

Fault Tolerant Computing Project 1

Usage Instructions

Server

```
python server.py [--port port_number]
```

- default port_number: 50051

Client

```
python client.py [--host host_number] [--port port_number]
```

- default host_number: localhost
- default port_number: 50051

Screenshots

- Step1. Run server.py

```
(base) D:\python_Practice\Anaconda3\FaultTolerantComputing\hw1>python server.py
server is acting.....
```

- Step2. Run client.py

```
(base) D:\python_Practice\Anaconda3\FaultTolerantComputing\hw1>python client.py
put request:

name {
  name: "Danny"
}
response {
  value: "\251\236"\242"
}

get response:

value: "\224k\1776"

value: "\224k\1776"
```

```
(base) D:\python_Practice\Anaconda3\FaultTolerantComputing\hw1>python server.py
server is acting.....
Send challenge: b'\xd442\x9a' to user: Danny
USER Danny register successfully.
Send challenge: b'\xa9\x9e"\xa2' to user: Danny
Got the response from client Danny
Danny login the server
|
```

Input the wrong IP/port

Wrong IP address

usage setting:

server:

1. host = 172.17.33.8
2. port = 50051

client:

1. host = 172.17.33.26
2. port = 50051

Result

```
Traceback (most recent call last):
  File "D:\python_Practice\Anaconda3\FaultTolerantComputing\hw1\client.py", line 82, in <module>
    stub.RegisterVoter(voter)
  File "C:\Users\User\anaconda3\lib\site-packages\grpc_channel.py", line 946, in __call__
    return _end_unary_response_blocking(state, call, False, None)
  File "C:\Users\User\anaconda3\lib\site-packages\grpc_channel.py", line 849, in _end_unary_response_blocking
    raise _InactiveRpcError(state)
grpc_channel._InactiveRpcError: <_InactiveRpcError of RPC that terminated with:
  status = StatusCode.UNAVAILABLE
  details = "failed to connect to all addresses; last error: UNKNOWN: ipv4:172.17.33.26:50051: socket is null"
  debug_error_string = "UNKNOWN:failed to connect to all addresses; last error: UNKNOWN: ipv4:172.17.33.26:50051: socket is null {created_time:"2023-03-26T09:12:45.313255133+00:00", grpc_status:14}"
>
```

error message:

```
grpc_channel._InactiveRpcError: <_InactiveRpcError of RPC that terminated with:
  status = StatusCode.UNAVAILABLE
  details = "failed to connect to all addresses;
  last error: UNKNOWN: ipv4:172.17.33.26:50051: socket is null"
  debug_error_string = "UNKNOWN:failed to connect to all addresses;
  last error:UNKNOWN:ipv4:172.17.33.26:50051:socket is null
  {created_time:"2023-03-26T09:12:45.313255133+00:00",
  grpc_status:14}"
```

Wrong port number

usage setting:

server:

1. host = 172.17.33.8
2. port = 50051

client:

1. host = 172.17.33.8
2. port = 50050

```
Traceback (most recent call last):
  File "D:\python_Practice\Anaconda3\FaultTolerantComputing\hw1\client.py", line 82, in <module>
    stub.RegisterVoter(voter)
  File "C:\Users\User\anaconda3\lib\site-packages\grpc_channel.py", line 946, in __call__
    return _end_unary_response_blocking(state, call, False, None)
  File "C:\Users\User\anaconda3\lib\site-packages\grpc_channel.py", line 849, in _end_unary_response_blocking
    raise _InactiveRpcError(state)
grpc_channel._InactiveRpcError: <_InactiveRpcError of RPC that terminated with:
  status = StatusCode.UNAVAILABLE
  details = "failed to connect to all addresses; last error: UNAVAILABLE: ipv4:127.0.0.1:50050: WSA Error"
  debug_error_string = "UNKNOWN:failed to connect to all addresses; last error: UNAVAILABLE: ipv4:127.0.0.1:50050: WSA Error {created_time
: "2023-03-26T09:24:16.000163455+00:00", grpc_status:14}"
>
```

error message:

```
grpc_channel._InactiveRpcError: <_InactiveRpcError of RPC that terminated with:
  status = StatusCode.UNAVAILABLE
  details = "failed to connect to all addresses;
  last error: UNAVAILABLE: ipv4:127.0.0.1:50050: WSA Error"
  debug_error_string = "UNKNOWN:failed to connect to all addresses;
  last error: UNAVAILABLE: ipv4:127.0.0.1:50050: WSA Error
  {created_time:"2023-03-26T09:24:16.000163455+00:00", grpc_status:14}"
```

Reason: The connection is built by a socket pair, where the socket IP address and TCP port (e.g. localhost:50051). Therefore, if the server and the client have different socket, the connection will not be built, means that they cannot communicate with other one.

Server Crash

```
Traceback (most recent call last):
  File "D:\python_Practice\Anaconda3\FaultTolerantComputing\hw1\client.py", line 78, in <module>
    response = try_login(stub, UserName)
  File "D:\python_Practice\Anaconda3\FaultTolerantComputing\hw1\client.py", line 14, in try_login
    Challenge = stub.PreAuth(VoterName)
  File "C:\Users\User\anaconda3\lib\site-packages\grpc_channel.py", line 946, in __call__
    return _end_unary_response_blocking(state, call, False, None)
  File "C:\Users\User\anaconda3\lib\site-packages\grpc_channel.py", line 849, in _end_unary_response_blocking
    raise _InactiveRpcError(state)
grpc._channel._InactiveRpcError: <InactiveRpcError of RPC that terminated with:
  status = StatusCode.UNKNOWN
  details = "Stream removed"
  debug_error_string = "UNKNOWN:Error received from peer ipv6:%5B::1%5D:50051 {created_time:"2023-03-27T02:30:45.774904336+00:00", grpc_status:2, grpc_message:"Stream removed"}">

During handling of the above exception, another exception occurred:

Traceback (most recent call last):
  File "D:\python_Practice\Anaconda3\FaultTolerantComputing\hw1\client.py", line 82, in <module>
    stub.RegisterVoter(voter)
  File "C:\Users\User\anaconda3\lib\site-packages\grpc_channel.py", line 946, in __call__
    return _end_unary_response_blocking(state, call, False, None)
  File "C:\Users\User\anaconda3\lib\site-packages\grpc_channel.py", line 849, in _end_unary_response_blocking
    raise _InactiveRpcError(state)
grpc._channel._InactiveRpcError: <InactiveRpcError of RPC that terminated with:
  status = StatusCode.UNAVAILABLE
```

When the server crash, client cannot get the response, and raise the error.