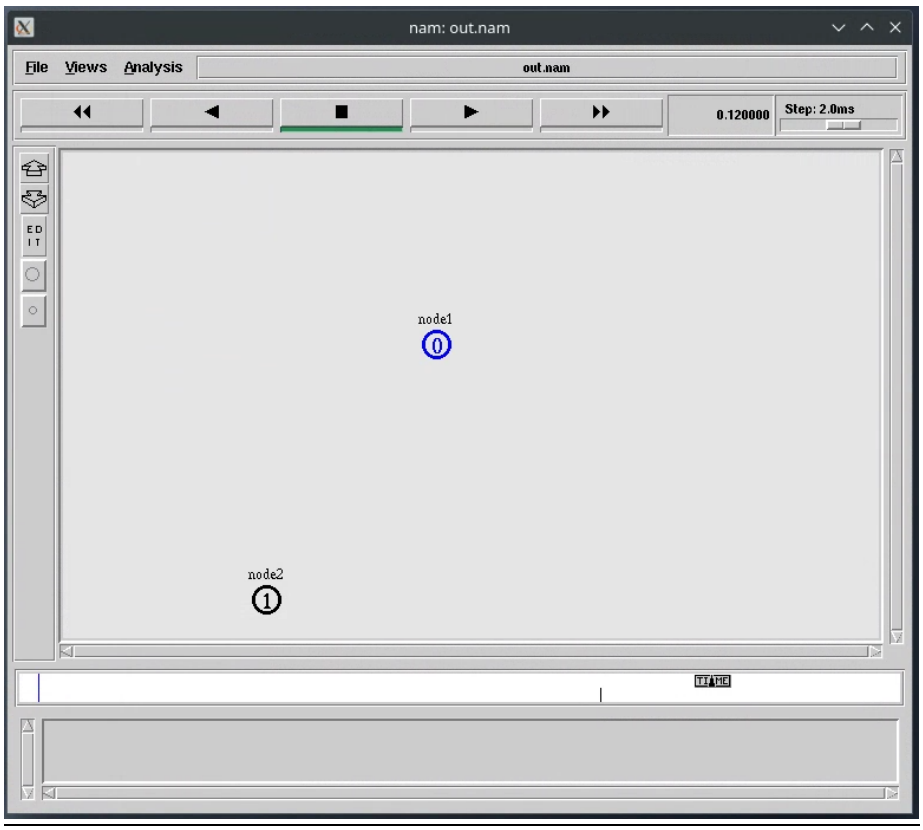
Week 1: Sample Wireless Network

```
set ns [new Simulator]
set val(chan) Channel/WirelessChannel;
set val(prop) Propagation/TwoRayGround;
set val(netif) Phy/WirelessPhy;
set val(mac) Mac/802_11;
set val(ifq) Queue/DropTail/PriQueue;
set val(ll) LL;
set val(ant) Antenna/OmniAntenna;
set val(ifqLen) 50;
set val(nn) 2;
set val(rp) AODV;
set val(x) 500;
set val(y) 500;
set topo [new Topography]

$topo load_flatgrid $val(x) $val(y)

set namfile [open out.nam w]
$ns namtrace-all-wireless $namfile $val(x) $val(y)

set tracefile [open out.tr w]
$ns trace-all $tracefile

create-god $val(nn)
$ns node-config -adhocRouting $val(rp) \
-channelType $val(chan) \
-propType $val(prop) \
-phyType $val(netif) \
-macType $val(mac) \
-ifqType $val(ifq) \
-llType $val(ll) \
-antType $val(ant) \
-ifqLen $val(ifqLen) \
-topoInstance $topo \
-agentTrace ON \
-routerTrace ON \
-macTrace OFF \
-movementTrace ON \

set n1 [$ns node]
set n2 [$ns node]

$n1 color black
$n2 color black

$n1 set X_ 200
$n1 set Y_ 100
$n1 set Z_ 0

$n1 set X_ 200
$n1 set Y_ 300
$n1 set Z_ 0
```

```
$ns at 0.1 "$n1 color blue"
$ns at 0.1 "$n1 label node1"
$ns at 0.1 "$n2 label node2"

$ns initial_node_pos $n1 30
$ns initial_node_pos $n2 30

proc finish {} {
global namfile tracefile
close $namfile
close $tracefile
exec nam out.nam &
}

$ns at 10.0 "finish"
$ns run
```

Output:

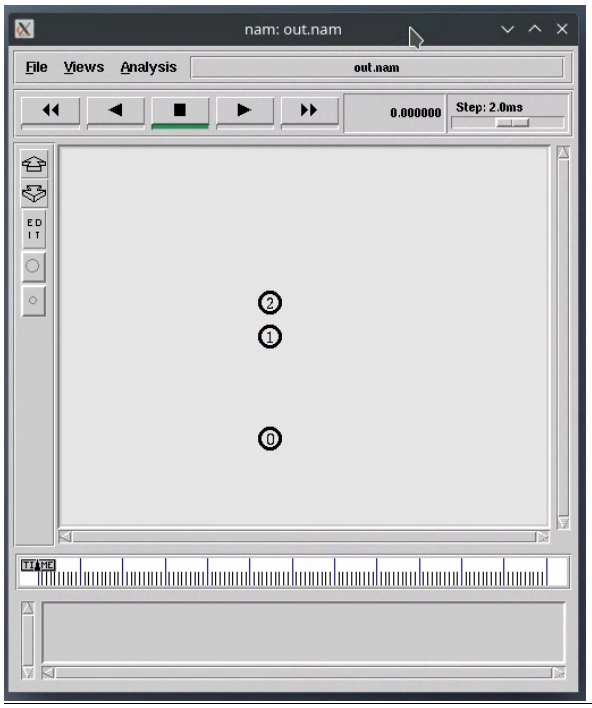


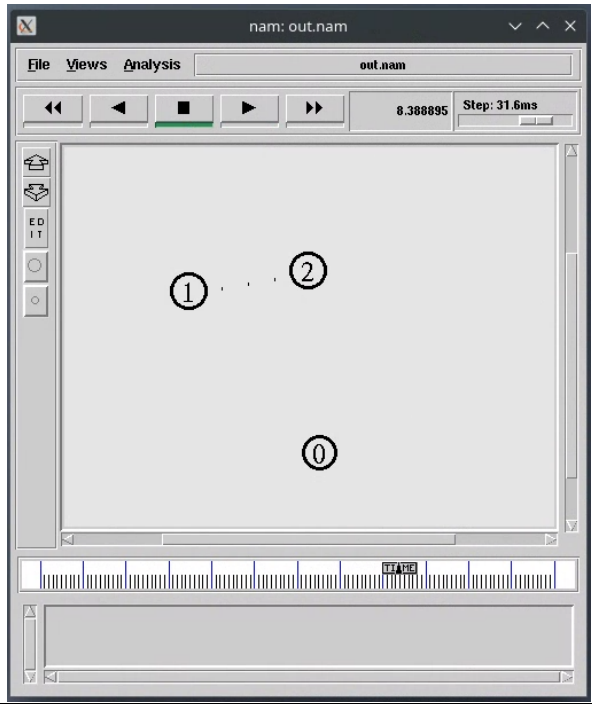
Week 2: Mobile Ad-hoc Network

```
set ns [new Simulator]
set val(chan) Channel/WirelessChannel;
set val(prop) Propagation/TwoRayGround;
set val(netif) Phy/WirelessPhy;
set val(mac) Mac/802_11;
set val(ifq) Queue/DropTail/PriQueue;
set val(ll) LL;
set val(ant) Antenna/OmniAntenna;
set val(ifqLen) 50;
set val(nn) 3;
set val(rp) DSDV;

set topo [new Topography]
$topo load_flatgrid 500 500

set namfile [open out.nam w]
$ns namtrace-all-wireless $namfile 500 500

set tracefile [open out.tr w]
$ns trace-all $tracefile

create-god $val(nn)
$ns node-config -adhocRouting $val(rp) \
-channelType $val(chan) \
-propType $val(prop) \
-phyType $val(netif) \
-macType $val(mac) \
-ifqType $val(ifq) \
-llType $val(ll) \
-antType $val(ant) \
-ifqLen $val(ifqLen) \
-topoInstance $topo \
-agentTrace ON \
-routerTrace ON \
-macTrace OFF \
-movementTrace ON \

set n0 [$ns node]
set n1 [$ns node]
set n2 [$ns node]

$n0 set X_ 200
$n0 set Y_ 100
$n0 set Z_ 0

$n1 set X_ 200
$n1 set Y_ 250
$n1 set Z_ 0

$n2 set X_ 200
$n2 set Y_ 300
$n2 set Z_ 0
```

```
$ns initial_node_pos $n0 30
$ns initial_node_pos $n1 30
$ns initial_node_pos $n2 30

$ns at 1.0 "$n0 setdest 400 110 8"
$ns at 1.0 "$n1 setdest 40 250 8"
$ns at 1.0 "$n2 setdest 430 150 8"

set udp [new Agent/UDP]
set null [new Agent/Null]
$ns attach-agent $n2 $udp
$ns attach-agent $n1 $null
$ns connect $udp $null
set cbr [new Application/Traffic/CBR]
$cbr attach-agent $udp
$ns at 0.1 "$cbr start"

proc finish {} {
global namfile tracefile
close $namfile
close $tracefile
exec nam out.nam &
exit
}

$ns at 12.0 "finish"
$ns run
```

Output:



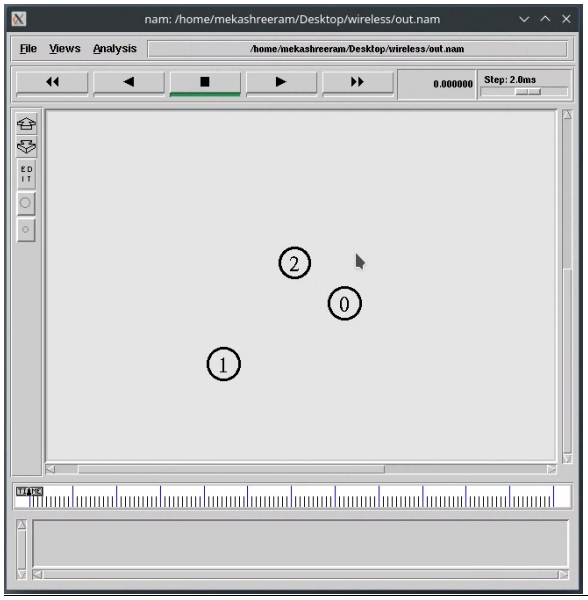


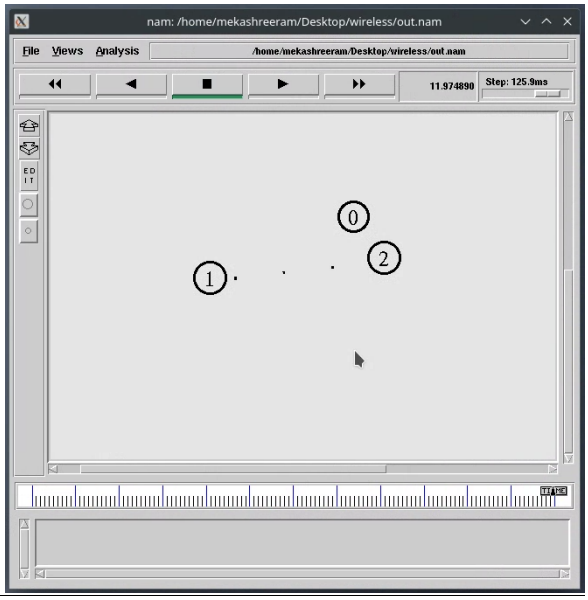
Week 3: Ad-hoc On-demand Distance Vector protocol

```
set ns [new Simulator]
set val(chan) Channel/WirelessChannel;
set val(prop) Propagation/TwoRayGround;
set val(netif) Phy/WirelessPhy;
set val(mac) Mac/802_11;
set val(ifq) Queue/DropTail/PriQueue;
set val(ll) LL;
set val(ant) Antenna/OmniAntenna;
set val(ifqLen) 50;
set val(nn) 3;
set val(rp) AODV;

set topo [new Topography]
$topo load_flatgrid 500 500

set namfile [open out.nam w]
$ns namtrace-all-wireless $namfile 500 500

set tracefile [open out.tr w]
$ns trace-all $tracefile

create-god $val(nn)
$ns node-config -adhocRouting $val(rp) \
-channelType $val(chan) \
-propType $val(prop) \
-phyType $val(netif) \
-macType $val(mac) \
-ifqType $val(ifq) \
-llType $val(ll) \
-antType $val(ant) \
-ifqLen $val(ifqLen) \
-topoInstance $topo \
-agentTrace ON \
-routerTrace ON \
-macTrace OFF \
-movementTrace ON \

set n0 [$ns node]
set n1 [$ns node]
set n2 [$ns node]

$n0 set X_ 180
$n0 set Y_ 90
$n0 set Z_ 0

$n1 set X_ 60
$n1 set Y_ 30
$n1 set Z_ 0

$n2 set X_ 130
$n2 set Y_ 130
$n2 set Z_ 0
```

```
$ns initial_node_pos $n0 30
$ns initial_node_pos $n1 30
$ns initial_node_pos $n2 30

$ns at 1.0 "$n0 setdest 200 350 8"
$ns at 1.0 "$n1 setdest 20 250 8"
$ns at 1.0 "$n2 setdest 430 150 8"

set udp [new Agent/UDP]
set null [new Agent/Null]
$ns attach-agent $n2 $udp
$ns attach-agent $n1 $null
$ns connect $udp $null
set cbr [new Application/Traffic/CBR]
$cbr attach-agent $udp
$ns at 0.1 "$cbr start"

proc finish {} {
global namfile tracefile
close $namfile
close $tracefile
exec nam out.nam &
exit
}

$ns at 12.0 "finish"
$ns run
```

Output:



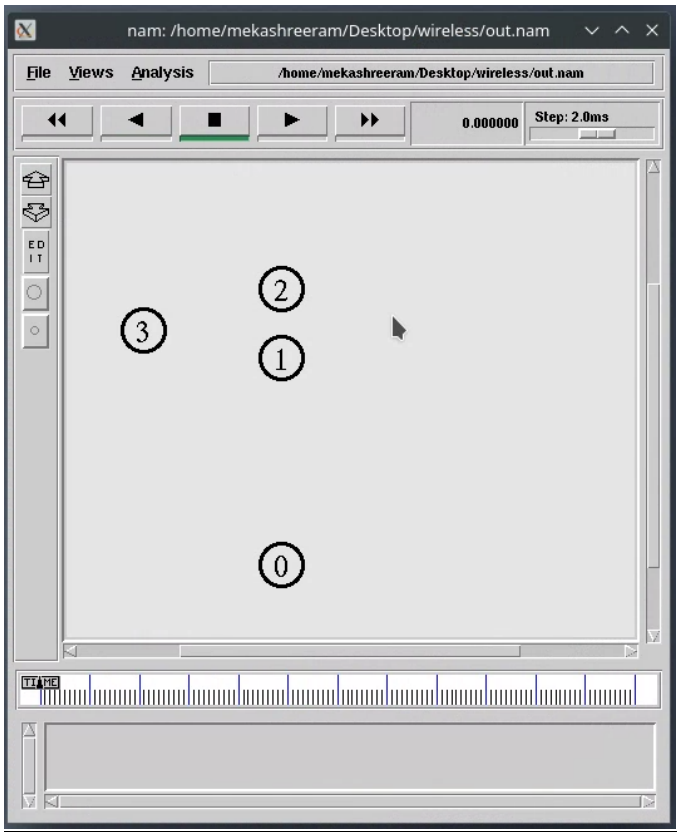


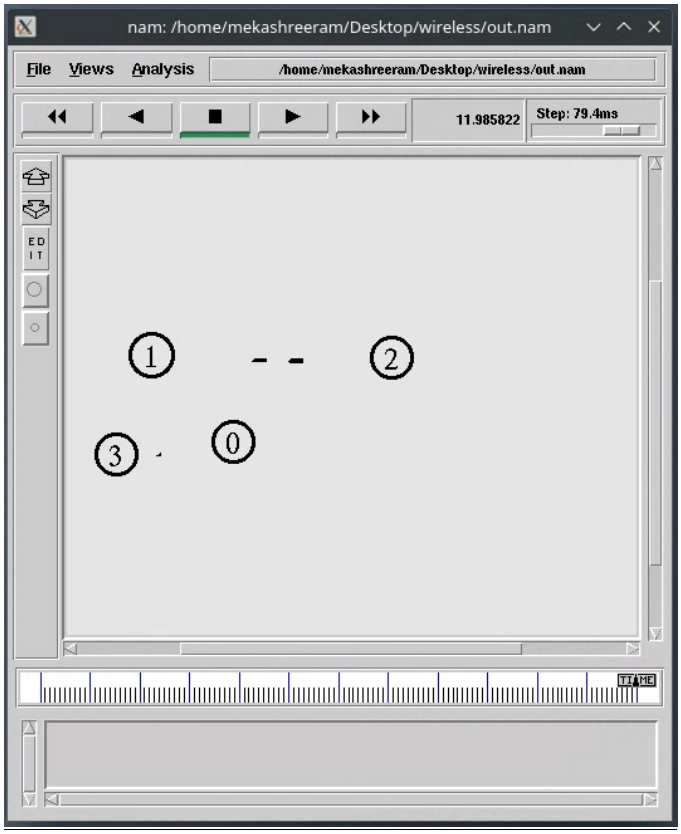
Week 4: Transmission Control Protocol

```
set ns [new Simulator]
set val(chan) Channel/WirelessChannel;
set val(prop) Propagation/TwoRayGround;
set val(netif) Phy/WirelessPhy;
set val(mac) Mac/802_11;
set val(ifq) Queue/DropTail/PriQueue;
set val(ll) LL;
set val(ant) Antenna/OmniAntenna;
set val(ifqLen) 50;
set val(nn) 4;
set val(rp) DSDV;

set topo [new Topography]
$topo load_flatgrid 500 500

set namfile [open out.nam w]
$ns namtrace-all-wireless $namfile 500 500

set tracefile [open out.tr w]
$ns trace-all $tracefile

create-god $val(nn)
$ns node-config -adhocRouting $val(rp) \
-channelType $val(chan) \
-propType $val(prop) \
-phyType $val(netif) \
-macType $val(mac) \
-ifqType $val(ifq) \
-llType $val(ll) \
-antType $val(ant) \
-ifqLen $val(ifqLen) \
-topoInstance $topo \
-agentTrace ON \
-routerTrace ON \
-macTrace OFF \
-movementTrace ON \

set n0 [$ns node]
set n1 [$ns node]
set n2 [$ns node]
set n3 [$ns node]

$n0 set X_ 200
$n0 set Y_ 100
$n0 set Z_ 0

$n1 set X_ 200
$n1 set Y_ 250
$n1 set Z_ 0
```

```
$n2 set X_ 200
$n2 set Y_ 300
$n2 set Z_ 0

$n3 set X_ 100
$n3 set Y_ 270
$n3 set Z_ 0

$ns initial_node_pos $n0 30
$ns initial_node_pos $n1 30
$ns initial_node_pos $n2 30
$ns initial_node_pos $n3 30

$ns at 0.2 "$n0 setdest 89 370 8"
$ns at 0.2 "$n1 setdest 40 250 8"
$ns at 0.2 "$n2 setdest 430 150 8"
$ns at 0.2 "$n3 setdest 60 90 8"

set tcp [new Agent/TCP]
set sink [new Agent/TCPSink]
$ns attach-agent $n2 $tcp
$ns attach-agent $n1 $sink
$ns connect $tcp $sink
set ftp [new Application/FTP]
$ftp attach-agent $tcp
$ns at 0.1 "$ftp start"

set tcp1 [new Agent/TCP]
set sink1 [new Agent/TCPSink]
$ns attach-agent $n0 $tcp1
$ns attach-agent $n3 $sink1
$ns connect $tcp1 $sink1
set ftp1 [new Application/FTP]
$ftp1 attach-agent $tcp1
$ns at 0.2 "$ftp1 start"

proc finish {} {
global namfile tracefile
close $namfile
close $tracefile
exec nam out.nam &
exit
}

$ns at 12.0 "finish"
$ns run
```

Output:


nam: /home/mekashreeram/Desktop/wireless/out.nam
File Views Analysis
/home/mekashreeram/Desktop/wireless/out.nam
0.000000
Step: 2.0ms
2
3
1
0


nam: /home/mekashreeram/Desktop/wireless/out.nam
File Views Analysis
/home/mekashreeram/Desktop/wireless/out.nam
11.985822
Step: 79.4ms
1
2
3
0