

TCP Finite Automata Documentation

JFLAP simulation inputs:

Client Side:

1. Establishing a Connection (Three-Way Handshake):

- Input Sequence: `_CONNECT_synack`
- Expected Path: `CLOSED -> SYN SENT -> ESTABLISHED`

2. Closing a Connection (Active Close):

- Case 1:
 - Input Sequence: `_CONNECT_synack_CLOSE_ACK_FIN_TIMEOUT`
 - Expected Path: `CLOSED -> SYN SENT -> ESTABLISHED -> FIN WAIT 1 -> FIN WAIT 2 -> TIME WAIT -> CLOSED`
- Case 2:
 - Input Sequence: `_CONNECT_synack_CLOSE_finack_TIMEOUT`
 - Expected Path: `CLOSED -> SYN SENT -> ESTABLISHED -> FIN WAIT 1 -> TIME WAIT -> CLOSED`

3. Simultaneous Close:

- Input Sequence: `_CONNECT_synack_CLOSE_FIN_ACK_TIMEOUT`
- Expected Path: `CLOSED -> SYN SENT -> ESTABLISHED -> FIN WAIT 1 -> CLOSING -> TIME WAIT -> CLOSED`

Server Side:

1. Listening for a Connection:

- Input Sequence: `_LISTEN_SYN_ACK`
- Expected Path: `CLOSED -> LISTEN -> SYN RECEIVED -> ESTABLISHED`

2. Closing a Connection (Passive Close):

- Input Sequence: `_LISTEN_SYN_ACK_FIN_CLOSE_ACK`
- Expected Path: `CLOSED -> LISTEN -> SYN RECEIVED -> ESTABLISHED -> CLOSE WAIT -> LAST ACK -> CLOSED`

3. Simultaneous Close:

- Input Sequence: `_LISTEN_SYN_ACK_CLOSE_FIN_ACK_TIMEOUT`
- Expected Path: `CLOSED -> LISTEN -> SYN RECEIVED -> ESTABLISHED -> FIN WAIT 1 -> CLOSING -> TIME WAIT -> CLOSED`

Unusual events:

1. Connection Reset:

- Input Sequence: `_LISTEN_SEND_SYN_RST`
- Expected Path: `CLOSED -> LISTEN -> SYN SENT -> CLOSED`

2. Unusual close:

- Input Sequence: `_LISTEN_SYN_CLOSE_FIN_ACK_TIMEOUT`
- Expected Path: `CLOSED -> LISTEN -> SYN RECEIVED -> FIN WAIT 1 -> CLOSING -> TIME WAIT -> CLOSED`

General example

Client:

```
_CONNECT_synack_DATA_DATA_DATA_CLOSE_ACK_FIN_TIMEOUT
```

```
CLOSED -> SYN SENT -> ESTABLISHED -> ESTABLISHED -> ESTABLISHED ->
```

Server:

```
_LISTEN_SYN_ACK_DATA_DATA_DATA_FIN_CLOSE_ACK
```

```
LOSED -> LISTEN -> SYN RECEIVED -> ESTABLISHED -> ESTABLISHED ->
```