

Tarea 4

Implementación de un Token Ring

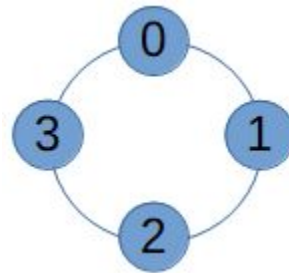
Topología en anillo

Jueves, 22 de octubre 2020

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Descripción

Desarrollar un programa en Java, el cual implementará un token que pasará de un nodo a otro nodo, en una topología lógica de anillo. El anillo constará de cuatro nodos, del 0 al 3.



- El token será un número entero de 8 bytes. El nodo 0 iniciará el token con cero.
- El nodo 0 enviará el token al nodo 1, entonces el nodo 1 incrementará el token y lo enviará al nodo 2. El nodo 2 incrementará el token y lo enviará al nodo 3. El nodo 3 incrementará el token y lo enviará al nodo 0.
- Cada nodo deberá desplegar el valor del token cada vez que lo recibe.

Se deberá subir a la plataforma un archivo ZIP que contenga el código fuente del programa desarrollado y un documento PDF con las capturas de pantalla. El archivo PDF deberá incluir una descripción de cada captura de pantalla.

Capturas

Subida de los archivos via scp a los servidores:

```
~ : scp — Konsole

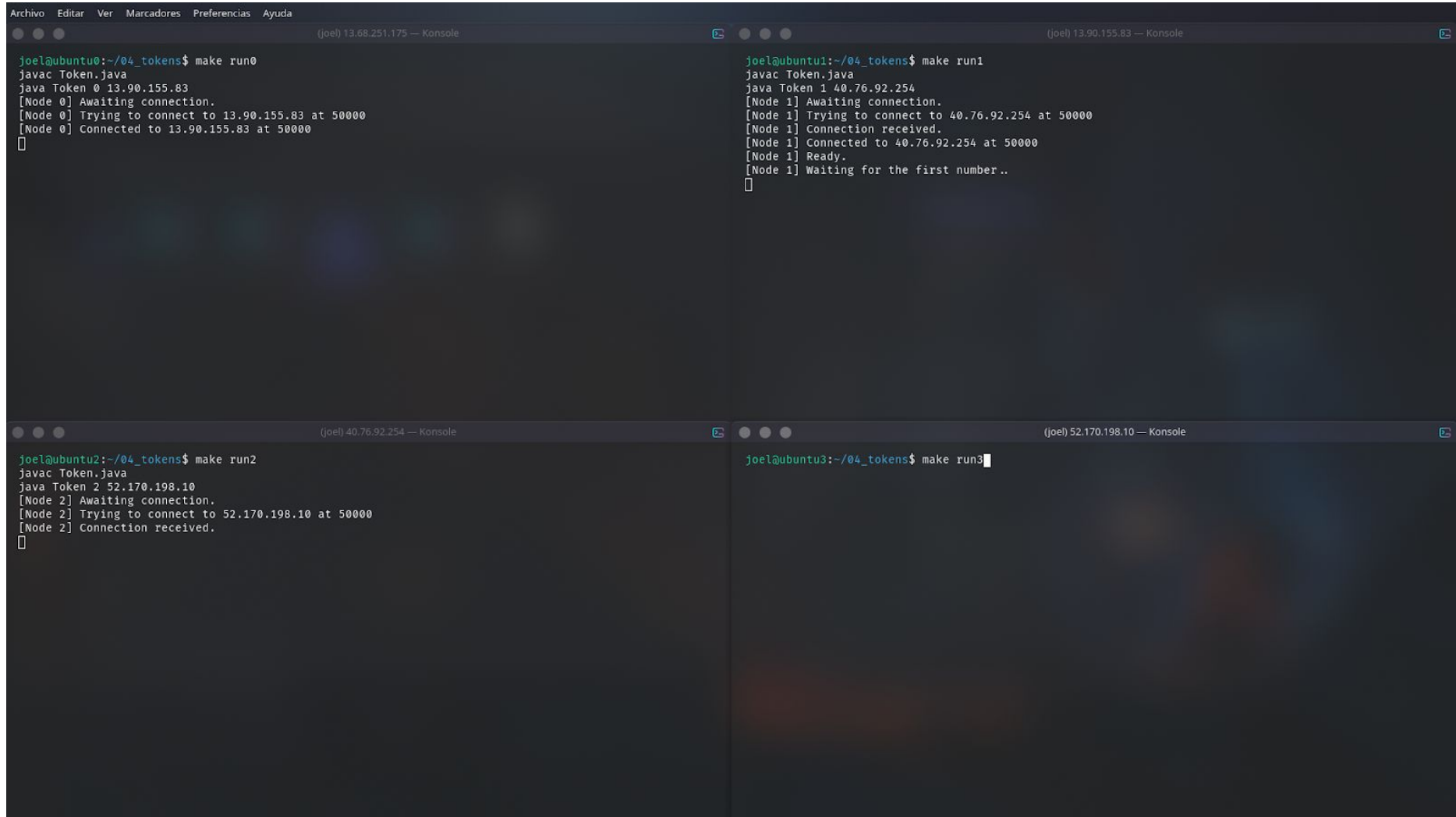
~ took 27s
→ scp -r ~/Escritorio/escom/distribuidos/Joel/Practicas/04_tokens joel@13.68.251.175:/home/joel/
joel@13.68.251.175's password:
Token.java                                100% 2866    24.8KB/s   00:00
configuration.txt                         100% 162     1.3KB/s    00:00
ConsoleColors.java                       100% 1402    10.8KB/s   00:00
Makefile                                  100% 386     3.3KB/s    00:00

~ took 8s
→ scp -r ~/Escritorio/escom/distribuidos/Joel/Practicas/04_tokens joel@13.90.155.83:/home/joel/
joel@13.90.155.83's password:
Token.java                                100% 2866    22.9KB/s   00:00
configuration.txt                         100% 162     1.4KB/s    00:00
ConsoleColors.java                       100% 1402    10.5KB/s   00:00
Makefile                                  100% 386     3.3KB/s    00:00

~ took 9s
→ scp -r ~/Escritorio/escom/distribuidos/Joel/Practicas/04_tokens joel@40.76.92.254:/home/joel/
joel@40.76.92.254's password:
Token.java                                100% 2866    23.9KB/s   00:00
configuration.txt                         100% 162     1.4KB/s    00:00
ConsoleColors.java                       100% 1402    12.9KB/s   00:00
Makefile                                  100% 386     3.6KB/s    00:00

~ took 9s
→ scp -r ~/Escritorio/escom/distribuidos/Joel/Practicas/04_tokens joel@52.170.198.10:/home/joel/
joel@52.170.198.10's password: 
```

Compilación y ejecución del programa en cada uno de los nodos usando un Makefile auxiliar con el número de nodo y la ip configurada. Captura justo antes de ejecutar el nodo 3, mientras los nodos 0, 1 y 2 se encuentran esperando.



```
joel@ubuntu0:~/04_tokens$ make run0
javac Token.java
java Token 0 13.90.155.83
[Node 0] Awaiting connection.
[Node 0] Trying to connect to 13.90.155.83 at 50000
[Node 0] Connected to 13.90.155.83 at 50000
[]

joel@ubuntu1:~/04_tokens$ make run1
javac Token.java
java Token 1 40.76.92.254
[Node 1] Awaiting connection.
[Node 1] Trying to connect to 40.76.92.254 at 50000
[Node 1] Connection received.
[Node 1] Connected to 40.76.92.254 at 50000
[Node 1] Ready.
[Node 1] Waiting for the first number..
[]

joel@ubuntu2:~/04_tokens$ make run2
javac Token.java
java Token 2 52.170.198.10
[Node 2] Awaiting connection.
[Node 2] Trying to connect to 52.170.198.10 at 50000
[Node 2] Connection received.
[]

joel@ubuntu3:~/04_tokens$ make run3
```

Ejecución de los 4 nodos:

```
Archivo Editar Ver Marcadores Preferencias Ayuda
(joel) 13.68.251.175 — Konsole

[Node 0] 2797
[Node 0] 2801
[Node 0] 2805
[Node 0] 2809
[Node 0] 2813
[Node 0] 2817
[Node 0] 2821
[Node 0] 2825
[Node 0] 2829
[Node 0] 2833
[Node 0] 2837
[Node 0] 2841
[Node 0] 2845
[Node 0] 2849
[Node 0] 2853
[Node 0] 2857
[Node 0] 2861
[Node 0] 2865
[Node 0] 2869
[Node 0] 2873
[Node 0] 2877
[Node 0] 2881
[Node 0] 2885
[Node 0] 2889
[Node 0] 2893
█

(joel) 13.90.155.83 — Konsole

[Node 1] 2758
[Node 1] 2762
[Node 1] 2766
[Node 1] 2770
[Node 1] 2774
[Node 1] 2778
[Node 1] 2782
[Node 1] 2786
[Node 1] 2790
[Node 1] 2794
[Node 1] 2798
[Node 1] 2802
[Node 1] 2806
[Node 1] 2810
[Node 1] 2814
[Node 1] 2818
[Node 1] 2822
[Node 1] 2826
[Node 1] 2830
[Node 1] 2834
[Node 1] 2838
[Node 1] 2842
[Node 1] 2846
[Node 1] 2850
[Node 1] 2854
█

(joel) 40.76.92.254 — Konsole

[Node 2] 2767
[Node 2] 2771
[Node 2] 2775
[Node 2] 2779
[Node 2] 2783
[Node 2] 2787
[Node 2] 2791
[Node 2] 2795
[Node 2] 2799
[Node 2] 2803
[Node 2] 2807
[Node 2] 2811
[Node 2] 2815
[Node 2] 2819
[Node 2] 2823
[Node 2] 2827
[Node 2] 2831
[Node 2] 2835
[Node 2] 2839
[Node 2] 2843
[Node 2] 2847
[Node 2] 2851
[Node 2] 2855
[Node 2] 2859
[Node 2] 2863
█

(joel) 52.170.198.10 — Konsole

[Node 3] 2780
[Node 3] 2784
[Node 3] 2788
[Node 3] 2792
[Node 3] 2796
[Node 3] 2800
[Node 3] 2804
[Node 3] 2808
[Node 3] 2812
[Node 3] 2816
[Node 3] 2820
[Node 3] 2824
[Node 3] 2828
[Node 3] 2832
[Node 3] 2836
[Node 3] 2840
[Node 3] 2844
[Node 3] 2848
[Node 3] 2852
[Node 3] 2856
[Node 3] 2860
[Node 3] 2864
[Node 3] 2868
[Node 3] 2872
[Node 3] 2876
█
```

Finalización del nodo 0 (y por consiguiente de los demás nodos):

```
Archivo  Editar  Ver  Marcadores  Preferencias  Ayuda
(joel) 13.68.251.175 — Konsole

[Node 0] 25233
[Node 0] 25237
[Node 0] 25241
[Node 0] 25245
[Node 0] 25249
[Node 0] 25253
[Node 0] 25257
[Node 0] 25261
[Node 0] 25265
[Node 0] 25269
[Node 0] 25273
[Node 0] 25277
[Node 0] 25281
[Node 0] 25285
[Node 0] 25289
[Node 0] 25293
[Node 0] 25297
[Node 0] 25301
[Node 0] 25305
[Node 0] 25309
[Node 0] 25313
^C[Node 0] 25317
Makefile:14: recipe for target 'run0' failed
make: *** [run0] Error 130
joel@ubuntu0:~/04_tokens$

(joel) 13.90.155.83 — Konsole

[Node 1] 25250
[Node 1] 25254
[Node 1] 25258
[Node 1] 25262
[Node 1] 25266
[Node 1] 25270
[Node 1] 25274
[Node 1] 25278
[Node 1] 25282
[Node 1] 25286
[Node 1] 25290
[Node 1] 25294
[Node 1] 25298
[Node 1] 25302
[Node 1] 25306
[Node 1] 25310
[Node 1] 25314
[Node 1] 25318
Exception in thread "main" java.io.EOFException
    at java.base/java.io.DataInputStream.readFully(DataInputStream.java:202)
    at java.base/java.io.DataInputStream.readLong(DataInputStream.java:421)
    at Token.process(Token.java:102)
    at Token.main(Token.java:66)
Makefile:17: recipe for target 'run1' failed
make: *** [run1] Error 1
joel@ubuntu1:~/04_tokens$

(joel) 40.76.92.254 — Konsole

[Node 2] 25251
[Node 2] 25255
[Node 2] 25259
[Node 2] 25263
[Node 2] 25267
[Node 2] 25271
[Node 2] 25275
[Node 2] 25279
[Node 2] 25283
[Node 2] 25287
[Node 2] 25291
[Node 2] 25295
[Node 2] 25299
[Node 2] 25303
[Node 2] 25307
[Node 2] 25311
[Node 2] 25315
[Node 2] 25319
Exception in thread "main" java.io.EOFException
    at java.base/java.io.DataInputStream.readFully(DataInputStream.java:202)
    at java.base/java.io.DataInputStream.readLong(DataInputStream.java:421)
    at Token.process(Token.java:102)
    at Token.main(Token.java:66)
Makefile:20: recipe for target 'run2' failed
make: *** [run2] Error 1
joel@ubuntu2:~/04_tokens$

(joel) 52.170.198.10 — Konsole

[Node 3] 25252
[Node 3] 25256
[Node 3] 25260
[Node 3] 25264
[Node 3] 25268
[Node 3] 25272
[Node 3] 25276
[Node 3] 25280
[Node 3] 25284
[Node 3] 25288
[Node 3] 25292
[Node 3] 25296
[Node 3] 25300
[Node 3] 25304
[Node 3] 25308
[Node 3] 25312
[Node 3] 25316
[Node 3] 25320
Exception in thread "main" java.io.EOFException
    at java.base/java.io.DataInputStream.readFully(DataInputStream.java:202)
    at java.base/java.io.DataInputStream.readLong(DataInputStream.java:421)
    at Token.process(Token.java:102)
    at Token.main(Token.java:66)
Makefile:23: recipe for target 'run3' failed
make: *** [run3] Error 1
joel@ubuntu3:~/04_tokens$
```