Homework 3

Cedric Bone

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Add your content using `reStructuredText` syntax. See the reStructuredText documentation for details.

CHAPTER

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CEDRIC_BONE_HW3

1.1 main module

main.**main**()

Main function

1.2 network_simulator module

Network Simulator

Implements a network simulator that can drop and corrupt packets.

class network_simulator.**NetworkSimulator**(*sender_port=11111*, *receiver_port=22222*, *loss_rate=0.3*, *corruption_rate=0.3*)

Bases: object

Simulates an unreliable network channel.

loss_rate

Probability of packet loss

Type
float

corruption_rate

Probability of packet corruption

Type
float

run()

Main sim loop.

Receives packets and randomly drops or corrupts them before forwarding.

1.3 packet module

Packet

Implements a packet with sequence number, data, and checksum.

class packet.**Packet**(*seq_num*, *data*, *ack_num=None*, *checksum=None*)

Bases: object

A packet with sequence number, data, and checksum.

seq_num
Sequence number

Type
int

data
Data

Type
str

ack_num
Ack number

Type
int

checksum
Checksum

Type
int

calculate_checksum()
Calculate checksum (UDP style)

1.4 receiver module

Receiver

Implements the receiver side of the reliable data transfer protocol.

class receiver.**Receiver**(*port=22222*, *window_size=4*)
Bases: object

A receiver that receives packets and reassembles

receive_file()
Receive file from sender

send_ack(*ack_num*, *addr*)
Send an ACK

Parameters

- **ack_num** (*int*) – ACK number
- **addr** (*tuple*) – Address of sender

1.5 sender module

Sender

Implements the sender side of the reliable data transfer protocol.

class sender.**Sender**(*port=11111*, *window_size=4*)
Bases: object

Implements a sliding window retransmission.

seq_num

Current sequence number

Type
int

window_size

Size of the sliding window

Type
int

window

Buffer

Type
dict

base

Sequence number of the oldest unacknowledged packet

Type
int

send_file(*data*, *receiver_addr=('localhost', 33333)*)

Send a file to address

Parameters

- **data** (*str*) – Data to send
- **receiver_addr** (*tuple*) – Destination address (host, port)

send_packet(*packet*, *addr*)

Send a packet to address

Parameters

- **packet** (Packet) – Packet to send
- **addr** (*tuple*) – Destination address (host, port)

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