

Redes 2
Cliente/Servidor UDP/IP

Alex Matsuo - GRR20196993
Lucas Soni Teixeira - GRR20190395

Introdução

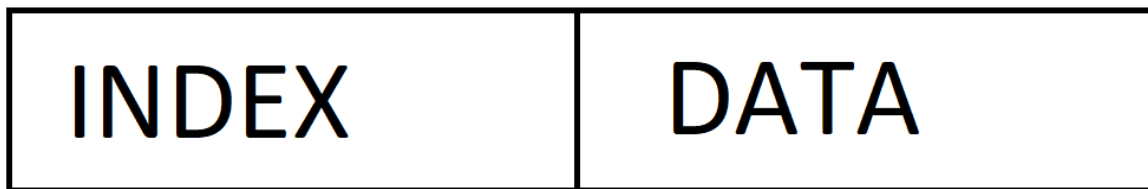
Neste trabalho foi implementado um servidor de streams em Python. Para fazer a comunicação foi utilizado um sistema de cliente/servidor usando sockets UDP. Vários clientes podem se conectar ao servidor e receber as mensagens sendo transmitidas. O servidor irá transmitir continuamente mensagens para todos os clientes conectados.

A Mensagem

A formatação da mensagem tem dois campos: um index que irá identificar a sequência da mensagem e o dado em si. O index simplesmente irá aumentar a cada mensagem enviada enquanto o dado irá somar 2.

Para isso foi criada uma classe Packet que foi instanciada e através da biblioteca pickle foi transformada em bits para que a comunicação entre cliente e servidor fosse possível.

Mensagem



Servidor

Para que o servidor possa funcionar foi utilizado socket UDP, em seguida foi criado um pacote inicial que será o objeto base para criar as mensagens que serão enviadas. O usuário também pode configurar um delay ao executar o servidor colocando no primeiro argumento o valor do delay em segundos. A funcionalidade principal será enviar continuamente pacotes para todos os clientes conectados e gerenciá-los.

Ex para delay : `python3 server.py 2`

Clientes Múltiplos

Para lidar com que o servidor possa ser conectado por múltiplos clientes foi utilizado uma lista de clientes que é atualizada a cada mensagem.

Cliente

O cliente irá tentar se conectar ao servidor enviando uma mensagem. A porta utilizada irá ser atualizada dinamicamente caso ela esteja sendo utilizada.

Depois o cliente irá escutar o servidor e mostrar todas as mensagens sendo recebidas imprimindo seu devido índice e dado.

Até que o cliente seja interrompido o cliente vai somando os dados e no final imprimir a soma de todos os dados recebidos.

Estatísticas

Ao final da execução do cliente foi exibido estatísticas com quantidade de pacotes recebidos, perdidos ou fora de ordem.

Logs

O programa gera 2 arquivos logs um para o cliente e outro para o servidor descrevendo o que aconteceu na comunicação.

Server log - exemplo

UDP server up and streaming

Client - 127.0.0.1:8889, Index - 0, Data - 2
Client - 127.0.0.1:8889, Index - 1, Data - 4
Client - 127.0.0.1:8889, Index - 2, Data - 6
Client - 127.0.0.1:8889, Index - 3, Data - 8
Client - 127.0.0.1:8889, Index - 4, Data - 10
Client - 127.0.0.1:8889, Index - 5, Data - 12
Client - 127.0.0.1:8889, Index - 6, Data - 14
Client - 127.0.0.1:8890, Index - 6, Data - 14
Client - 127.0.0.1:8889, Index - 7, Data - 16
Client - 127.0.0.1:8890, Index - 7, Data - 16
Client - 127.0.0.1:8889, Index - 8, Data - 18
Client - 127.0.0.1:8890, Index - 8, Data - 18
Client - 127.0.0.1:8889, Index - 9, Data - 20
Client - 127.0.0.1:8890, Index - 9, Data - 20
Client - 127.0.0.1:8889, Index - 10, Data - 22
Client - 127.0.0.1:8890, Index - 10, Data - 22
Client - 127.0.0.1:8889, Index - 11, Data - 24

Client - 127.0.0.1:8890, Index - 11, Data - 24
Client - 127.0.0.1:8891, Index - 11, Data - 24
Client - 127.0.0.1:8889, Index - 12, Data - 26
Client - 127.0.0.1:8890, Index - 12, Data - 26
Client - 127.0.0.1:8891, Index - 12, Data - 26
Client - 127.0.0.1:8889, Index - 13, Data - 28
Client - 127.0.0.1:8890, Index - 13, Data - 28
Client - 127.0.0.1:8891, Index - 13, Data - 28
Client - 127.0.0.1:8889, Index - 14, Data - 30
Client - 127.0.0.1:8890, Index - 14, Data - 30
Client - 127.0.0.1:8891, Index - 14, Data - 30
Client - 127.0.0.1:8889, Index - 15, Data - 32
Client - 127.0.0.1:8890, Index - 15, Data - 32
Client - 127.0.0.1:8891, Index - 15, Data - 32
Client - 127.0.0.1:8889, Index - 16, Data - 34
Client - 127.0.0.1:8890, Index - 16, Data - 34
Client - 127.0.0.1:8891, Index - 16, Data - 34
Client - 127.0.0.1:8889, Index - 17, Data - 36
Client - 127.0.0.1:8890, Index - 17, Data - 36
Client - 127.0.0.1:8891, Index - 17, Data - 36
Client - 127.0.0.1:8889, Index - 18, Data - 38
Client - 127.0.0.1:8890, Index - 18, Data - 38
Client - 127.0.0.1:8891, Index - 18, Data - 38
Server stopped.

Cliente log - exemplo

UDP client listening on port: 8889

Received: Index - 0, Data - 2
Received: Index - 1, Data - 4
Received: Index - 2, Data - 6
Received: Index - 3, Data - 8
Received: Index - 4, Data - 10
Received: Index - 5, Data - 12
UDP client listening on port: 8890

Received: Index - 6, Data - 14
Received: Index - 6, Data - 14

Received: Index - 7, Data - 16
Received: Index - 7, Data - 16
Received: Index - 8, Data - 18
Received: Index - 8, Data - 18
Received: Index - 9, Data - 20
Received: Index - 9, Data - 20
Received: Index - 10, Data - 22
Received: Index - 10, Data - 22
UDP client listening on port: 8891

Received: Index - 11, Data - 24
Received: Index - 11, Data - 24
Received: Index - 11, Data - 24
Received: Index - 12, Data - 26
Received: Index - 12, Data - 26
Received: Index - 12, Data - 26
Received: Index - 13, Data - 28
Received: Index - 13, Data - 28
Received: Index - 13, Data - 28
Received: Index - 14, Data - 30
Received: Index - 14, Data - 30
Received: Index - 14, Data - 30
Received: Index - 15, Data - 32
Received: Index - 15, Data - 32
Received: Index - 15, Data - 32
Received: Index - 16, Data - 34
Received: Index - 16, Data - 34
Received: Index - 16, Data - 34
Received: Index - 17, Data - 36
Received: Index - 17, Data - 36
Received: Index - 17, Data - 36
Total sum of received data: 186
Total packets received: 7
Total packets lost: 11
Packets out of order: 0
Total sum of received data: 286
Total packets received: 12
Total packets lost: 6
Packets out of order: 0
Received: Index - 18, Data - 38

Total sum of received data: 380

Total packets received: 19

Total packets lost: 0

Packets out of order: 0

Server log - exemplo 2

UDP server up and streaming

Client - 127.0.0.1:8889, Index - 0, Data - 2
Client - 127.0.0.1:8889, Index - 1, Data - 4
Client - 127.0.0.1:8889, Index - 2, Data - 6
Client - 127.0.0.1:8889, Index - 3, Data - 8
Client - 127.0.0.1:8889, Index - 4, Data - 10
Client - 127.0.0.1:8889, Index - 5, Data - 12
Client - 127.0.0.1:8890, Index - 5, Data - 12
Client - 127.0.0.1:8889, Index - 6, Data - 14
Client - 127.0.0.1:8890, Index - 6, Data - 14
Client - 127.0.0.1:8889, Index - 7, Data - 16
Client - 127.0.0.1:8890, Index - 7, Data - 16
Client - 127.0.0.1:8889, Index - 8, Data - 18
Client - 127.0.0.1:8890, Index - 8, Data - 18
Client - 127.0.0.1:8889, Index - 9, Data - 20
Client - 127.0.0.1:8890, Index - 9, Data - 20
Client - 127.0.0.1:8889, Index - 10, Data - 22
Client - 127.0.0.1:8890, Index - 10, Data - 22
Client - 127.0.0.1:8889, Index - 11, Data - 24
Client - 127.0.0.1:8890, Index - 11, Data - 24
Client - 127.0.0.1:8889, Index - 12, Data - 26
Client - 127.0.0.1:8890, Index - 12, Data - 26
Client - 127.0.0.1:8889, Index - 13, Data - 28
Client - 127.0.0.1:8890, Index - 13, Data - 28
Client - 127.0.0.1:8889, Index - 14, Data - 30
Client - 127.0.0.1:8890, Index - 14, Data - 30
Client - 127.0.0.1:8889, Index - 15, Data - 32
Client - 127.0.0.1:8890, Index - 15, Data - 32
Client - 127.0.0.1:8889, Index - 16, Data - 34
Client - 127.0.0.1:8890, Index - 16, Data - 34
Client - 127.0.0.1:8889, Index - 17, Data - 36
Client - 127.0.0.1:8890, Index - 17, Data - 36
Client - 127.0.0.1:8889, Index - 18, Data - 38

Client - 127.0.0.1:8890, Index - 18, Data - 38
Client - 127.0.0.1:8889, Index - 19, Data - 40
Client - 127.0.0.1:8890, Index - 19, Data - 40
Client - 127.0.0.1:8889, Index - 20, Data - 42
Client - 127.0.0.1:8890, Index - 20, Data - 42
Client - 127.0.0.1:8889, Index - 21, Data - 44
Client - 127.0.0.1:8890, Index - 21, Data - 44
Client - 127.0.0.1:8889, Index - 22, Data - 46
Client - 127.0.0.1:8890, Index - 22, Data - 46
Client - 127.0.0.1:8889, Index - 23, Data - 48
Client - 127.0.0.1:8890, Index - 23, Data - 48
Client - 127.0.0.1:8889, Index - 24, Data - 50
Client - 127.0.0.1:8890, Index - 24, Data - 50
Client - 127.0.0.1:8891, Index - 24, Data - 50
Client - 127.0.0.1:8889, Index - 25, Data - 52
Client - 127.0.0.1:8890, Index - 25, Data - 52
Client - 127.0.0.1:8891, Index - 25, Data - 52
Client - 127.0.0.1:8889, Index - 26, Data - 54
Client - 127.0.0.1:8890, Index - 26, Data - 54
Client - 127.0.0.1:8891, Index - 26, Data - 54
Client - 127.0.0.1:8889, Index - 27, Data - 56
Client - 127.0.0.1:8890, Index - 27, Data - 56
Client - 127.0.0.1:8891, Index - 27, Data - 56
Client - 127.0.0.1:8889, Index - 28, Data - 58
Client - 127.0.0.1:8890, Index - 28, Data - 58
Client - 127.0.0.1:8891, Index - 28, Data - 58
Client - 127.0.0.1:8889, Index - 29, Data - 60
Client - 127.0.0.1:8890, Index - 29, Data - 60
Client - 127.0.0.1:8891, Index - 29, Data - 60
Client - 127.0.0.1:8889, Index - 30, Data - 62
Client - 127.0.0.1:8890, Index - 30, Data - 62
Client - 127.0.0.1:8891, Index - 30, Data - 62
Client - 127.0.0.1:8889, Index - 31, Data - 64
Client - 127.0.0.1:8890, Index - 31, Data - 64
Client - 127.0.0.1:8891, Index - 31, Data - 64
Client - 127.0.0.1:8889, Index - 32, Data - 66
Client - 127.0.0.1:8890, Index - 32, Data - 66
Client - 127.0.0.1:8891, Index - 32, Data - 66
Client - 127.0.0.1:8889, Index - 33, Data - 68
Client - 127.0.0.1:8890, Index - 33, Data - 68

Client - 127.0.0.1:8891, Index - 33, Data - 68
Client - 127.0.0.1:8889, Index - 34, Data - 70
Client - 127.0.0.1:8890, Index - 34, Data - 70
Client - 127.0.0.1:8891, Index - 34, Data - 70
Client - 127.0.0.1:8889, Index - 35, Data - 72
Client - 127.0.0.1:8890, Index - 35, Data - 72
Client - 127.0.0.1:8891, Index - 35, Data - 72
Client - 127.0.0.1:8889, Index - 36, Data - 74
Client - 127.0.0.1:8890, Index - 36, Data - 74
Client - 127.0.0.1:8891, Index - 36, Data - 74
Client - 127.0.0.1:8889, Index - 37, Data - 76
Client - 127.0.0.1:8890, Index - 37, Data - 76
Client - 127.0.0.1:8891, Index - 37, Data - 76
Client - 127.0.0.1:8889, Index - 38, Data - 78
Client - 127.0.0.1:8890, Index - 38, Data - 78
Client - 127.0.0.1:8891, Index - 38, Data - 78
Client - 127.0.0.1:8889, Index - 39, Data - 80
Client - 127.0.0.1:8890, Index - 39, Data - 80
Client - 127.0.0.1:8891, Index - 39, Data - 80
Client - 127.0.0.1:8889, Index - 40, Data - 82
Client - 127.0.0.1:8890, Index - 40, Data - 82
Client - 127.0.0.1:8891, Index - 40, Data - 82
Client - 127.0.0.1:8892, Index - 40, Data - 82
Client - 127.0.0.1:8889, Index - 41, Data - 84
Client - 127.0.0.1:8890, Index - 41, Data - 84
Client - 127.0.0.1:8891, Index - 41, Data - 84
Client - 127.0.0.1:8892, Index - 41, Data - 84
Client - 127.0.0.1:8889, Index - 42, Data - 86
Client - 127.0.0.1:8890, Index - 42, Data - 86
Client - 127.0.0.1:8891, Index - 42, Data - 86
Client - 127.0.0.1:8892, Index - 42, Data - 86
Client - 127.0.0.1:8889, Index - 43, Data - 88
Client - 127.0.0.1:8890, Index - 43, Data - 88
Client - 127.0.0.1:8891, Index - 43, Data - 88
Client - 127.0.0.1:8892, Index - 43, Data - 88
Client - 127.0.0.1:8889, Index - 44, Data - 90
Client - 127.0.0.1:8890, Index - 44, Data - 90
Client - 127.0.0.1:8891, Index - 44, Data - 90
Client - 127.0.0.1:8892, Index - 44, Data - 90
Client - 127.0.0.1:8889, Index - 45, Data - 92

Client - 127.0.0.1:8890, Index - 45, Data - 92
Client - 127.0.0.1:8891, Index - 45, Data - 92
Client - 127.0.0.1:8892, Index - 45, Data - 92
Client - 127.0.0.1:8889, Index - 46, Data - 94
Client - 127.0.0.1:8890, Index - 46, Data - 94
Client - 127.0.0.1:8891, Index - 46, Data - 94
Client - 127.0.0.1:8892, Index - 46, Data - 94
Client - 127.0.0.1:8889, Index - 47, Data - 96
Client - 127.0.0.1:8890, Index - 47, Data - 96
Client - 127.0.0.1:8891, Index - 47, Data - 96
Client - 127.0.0.1:8892, Index - 47, Data - 96
Client - 127.0.0.1:8889, Index - 48, Data - 98
Client - 127.0.0.1:8890, Index - 48, Data - 98
Client - 127.0.0.1:8891, Index - 48, Data - 98
Client - 127.0.0.1:8892, Index - 48, Data - 98
Client - 127.0.0.1:8889, Index - 49, Data - 100
Client - 127.0.0.1:8890, Index - 49, Data - 100
Client - 127.0.0.1:8891, Index - 49, Data - 100
Client - 127.0.0.1:8892, Index - 49, Data - 100
Client - 127.0.0.1:8889, Index - 50, Data - 102
Client - 127.0.0.1:8890, Index - 50, Data - 102
Client - 127.0.0.1:8891, Index - 50, Data - 102
Client - 127.0.0.1:8892, Index - 50, Data - 102
Server stopped.

Cliente 1 log - exemplo

2023-11-07 18:28:49,613 - INFO - UDP client listening on port: 8889

2023-11-07 18:28:50,113 - INFO - Received: Index - 0, Data - 2
2023-11-07 18:28:51,114 - INFO - Received: Index - 1, Data - 4
2023-11-07 18:28:52,116 - INFO - Received: Index - 2, Data - 6
2023-11-07 18:28:53,117 - INFO - Received: Index - 3, Data - 8
2023-11-07 18:28:54,119 - INFO - Received: Index - 4, Data - 10
2023-11-07 18:28:55,121 - INFO - Received: Index - 5, Data - 12
2023-11-07 18:28:56,123 - INFO - Received: Index - 6, Data - 14
2023-11-07 18:28:57,125 - INFO - Received: Index - 7, Data - 16
2023-11-07 18:28:58,127 - INFO - Received: Index - 8, Data - 18
2023-11-07 18:28:59,129 - INFO - Received: Index - 9, Data - 20

2023-11-07 18:29:00,131 - INFO - Received: Index - 10, Data - 22
2023-11-07 18:29:01,133 - INFO - Received: Index - 11, Data - 24
2023-11-07 18:29:02,135 - INFO - Received: Index - 12, Data - 26
2023-11-07 18:29:03,136 - INFO - Received: Index - 13, Data - 28
2023-11-07 18:29:04,139 - INFO - Received: Index - 14, Data - 30
2023-11-07 18:29:05,141 - INFO - Received: Index - 15, Data - 32
2023-11-07 18:29:06,142 - INFO - Received: Index - 16, Data - 34
2023-11-07 18:29:07,144 - INFO - Received: Index - 17, Data - 36
2023-11-07 18:29:08,146 - INFO - Received: Index - 18, Data - 38
2023-11-07 18:29:09,148 - INFO - Received: Index - 19, Data - 40
2023-11-07 18:29:10,150 - INFO - Received: Index - 20, Data - 42
2023-11-07 18:29:11,152 - INFO - Received: Index - 21, Data - 44
2023-11-07 18:29:12,154 - INFO - Received: Index - 22, Data - 46
2023-11-07 18:29:13,156 - INFO - Received: Index - 23, Data - 48
2023-11-07 18:29:14,158 - INFO - Received: Index - 24, Data - 50
2023-11-07 18:29:15,160 - INFO - Received: Index - 25, Data - 52
2023-11-07 18:29:16,163 - INFO - Received: Index - 26, Data - 54
2023-11-07 18:29:17,165 - INFO - Received: Index - 27, Data - 56
2023-11-07 18:29:18,167 - INFO - Received: Index - 28, Data - 58
2023-11-07 18:29:19,170 - INFO - Received: Index - 29, Data - 60
2023-11-07 18:29:20,172 - INFO - Received: Index - 30, Data - 62
2023-11-07 18:29:21,174 - INFO - Received: Index - 31, Data - 64
2023-11-07 18:29:22,176 - INFO - Received: Index - 32, Data - 66
2023-11-07 18:29:23,179 - INFO - Received: Index - 33, Data - 68
2023-11-07 18:29:24,181 - INFO - Received: Index - 34, Data - 70
2023-11-07 18:29:25,183 - INFO - Received: Index - 35, Data - 72
2023-11-07 18:29:26,186 - INFO - Received: Index - 36, Data - 74
2023-11-07 18:29:27,188 - INFO - Received: Index - 37, Data - 76
2023-11-07 18:29:28,190 - INFO - Received: Index - 38, Data - 78
2023-11-07 18:29:29,193 - INFO - Received: Index - 39, Data - 80
2023-11-07 18:29:30,195 - INFO - Received: Index - 40, Data - 82
2023-11-07 18:29:31,197 - INFO - Received: Index - 41, Data - 84
2023-11-07 18:29:32,200 - INFO - Received: Index - 42, Data - 86
2023-11-07 18:29:33,203 - INFO - Received: Index - 43, Data - 88
2023-11-07 18:29:34,205 - INFO - Received: Index - 44, Data - 90
2023-11-07 18:29:35,100 - INFO - Total sum of received data: 2070
2023-11-07 18:29:35,100 - INFO - Total packets received: 45
2023-11-07 18:29:35,100 - INFO - Total packets lost: 0
2023-11-07 18:29:35,101 - INFO - Packets out of order: 0

Cliente 2 log - exemplo

2023-11-07 18:28:54,430 - INFO - UDP client listening on port: 8890

2023-11-07 18:28:55,121 - INFO - Received: Index - 5, Data - 12
2023-11-07 18:28:56,123 - INFO - Received: Index - 6, Data - 14
2023-11-07 18:28:57,125 - INFO - Received: Index - 7, Data - 16
2023-11-07 18:28:58,127 - INFO - Received: Index - 8, Data - 18
2023-11-07 18:28:59,129 - INFO - Received: Index - 9, Data - 20
2023-11-07 18:29:00,131 - INFO - Received: Index - 10, Data - 22
2023-11-07 18:29:01,133 - INFO - Received: Index - 11, Data - 24
2023-11-07 18:29:02,135 - INFO - Received: Index - 12, Data - 26
2023-11-07 18:29:03,137 - INFO - Received: Index - 13, Data - 28
2023-11-07 18:29:04,139 - INFO - Received: Index - 14, Data - 30
2023-11-07 18:29:05,141 - INFO - Received: Index - 15, Data - 32
2023-11-07 18:29:06,143 - INFO - Received: Index - 16, Data - 34
2023-11-07 18:29:07,145 - INFO - Received: Index - 17, Data - 36
2023-11-07 18:29:08,147 - INFO - Received: Index - 18, Data - 38
2023-11-07 18:29:09,149 - INFO - Received: Index - 19, Data - 40
2023-11-07 18:29:10,151 - INFO - Received: Index - 20, Data - 42
2023-11-07 18:29:11,153 - INFO - Received: Index - 21, Data - 44
2023-11-07 18:29:12,155 - INFO - Received: Index - 22, Data - 46
2023-11-07 18:29:13,157 - INFO - Received: Index - 23, Data - 48
2023-11-07 18:29:14,159 - INFO - Received: Index - 24, Data - 50
2023-11-07 18:29:15,161 - INFO - Received: Index - 25, Data - 52
2023-11-07 18:29:16,163 - INFO - Received: Index - 26, Data - 54
2023-11-07 18:29:17,165 - INFO - Received: Index - 27, Data - 56
2023-11-07 18:29:18,168 - INFO - Received: Index - 28, Data - 58
2023-11-07 18:29:19,170 - INFO - Received: Index - 29, Data - 60
2023-11-07 18:29:20,172 - INFO - Received: Index - 30, Data - 62
2023-11-07 18:29:21,175 - INFO - Received: Index - 31, Data - 64
2023-11-07 18:29:22,177 - INFO - Received: Index - 32, Data - 66
2023-11-07 18:29:23,179 - INFO - Received: Index - 33, Data - 68
2023-11-07 18:29:24,182 - INFO - Received: Index - 34, Data - 70
2023-11-07 18:29:25,184 - INFO - Received: Index - 35, Data - 72
2023-11-07 18:29:26,186 - INFO - Received: Index - 36, Data - 74
2023-11-07 18:29:27,189 - INFO - Received: Index - 37, Data - 76
2023-11-07 18:29:28,191 - INFO - Received: Index - 38, Data - 78
2023-11-07 18:29:29,193 - INFO - Received: Index - 39, Data - 80
2023-11-07 18:29:30,195 - INFO - Received: Index - 40, Data - 82

2023-11-07 18:29:31,198 - INFO - Received: Index - 41, Data - 84
2023-11-07 18:29:32,201 - INFO - Received: Index - 42, Data - 86
2023-11-07 18:29:33,203 - INFO - Received: Index - 43, Data - 88
2023-11-07 18:29:34,206 - INFO - Received: Index - 44, Data - 90
2023-11-07 18:29:35,208 - INFO - Received: Index - 45, Data - 92
2023-11-07 18:29:36,175 - INFO - Total sum of received data: 2120
2023-11-07 18:29:36,176 - INFO - Total packets received: 41
2023-11-07 18:29:36,176 - INFO - Total packets lost: 5
2023-11-07 18:29:36,176 - INFO - Packets out of order: 0

Cliente 3 log - exemplo

2023-11-07 18:29:13,660 - INFO - UDP client listening on port: 8891

2023-11-07 18:29:14,159 - INFO - Received: Index - 24, Data - 50
2023-11-07 18:29:15,161 - INFO - Received: Index - 25, Data - 52
2023-11-07 18:29:16,163 - INFO - Received: Index - 26, Data - 54
2023-11-07 18:29:17,166 - INFO - Received: Index - 27, Data - 56
2023-11-07 18:29:18,168 - INFO - Received: Index - 28, Data - 58
2023-11-07 18:29:19,170 - INFO - Received: Index - 29, Data - 60
2023-11-07 18:29:20,173 - INFO - Received: Index - 30, Data - 62
2023-11-07 18:29:21,175 - INFO - Received: Index - 31, Data - 64
2023-11-07 18:29:22,177 - INFO - Received: Index - 32, Data - 66
2023-11-07 18:29:23,180 - INFO - Received: Index - 33, Data - 68
2023-11-07 18:29:24,182 - INFO - Received: Index - 34, Data - 70
2023-11-07 18:29:25,184 - INFO - Received: Index - 35, Data - 72
2023-11-07 18:29:26,187 - INFO - Received: Index - 36, Data - 74
2023-11-07 18:29:27,189 - INFO - Received: Index - 37, Data - 76
2023-11-07 18:29:28,191 - INFO - Received: Index - 38, Data - 78
2023-11-07 18:29:29,193 - INFO - Received: Index - 39, Data - 80
2023-11-07 18:29:30,196 - INFO - Received: Index - 40, Data - 82
2023-11-07 18:29:31,198 - INFO - Received: Index - 41, Data - 84
2023-11-07 18:29:32,201 - INFO - Received: Index - 42, Data - 86
2023-11-07 18:29:33,204 - INFO - Received: Index - 43, Data - 88
2023-11-07 18:29:34,206 - INFO - Received: Index - 44, Data - 90
2023-11-07 18:29:35,209 - INFO - Received: Index - 45, Data - 92
2023-11-07 18:29:36,211 - INFO - Received: Index - 46, Data - 94
2023-11-07 18:29:37,214 - INFO - Received: Index - 47, Data - 96
2023-11-07 18:29:38,216 - INFO - Received: Index - 48, Data - 98
2023-11-07 18:29:39,219 - INFO - Received: Index - 49, Data - 100

2023-11-07 18:29:40,221 - INFO - Received: Index - 50, Data - 102
2023-11-07 18:29:43,252 - INFO - Total sum of received data: 2002
2023-11-07 18:29:43,253 - INFO - Total packets received: 27
2023-11-07 18:29:43,253 - INFO - Total packets lost: 24
2023-11-07 18:29:43,253 - INFO - Packets out of order: 0

Cliente 3 log - exemplo

2023-11-07 18:29:29,876 - INFO - UDP client listening on port: 8892

2023-11-07 18:29:30,196 - INFO - Received: Index - 40, Data - 82
2023-11-07 18:29:31,199 - INFO - Received: Index - 41, Data - 84
2023-11-07 18:29:32,201 - INFO - Received: Index - 42, Data - 86
2023-11-07 18:29:33,204 - INFO - Received: Index - 43, Data - 88
2023-11-07 18:29:34,206 - INFO - Received: Index - 44, Data - 90
2023-11-07 18:29:35,209 - INFO - Received: Index - 45, Data - 92
2023-11-07 18:29:36,211 - INFO - Received: Index - 46, Data - 94
2023-11-07 18:29:37,214 - INFO - Received: Index - 47, Data - 96
2023-11-07 18:29:38,217 - INFO - Received: Index - 48, Data - 98
2023-11-07 18:29:39,219 - INFO - Received: Index - 49, Data - 100
2023-11-07 18:29:40,222 - INFO - Received: Index - 50, Data - 102
2023-11-07 18:29:46,773 - INFO - Total sum of received data: 930
2023-11-07 18:29:46,774 - INFO - Total packets received: 11
2023-11-07 18:29:46,774 - INFO - Total packets lost: 40
2023-11-07 18:29:46,774 - INFO - Packets out of order: 0