



# CES-27

## 2ª ATIVIDADE

**Professores:** Juliana de Melo Bezerra  
Vitor Curtis

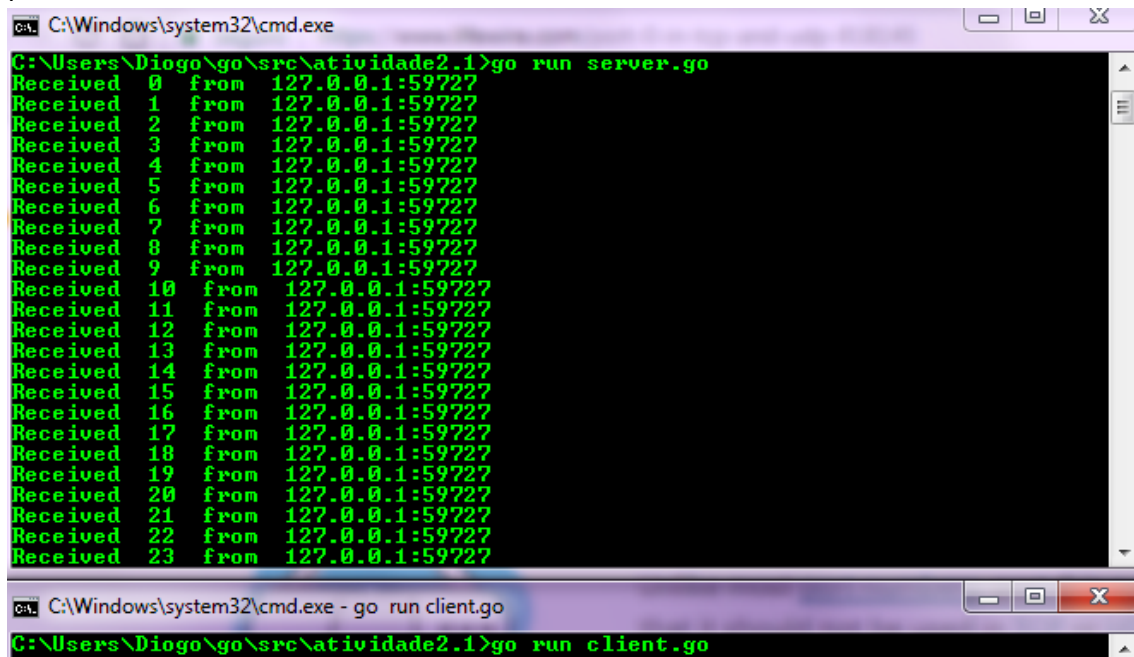
**Aluno:** Dennys Leandro Agostini Rocha

### **Objetivo**

Simular processos rodando e trocando seus relógios lógicos (*Logical Clock* definido por Lamport).

### Tarefa 1:

Selecionar a porta :0 para de onde o cliente enviará as mensagens significa que será selecionada uma porta qualquer (até :65535)<sup>[1]</sup> que esteja livre. No caso da Figura 1, a porta selecionada foi a :59727.



The image shows two overlapping Windows command prompt windows. The top window, titled 'C:\Windows\system32\cmd.exe', displays the output of a Go server program. It shows 24 received messages, each numbered from 0 to 23, all originating from the IP address 127.0.0.1 on port 59727. The bottom window, titled 'C:\Windows\system32\cmd.exe - go run client.go', shows the command 'go run client.go' being executed in the directory 'C:\Users\Diogo\go\src\atividade2.1'.

```
C:\Windows\system32\cmd.exe
C:\Users\Diogo\go\src\atividade2.1>go run server.go
Received 0 from 127.0.0.1:59727
Received 1 from 127.0.0.1:59727
Received 2 from 127.0.0.1:59727
Received 3 from 127.0.0.1:59727
Received 4 from 127.0.0.1:59727
Received 5 from 127.0.0.1:59727
Received 6 from 127.0.0.1:59727
Received 7 from 127.0.0.1:59727
Received 8 from 127.0.0.1:59727
Received 9 from 127.0.0.1:59727
Received 10 from 127.0.0.1:59727
Received 11 from 127.0.0.1:59727
Received 12 from 127.0.0.1:59727
Received 13 from 127.0.0.1:59727
Received 14 from 127.0.0.1:59727
Received 15 from 127.0.0.1:59727
Received 16 from 127.0.0.1:59727
Received 17 from 127.0.0.1:59727
Received 18 from 127.0.0.1:59727
Received 19 from 127.0.0.1:59727
Received 20 from 127.0.0.1:59727
Received 21 from 127.0.0.1:59727
Received 22 from 127.0.0.1:59727
Received 23 from 127.0.0.1:59727

C:\Windows\system32\cmd.exe - go run client.go
C:\Users\Diogo\go\src\atividade2.1>go run client.go
```

Figura 1: Cliente utiliza a porta :59727 para enviar mensagens para o servidor na porta :10001. Cada pacote é numerado e enviado com *delay* de 1 segundo.

## Tarefa 2:

Código comentado em anexo no .zip enviado no tidia ou no link

<https://github.com/dennysrocha/ces27>

The image shows three terminal windows stacked vertically, each displaying network traffic logs. The logs are color-coded: green for 'Received' and red for 'from'. Colored lines (yellow, blue, red, purple) connect specific log entries across the three windows. A red number '1' points to the first log entry in the top window. A red number '2' points to the second log entry in the middle window. A red number '3' points to the third log entry in the bottom window.

```
C:\Windows\system32\cmd.exe
C:\Users\Diogo\go\src\atividade2.1>process2 :10001 :10002 :10003
Received 0 from 127.0.0.1:64388
Received 0 from 127.0.0.1:64390
Received 1 from 127.0.0.1:64388
Received 1 from 127.0.0.1:64390
Received 2 from 127.0.0.1:64388
Received 2 from 127.0.0.1:64390
Received 3 from 127.0.0.1:64388
Received 3 from 127.0.0.1:64390
Received 4 from 127.0.0.1:64388
Received 4 from 127.0.0.1:64390
Received 5 from 127.0.0.1:64388
Received 5 from 127.0.0.1:64390
Received 6 from 127.0.0.1:64388

C:\Windows\system32\cmd.exe
C:\Users\Diogo\go\src\atividade2.1>process2 :10002 :10001 :10003
Received 3 from 127.0.0.1:64389
Received 0 from 127.0.0.1:64391
Received 4 from 127.0.0.1:64385
Received 1 from 127.0.0.1:64391
Received 5 from 127.0.0.1:64385
Received 2 from 127.0.0.1:64391
Received 6 from 127.0.0.1:64385
Received 3 from 127.0.0.1:64391
Received 7 from 127.0.0.1:64385
Received 4 from 127.0.0.1:64391
Received 8 from 127.0.0.1:64385
Received 5 from 127.0.0.1:64391
Received 9 from 127.0.0.1:64385

C:\Windows\system32\cmd.exe
C:\Users\Diogo\go\src\atividade2.1>process2 :10003 :10001 :10002
Received 1 from 127.0.0.1:64389
Received 4 from 127.0.0.1:64386
Received 2 from 127.0.0.1:64389
Received 5 from 127.0.0.1:64386
Received 3 from 127.0.0.1:64389
Received 6 from 127.0.0.1:64386
Received 4 from 127.0.0.1:64389
Received 7 from 127.0.0.1:64386
Received 5 from 127.0.0.1:64389
Received 8 from 127.0.0.1:64386
Received 6 from 127.0.0.1:64389
Received 9 from 127.0.0.1:64386
Received 7 from 127.0.0.1:64389
```

### Tarefa 3:

Código comentado em anexo no .zip enviado no tidia ou no link

<https://github.com/dennysrocha/ces27>

```
C:\Windows\system32\cmd.exe - process3 :10001:10002:10003
C:\Users\Diogo\go\src\atividade2.1>process3 :10001 :10002 :10003
Recebi do teclado: a
Received b from 127.0.0.1:59627
Received c from 127.0.0.1:59629

C:\Windows\system32\cmd.exe - process3 :10002:10001:10003
C:\Users\Diogo\go\src\atividade2.1>process3 :10002 :10001 :10003
Received a from 127.0.0.1:59625
b
Recebi do teclado: b
Received c from 127.0.0.1:59630

C:\Windows\system32\cmd.exe - process3 :10003:10001:10002
C:\Users\Diogo\go\src\atividade2.1>process3 :10003 :10001 :10002
Received a from 127.0.0.1:59626
Received b from 127.0.0.1:59628
c
Recebi do teclado: c
```

1

2

3

#### Tarefa 4:

Código comentado em anexo no .zip enviado no tidia ou no link

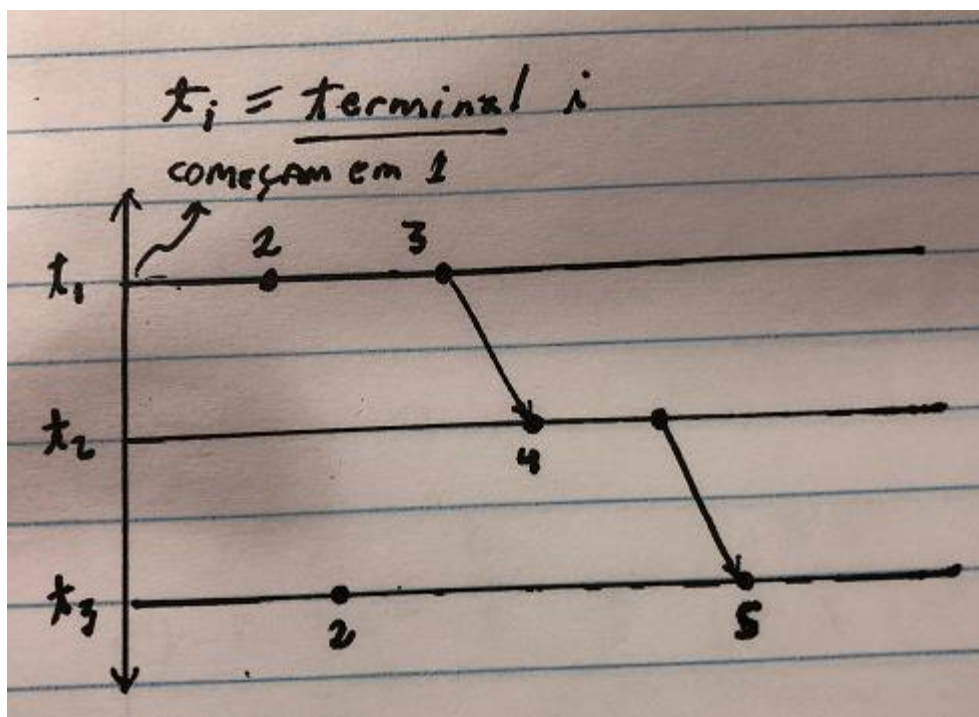
<https://github.com/dennysrocha/ces27>

```
C:\Windows\system32\cmd.exe - process4 1 :10001 :10002 :10003
C:\Users\Diogo\go\src\atividade2.1>process4 1 :10001 :10002 :10003
Eu sou o Processo 1 !
-----
1
Enviei para o processo 1 o meu logicalClock = 2
-----
2
Enviei para o processo 2 o meu logicalClock = 3
-----

C:\Windows\system32\cmd.exe - process4 2 :10001 :10002 :10003
C:\Users\Diogo\go\src\atividade2.1>process4 2 :10001 :10002 :10003
Eu sou o Processo 2 !
-----
Recebi um logicalClock igual a 3 do 127.0.0.1:59543
Agora meu logicalClock eh 4
-----
3
Enviei para o processo 3 o meu logicalClock = 5
-----

C:\Windows\system32\cmd.exe - process4 3 :10001 :10002 :10003
C:\Users\Diogo\go\src\atividade2.1>process4 3 :10001 :10002 :10003
Eu sou o Processo 3 !
-----
3
Enviei para o processo 3 o meu logicalClock = 2
-----
Recebi um logicalClock igual a 5 do 127.0.0.1:59547
Agora meu logicalClock eh 6
-----
```

O diagrama que representa as mensagens e transições entre os terminais pode ser visto na Figura abaixo.

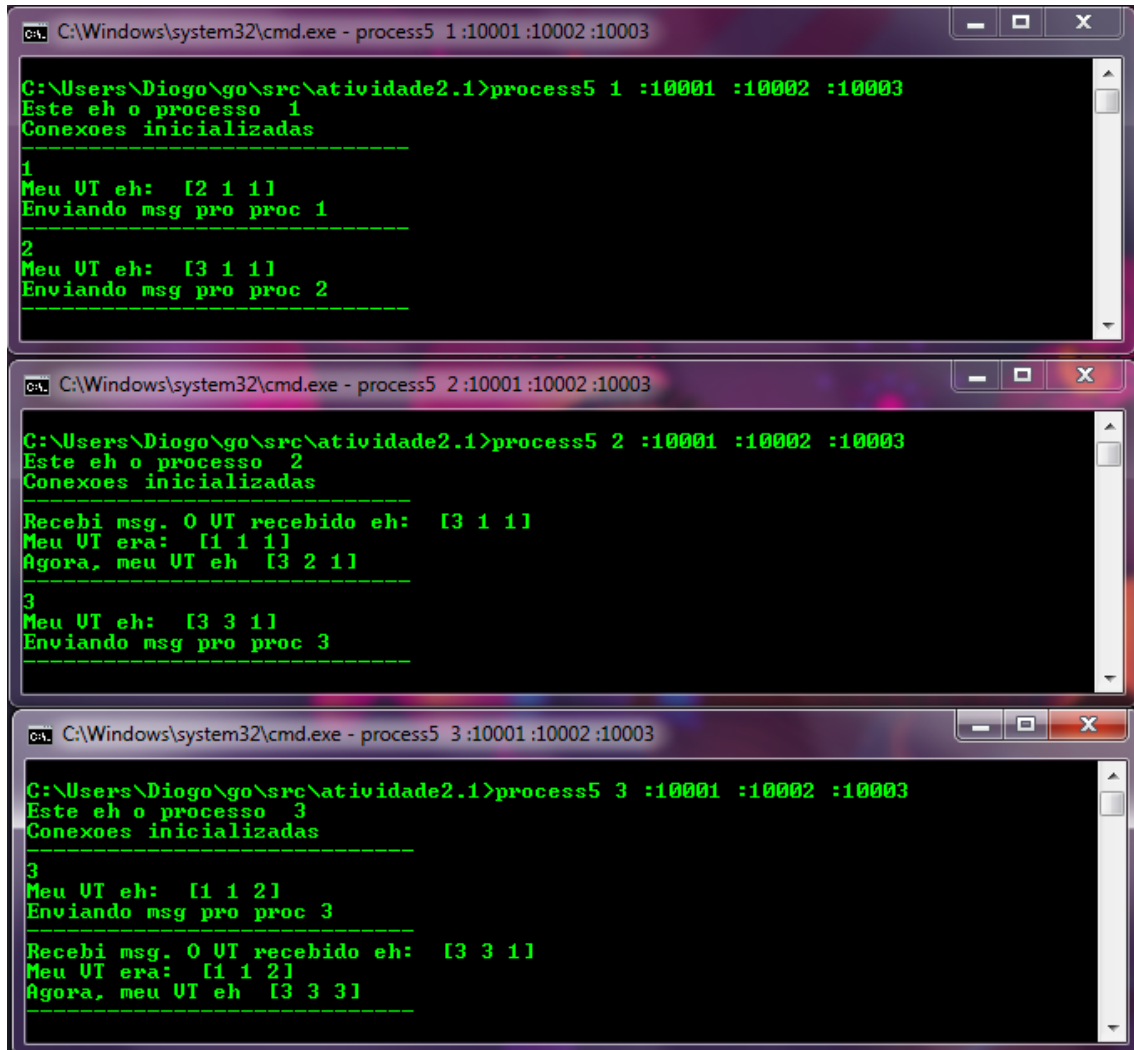


Vale notar que os logicalClock começavam em 1, diferentemente do que foi apresentado nos slides de aula, onde começavam em 0.

### Tarefa 5:

Código comentado em anexo no .zip enviado no tidia ou no link

<https://github.com/dennysrocha/ces27>



```
C:\Windows\system32\cmd.exe - process5 1 :10001 :10002 :10003

C:\Users\Diogo\go\src\atividade2.1>process5 1 :10001 :10002 :10003
Este eh o processo 1
Conexoes inicializadas
-----
1
Meu UT eh: [2 1 1]
Enviando msg pro proc 1
-----
2
Meu UT eh: [3 1 1]
Enviando msg pro proc 2
-----

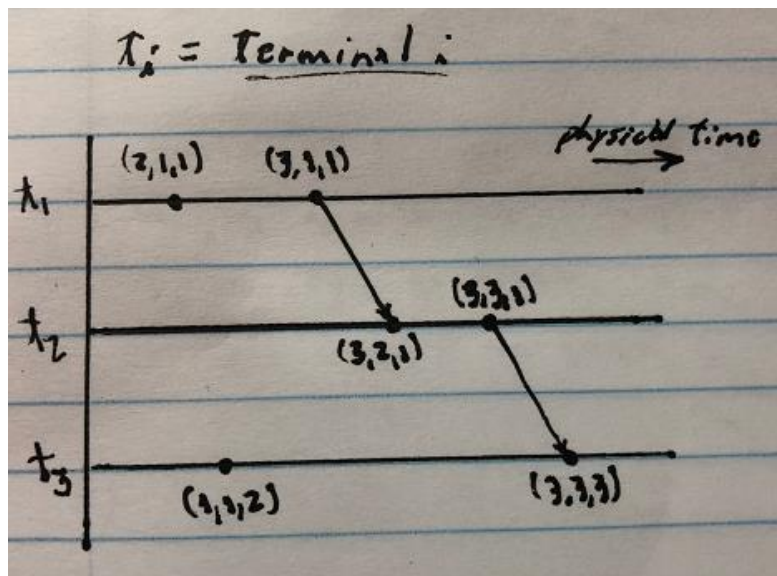
C:\Windows\system32\cmd.exe - process5 2 :10001 :10002 :10003

C:\Users\Diogo\go\src\atividade2.1>process5 2 :10001 :10002 :10003
Este eh o processo 2
Conexoes inicializadas
-----
Recebi msg. 0 UT recebido eh: [3 1 1]
Meu UT era: [1 1 1]
Agora, meu UT eh [3 2 1]
-----
3
Meu UT eh: [3 3 1]
Enviando msg pro proc 3
-----

C:\Windows\system32\cmd.exe - process5 3 :10001 :10002 :10003

C:\Users\Diogo\go\src\atividade2.1>process5 3 :10001 :10002 :10003
Este eh o processo 3
Conexoes inicializadas
-----
3
Meu UT eh: [1 1 2]
Enviando msg pro proc 3
-----
Recebi msg. 0 UT recebido eh: [3 3 1]
Meu UT era: [1 1 2]
Agora, meu UT eh [3 3 3]
-----
```

O diagrama que representa as mensagens e transições entre os terminais pode ser visto na Figura abaixo.



Vale notar que os logicalClock de cada terminal começavam em 1, diferentemente do que foi apresentado nos slides de aula, onde começavam em 0.



**Bibliografia:**

[1]: <https://www.lifewire.com/port-0-in-tcp-and-udp-818145>