pendingresp:0 queuedevents:0
2020-11-24 16:02:53,187 [myid:] - INFO [main-SendThread(localhost:2181):ClientCnxn$SendThread@1025] - Opening socket connection to server localhost/0:0:0:0:0:0:1:2181. Will not attempt to authenticate using SASL (unknown error)
2020-11-24 16:02:53,190 [myid:] - INFO [main-SendThread(localhost:2181):ClientCnxn$SendThread@879] - Socket connection established to localhost/0:0:0:0:0:0:1:2181, initiating session
2020-11-24 16:02:53,197 [myid:] - INFO [main-SendThread(localhost:2181):ClientCnxn$SendThread@1299] - Session establishment complete on server localhost/0:0:0:0:0:0:1:2181, sessionId = 0x1001f1caf7c000c, negotiated timeout = 4000
My path name is: /election/n-0000000000 and my id is: 625061!
List: [n-0000000000]
Suffix: 0, min: 0
Become a leader: 625061!
I will die after 10 seconds!
Process 625061 died!
PS C:\Users\PC\Desktop\zookeeper\Codigos5> |
```

Executando o segundo run_leader. Como outro processo era o líder, ele fica esperando esse processo morrer. Quando o antigo líder morre, ele entra no seu lugar pois é o processo com o zNode mais baixo

```
bin;C:\Windows\Sun\Java\bin;C:\Windows\system32;C:\Windows;C:\Program Files (x86)\Common Files\Intel\Shared Libraries\redist\intel64\compiler;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\iCLS\;C:\Program Files\Intel\Intel(R) Management Engine Components\iCLS\;C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem;C:\Windows\System32\WindowsPowerShell\v1.0\;C:\Windows\System32\OpenSSH\;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\DAL;C:\Program Files\Intel\Intel(R) Management Engine Components\DAL;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\IPT;C:\Program Files\Intel\Intel(R) Management Engine Components\IPT;C:\Program Files (x86)\NVIDIA Corporation\PhysX\Common;C:\Program Files\NVIDIA Corporation\NVIDIA NVDLISR\;D:\Programs\Java\jdk-13.0.1\bin;C:\Users\PC\AppData\Local\Microsoft\WindowsApps;C:\Users\PC\AppData\Local\Programs\Microsoft VS Code\bin;C:\Users\PC\AppData\Local\atom\bin;C:\Users\PC\AppData\Local\GitHubDesktop\bin;.  
2020-11-24 16:02:53,707 [myid:] - INFO [main:Environment@100] - Client environment:java.io.tmpdir=C:\Users\PC\AppData\Local\Temp\  
2020-11-24 16:02:53,708 [myid:] - INFO [main:Environment@100] - Client environment:java.compiler=<NA>  
2020-11-24 16:02:53,708 [myid:] - INFO [main:Environment@100] - Client environment:os.name=Windows 10  
2020-11-24 16:02:53,708 [myid:] - INFO [main:Environment@100] - Client environment:os.arch=amd64  
2020-11-24 16:02:53,708 [myid:] - INFO [main:Environment@100] - Client environment:os.version=10.0  
2020-11-24 16:02:53,708 [myid:] - INFO [main:Environment@100] - Client environment:user.name=PC  
2020-11-24 16:02:53,709 [myid:] - INFO [main:Environment@100] - Client environment:user.home=C:\Users\PC  
2020-11-24 16:02:53,709 [myid:] - INFO [main:Environment@100] - Client environment:user.dir=C:\Users\PC\Desktop\zookeeper\Codigos  
5  
2020-11-24 16:02:53,710 [myid:] - INFO [main:ZooKeeper@442] - Initiating client connection, connectString=localhost sessionTimeou  
t=3000 watcher=SyncPrimitive$Leader@71f2a7d5  
Finished starting ZK: State:CONNECTING sessionId:0x0 local:null remoteserver:null lastZxid:0 xid:1 sent:0 recv:0 queuedpkts:0 pend  
ingresp:0 queuedevents:0  
2020-11-24 16:02:53,971 [myid:] - INFO [main:SendThread(localhost:2181):ClientCnxn$SendThread@1025] - Opening socket connection t  
o server localhost/0:0:0:0:0:0:1:2181. Will not attempt to authenticate using SASL (unknown error)  
2020-11-24 16:02:53,975 [myid:] - INFO [main:SendThread(localhost:2181):ClientCnxn$SendThread@879] - Socket connection establishe  
d to localhost/0:0:0:0:0:0:1:2181, initiating session  
2020-11-24 16:02:53,981 [myid:] - INFO [main:SendThread(localhost:2181):ClientCnxn$SendThread@1299] - Session establishment compl  
ete on server localhost/0:0:0:0:0:0:1:2181, sessionId = 0x1001f1caf7c000d, negotiated timeout = 4000  
Current leader with id: 625061  
My path name is: /election/n-0000000001 and my id is: 845231!  
List: [n-0000000001, n-0000000000]  
Suffix: 1, min: 0  
Watching /election/n-0000000000  
/election/n-0000000001 is waiting for a notification!  
List: [n-0000000001]  
Suffix: 1, min: 1  
Become a leader: 845231!  
I will die after 10 seconds!  
Process 845231 died!
```

1.3) Executando o primeiro run_leader, que morre depois de 10 segundos.

```
2020-11-24 16:05:33,065 [myid:] - INFO [main:Environment@100] - Client environment:java.home=D:\Programs\Java\jdk-13.0.1
2020-11-24 16:05:33,066 [myid:] - INFO [main:Environment@100] - Client environment:java.class.path=.;C:\Users\PC\Desktop\zookeeper
r\zookeeper-3.4.14\zookeeper-3.4.14.jar;C:\Users\PC\Desktop\zookeeper\zookeeper-3.4.14\lib\slf4j-log4j12-1.7.25.jar;C:\Users\PC\De
sktop\zookeeper\zookeeper-3.4.14\lib\slf4j-api-1.7.25.jar;C:\Users\PC\Desktop\zookeeper\zookeeper-3.4.14\lib\log4j-1.2.17.jar
2020-11-24 16:05:33,066 [myid:] - INFO [main:Environment@100] - Client environment:java.library.path=D:\Programs\Java\jdk-13.0.1\
bin;C:\Windows\Sun\Java\bin;C:\Windows\system32;C:\Windows;C:\Program Files (x86)\Common Files\Intel\Shared Libraries\redist\intel
64\compiler;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\iCLS\;C:\Program Files\Intel\Intel(R) Management En
gine Components\iCLS\;C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem;C:\Windows\System32\WindowsPowerShell\v1.0\;C:\Windo
ws\System32\OpenSSH\;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\DAL;C:\Program Files\Intel\Intel(R) Manage
ment Engine Components\DAL;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\IPT;C:\Program Files\Intel\Intel(R)
Management Engine Components\IPT;C:\Program Files (x86)\NVIDIA Corporation\PhysX\Common;C:\Program Files\NVIDIA Corporation\NVIDIA
NvDLISR;D:\Programs\Java\jdk-13.0.1\bin;C:\Users\PC\AppData\Local\Microsoft\WindowsApps;C:\Users\PC\AppData\Local\Programs\Micros
oft VS Code\bin;C:\Users\PC\AppData\Local\atom\bin;C:\Users\PC\AppData\Local\GitHubDesktop\bin;.
2020-11-24 16:05:33,066 [myid:] - INFO [main:Environment@100] - Client environment:java.io.tmpdir=C:\Users\PC\AppData\Local\Temp\
2020-11-24 16:05:33,067 [myid:] - INFO [main:Environment@100] - Client environment:java.compiler=<NA>
2020-11-24 16:05:33,067 [myid:] - INFO [main:Environment@100] - Client environment:os.name=Windows 10
2020-11-24 16:05:33,067 [myid:] - INFO [main:Environment@100] - Client environment:os.arch=amd64
2020-11-24 16:05:33,067 [myid:] - INFO [main:Environment@100] - Client environment:os.version=10.0
2020-11-24 16:05:33,067 [myid:] - INFO [main:Environment@100] - Client environment:user.name=PC
2020-11-24 16:05:33,068 [myid:] - INFO [main:Environment@100] - Client environment:user.home=C:\Users\PC
2020-11-24 16:05:33,068 [myid:] - INFO [main:Environment@100] - Client environment:user.dir=C:\Users\PC\Desktop\zookeeper\Codigos
5
2020-11-24 16:05:33,068 [myid:] - INFO [main:ZooKeeper@442] - Initiating client connection, connectString=localhost sessionTimeou
t=3000 watcher=SyncPrimitive$Leader@71f2a7d5
Finished starting ZK: State:CONNECTING sessionId:0x0 local:null remoteserver:null lastZxid:0 xid:1 sent:0 rcv:0 queuedpkts:0 pend
ingresp:0 queuedevents:0
2020-11-24 16:05:33,327 [myid:] - INFO [main-SendThread(localhost:2181):ClientCnxn$SendThread@1025] - Opening socket connection t
o server localhost/127.0.0.1:2181. Will not attempt to authenticate using SASL (unknown error)
2020-11-24 16:05:33,331 [myid:] - INFO [main-SendThread(localhost:2181):ClientCnxn$SendThread@879] - Socket connection establishe
d to localhost/127.0.0.1:2181, initiating session
2020-11-24 16:05:33,337 [myid:] - INFO [main-SendThread(localhost:2181):ClientCnxn$SendThread@1299] - Session establishment compl
ete on server localhost/127.0.0.1:2181, sessionId = 0x1001f1caf7c000e, negotiated timeout = 4000
My path name is: /election/n-0000000002 and my id is: 938501!
List: [n-0000000002]
Suffix: 2, min: 2
Become a leader: 938501!
I will die after 10 seconds!
Process 938501 died!
PS C:\Users\PC\Desktop\zookeeper\Codigos5> |
```

Executando o segundo run_leader, que é interrompido antes de se tornar o lider.

```
2020-11-24 16:05:33,666 [myid:] - INFO [main:Environment@100] - Client environment:java.class.path=.;C:\Users\PC\Desktop\zookeep
er\zookeeper-3.4.14\zookeeper-3.4.14.jar;C:\Users\PC\Desktop\zookeeper\zookeeper-3.4.14\lib\slf4j-log4j12-1.7.25.jar;C:\Users\PC\De
sktop\zookeeper\zookeeper-3.4.14\lib\slf4j-api-1.7.25.jar;C:\Users\PC\Desktop\zookeeper\zookeeper-3.4.14\lib\log4j-1.2.17.jar
2020-11-24 16:05:33,666 [myid:] - INFO [main:Environment@100] - Client environment:java.library.path=D:\Programs\Java\jdk-13.0.1\
bin;C:\Windows\Sun\Java\bin;C:\Windows\system32;C:\Windows;C:\Program Files (x86)\Common Files\Intel\Shared Libraries\redist\intel
64\compiler;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\iCLS\;C:\Program Files\Intel\Intel(R) Management En
gine Components\iCLS\;C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem;C:\Windows\System32\WindowsPowerShell\v1.0\;C:\Windo
ws\System32\OpenSSH\;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\DAL;C:\Program Files\Intel\Intel(R) Manage
ment Engine Components\DAL;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\IPT;C:\Program Files\Intel\Intel(R)
Management Engine Components\IPT;C:\Program Files (x86)\NVIDIA Corporation\PhysX\Common;C:\Program Files\NVIDIA Corporation\NVIDIA
NvDLISR;D:\Programs\Java\jdk-13.0.1\bin;C:\Users\PC\AppData\Local\Microsoft\WindowsApps;C:\Users\PC\AppData\Local\Programs\Micros
oft VS Code\bin;C:\Users\PC\AppData\Local\atom\bin;C:\Users\PC\AppData\Local\GitHubDesktop\bin;.
2020-11-24 16:05:33,667 [myid:] - INFO [main:Environment@100] - Client environment:java.io.tmpdir=C:\Users\PC\AppData\Local\Temp\
2020-11-24 16:05:33,667 [myid:] - INFO [main:Environment@100] - Client environment:java.compiler=<NA>
2020-11-24 16:05:33,667 [myid:] - INFO [main:Environment@100] - Client environment:os.name=Windows 10
2020-11-24 16:05:33,668 [myid:] - INFO [main:Environment@100] - Client environment:os.arch=amd64
2020-11-24 16:05:33,668 [myid:] - INFO [main:Environment@100] - Client environment:os.version=10.0
2020-11-24 16:05:33,668 [myid:] - INFO [main:Environment@100] - Client environment:user.name=PC
2020-11-24 16:05:33,668 [myid:] - INFO [main:Environment@100] - Client environment:user.home=C:\Users\PC
2020-11-24 16:05:33,668 [myid:] - INFO [main:Environment@100] - Client environment:user.dir=C:\Users\PC\Desktop\zookeeper\Codigos
5
2020-11-24 16:05:33,669 [myid:] - INFO [main:ZooKeeper@442] - Initiating client connection, connectString=localhost sessionTimeou
t=3000 watcher=SyncPrimitive$Leader@71f2a7d5
Finished starting ZK: State:CONNECTING sessionId:0x0 local:null remoteserver:null lastZxid:0 xid:1 sent:0 rcv:0 queuedpkts:0 pend
ingresp:0 queuedevents:0
2020-11-24 16:05:33,935 [myid:] - INFO [main-SendThread(localhost:2181):ClientCnxn$SendThread@1025] - Opening socket connection t
o server localhost/127.0.0.1:2181. Will not attempt to authenticate using SASL (unknown error)
2020-11-24 16:05:33,937 [myid:] - INFO [main-SendThread(localhost:2181):ClientCnxn$SendThread@879] - Socket connection establishe
d to localhost/127.0.0.1:2181, initiating session
2020-11-24 16:05:33,943 [myid:] - INFO [main-SendThread(localhost:2181):ClientCnxn$SendThread@1299] - Session establishment compl
ete on server localhost/127.0.0.1:2181, sessionId = 0x1001f1caf7c000f, negotiated timeout = 4000
Current leader with id: 938501
My path name is: /election/n-0000000003 and my id is: 982802!
List: [n-0000000002, n-0000000003]
Suffix: 3, min: 2
Watching /election/n-0000000002
/election/n-0000000003 is waiting for a notification!
Terminate batch job (Y/N)? y
PS C:\Users\PC\Desktop\zookeeper\Codigos5> |
```

Executando o terceiro run_leader, que vira o líder imediatamente depois que o primeiro morre, pois o segundo já tinha sido interrompido antes.

```
ment Engine Components\DAL;C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\IPT;C:\Program Files\Intel\Intel(R)
Management Engine Components\IPT;C:\Program Files (x86)\NVIDIA Corporation\PhysX\Common;C:\Program Files\NVIDIA Corporation\NVIDIA
NvDLISR;D:\Programs\Java\jdk-13.0.1\bin;C:\Users\PC\AppData\Local\Microsoft\WindowsApps;C:\Users\PC\AppData\Local\Programs\Micros
oft VS Code\bin;C:\Users\PC\AppData\Local\atom\bin;C:\Users\PC\AppData\Local\GitHubDesktop\bin;.
2020-11-24 16:05:34,268 [myid:] - INFO [main:Environment@100] - Client environment:java.io.tmpdir=C:\Users\PC\AppData\Local\Temp\
2020-11-24 16:05:34,268 [myid:] - INFO [main:Environment@100] - Client environment:java.compiler=<NA>
2020-11-24 16:05:34,268 [myid:] - INFO [main:Environment@100] - Client environment:os.name=Windows 10
2020-11-24 16:05:34,268 [myid:] - INFO [main:Environment@100] - Client environment:os.arch=amd64
2020-11-24 16:05:34,269 [myid:] - INFO [main:Environment@100] - Client environment:os.version=10.0
2020-11-24 16:05:34,269 [myid:] - INFO [main:Environment@100] - Client environment:user.name=PC
2020-11-24 16:05:34,269 [myid:] - INFO [main:Environment@100] - Client environment:user.home=C:\Users\PC
2020-11-24 16:05:34,270 [myid:] - INFO [main:Environment@100] - Client environment:user.dir=C:\Users\PC\Desktop\zookeeper\Codigos
5
2020-11-24 16:05:34,271 [myid:] - INFO [main:ZooKeeper@442] - Initiating client connection, connectString=localhost sessionTimeou
t=3000 watcher=SyncPrimitive$Leader@71f2a7d5
Finished starting ZK: State:CONNECTING sessionId:0x0 local:null remoteserver:null lastZxid:0 xid:1 sent:0 recv:0 queuedpkts:0 pend
ingresp:0 queuedevents:0
2020-11-24 16:05:34,540 [myid:] - INFO [main-SendThread(localhost:2181):ClientCnxn$SendThread@1025] - Opening socket connection t
o server localhost/0:0:0:0:0:0:1:2181. Will not attempt to authenticate using SASL (unknown error)
2020-11-24 16:05:34,542 [myid:] - INFO [main-SendThread(localhost:2181):ClientCnxn$SendThread@879] - Socket connection establishe
d to localhost/0:0:0:0:0:0:1:2181, initiating session
2020-11-24 16:05:34,549 [myid:] - INFO [main-SendThread(localhost:2181):ClientCnxn$SendThread@1299] - Session establishment compl
ete on server localhost/0:0:0:0:0:0:1:2181, sessionId = 0x1001f1caf7c0010, negotiated timeout = 4000
Current leader with id: 938501
My path name is: /election/n-0000000004 and my id is: 184001!
List: [n-0000000002, n-0000000004, n-0000000003]
Suffix: 4, min: 2
Watching /election/n-0000000003
/election/n-0000000004 is waiting for a notification!
List: [n-0000000002, n-0000000004]
Suffix: 4, min: 2
Watching /election/n-0000000002
/election/n-0000000004 is waiting for a notification!
List: [n-0000000004]
Suffix: 4, min: 4
Become a leader: 184001!
I will die after 10 seconds!
Process 184001 died!
PS C:\Users\PC\Desktop\zookeeper\Codigos5> |
```