# COMP9331 Computer Networks and Applications
# Assignment 1 Report

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## Part 1. Brief Introduction :

STP is depend on UDP, to achieve the goal which is to transmit file form sender to receiver. Running STP begins at three times handshake, then is the transmission of the file and finally
stop with the four-way handshake.
At the transmission part, having a simulated process which simulates to drop or lost packet.

## Part 2. STP header :

```
# packet type
class Packet:
    def __init__(self, flag, sequence, acknowledgement, data):
        self.seq = sequence
        self.ACK = acknowledgement
        self.flags = [False, False, False]
        # 0: ACK 1: SYN 2: FIN
        self.data = data

        if flag == 'ACK':
            self.flags[0] = True
        if flag == 'SYN':
            self.flags[1] = True
        if flag == 'FIN':
            self.flags[2] = True
        if flag == 'SYNACK':
            self.flags[0] = True
            self.flags[1] = True
        if flag == 'FINACK':
            self.flags[0] = True
            self.flags[2] = True
```

A packet with a header and the data is defined as above.

Header has a sequence number (which is seq), a ACK number (which is ACK), a flag (which distinguishes the packet types: SYN, SYNACK, ACK, FIN, FINACK)

## Part 3. Standard version of the assignment
## (a)

pdrop = 0.1, MWS = 500 bytes, MSS = 50 bytes, seed = 300
Set the timeout = 100000, it will take a long time to transmit if there is a drop appear.
Set the timeout = 0.1, it will transmit the same packet much more times, which will increase the number of packet which should be retransmitted.

If pdrop = 0.2,
The drop ratio increase, the number of retransmission packet will increase.

## (b)

`Tcurrent:`

```
Amount of (original) Data Transferred (in bytes): 1953
Number of Data Segments Sent (excluding retransmissions): 40
Number of (all) Packets Dropped (by the PLD module): 10
Number of Retransmitted Segments: 54
Number of Duplicate Acknowledgements received: 76
```

`4 x Tcurrent:`

```
Amount of (original) Data Transferred (in bytes): 1953
Number of Data Segments Sent (excluding retransmissions): 40
Number of (all) Packets Dropped (by the PLD module): 7
Number of Retransmitted Segments: 39
Number of Duplicate Acknowledgements received: 65
```

`Tcurrent / 4:`

```
Amount of (original) Data Transferred (in bytes): 1953
Number of Data Segments Sent (excluding retransmissions): 40
Number of (all) Packets Dropped (by the PLD module): 12
Number of Retransmitted Segments: 96
Number of Duplicate Acknowledgements received: 102
```

As the data showed above, if the Tcurrent increased, the number of retransmitted segment will be decreased.
If the Tcurrent decreased, the number of retransmitted segment will be increased.

About time, if the Tcurrent increased, it will take a long time to wait for the timeout.