

## **LAB-2: PING**

### **Tcl code:**

```
set ns [new Simulator]
```

```
set ta [open PING.tr w]
$ns trace-all $ta
```

```
set nf [open PING.nam w]
$ns namtrace-all $nf
```

```
proc finish {} {
    global ns nf ta
    $ns flush-trace
    #Close the NAM trace file
    close $ta
    close $nf
    #Execute NAM on the trace file
    exec nam PING.nam &
    exit 0
}
```

```
set n0 [$ns node]
set n1 [$ns node]
set n2 [$ns node]
set n3 [$ns node]
set n4 [$ns node]
set n5 [$ns node]
```

```
$ns duplex-link $n0 $n1 1Mb 10ms DropTail
$ns duplex-link $n2 $n1 10Mb 10ms DropTail
$ns duplex-link $n3 $n1 10Mb 10ms DropTail
$ns duplex-link $n4 $n1 1Mb 10ms DropTail
$ns duplex-link $n5 $n1 10Mb 1ms DropTail
```

```
$ns queue-limit $n0 $n1 5
$ns queue-limit $n1 $n2 20
$ns queue-limit $n1 $n3 20
$ns queue-limit $n1 $n4 5
$ns queue-limit $n1 $n5 20
```

```
#Color the flow
```

```
$ns color 2 Blue
```

```
$ns color 3 Red
```

```
$ns color 4 Yellow
```

```
$ns color 5 Green
```

```
#Define s 'recv' function for the class 'Agent/Ping'
```

```
Agent/Ping instproc recv {from rtt} {
```

```
    $self instvar node_
```

```
    puts "node [$node_ id] received ping answer from $from with round-trip-time $rtt ms."
```

```
}
```

```
#Create ping agents and attach them to the nodes
```

```
set p0 [new Agent/Ping]
```

```
$ns attach-agent $n0 $p0
```

```
$p0 set class_ 1
```

```
set p2 [new Agent/Ping]
```

```
$ns attach-agent $n2 $p2
```

```
$p2 set class_ 2
```

```
set p3 [new Agent/Ping]
```

```
$ns attach-agent $n3 $p3
```

```
$p3 set class_ 3
```

```
set p4 [new Agent/Ping]
```

```
$ns attach-agent $n4 $p4
```

```
$p4 set class_ 4
```

```
set p5 [new Agent/Ping]
```

```
$ns attach-agent $n5 $p5
```

```
$p5 set class_ 5
```

```
#Connect the two agents
```

```
$ns connect $p2 $p5
```

```
$ns connect $p3 $p5
```

```
proc SendPingPacket { } {
```

```
    global ns p2 p3
```

```
    set intervalTime 0.001
```

```
    set now [$ns now]
```

```
    $ns at [expr $now+$intervalTime] "$p2 send"
```

```
    $ns at [expr $now+$intervalTime] "$p3 send"
```

```
    $ns at [expr $now+$intervalTime] "SendPingPacket"
```

```
}
```

\$ns run

The image shows a Windows desktop with two open windows. The left window is a terminal titled 'bash' with the command prompt 'C:\Users\user>'. It displays a series of 'ping' commands from 'node 3' to '5' with round-trip times of 22.2 ms. The commands are part of a script named 'lab2.tcl'. The right window is a file explorer titled 'C:\Users\user\Downloads'. It shows a grid of files, including images, documents, and folders. The files are arranged in a grid view. The desktop background is a light blue gradient. The taskbar at the bottom shows the time as 6:37 PM and the date as 21/08/2024.