

Experiment 4

9609

CODE:

Exp4.tcl

```
# Define options
set val(chan) Channel/WirelessChannel ;# channel type
set val(prop) Propagation/FreeSpace ;# radio-propagation model
set val(netif) Phy/WirelessPhy ;# network interface type
set val(mac) Mac/802_11 ;# MAC type
set val(ifq) Queue/DropTail/PriQueue ;# interface queue type
set val(ll) LL ;# link layer type
set val(ant) Antenna/OmniAntenna ;# antenna model
set val(ifqlen) 10000 ;# max packet in ifq
set val(nn) 5 ;# number of mobilenodes
set val(rp) DSR ;# routing protocol
set val(x) 600 ;# X dimension of topography
set val(y) 600 ;# Y dimension of topography
set val(stop) 100 ;# time of simulation end
set val(R) 300
set opt(tr) out.tr
set ns [new Simulator]
set tracefd [open $opt(tr) w]
set windowVsTime2 [open win.tr w]
set namtrace [open simwrls.nam w]
Mac/802_11 set dataRate_ 1.2e6
Mac/802_11 set RTSThreshold_ 100
$ns trace-all $tracefd
#$ns use-newtrace
$ns namtrace-all-wireless $namtrace $val(x) $val(y)

# set up topography object
set topo [new Topography]

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

create-god $val(nn)

#
# Create nn mobilenodes [$val(nn)] and attach them to the channel.
#

# configure the nodes

$ns node-config -adhocRouting $val(rp) \
  -llType $val(ll) \
  -macType $val(mac) \
  -ifqType $val(ifq) \
  -ifqLen $val(ifqlen) \
```

```

-antType $val(ant) \
-propType $val(prop) \
-phyType $val(netif) \
-channelType $val(chan) \
-topoInstance $topo \
-agentTrace ON \
-routerTrace ON \
-macTrace ON \
-movementTrace ON

```

Phy/WirelessPhy set CStresh 30.5e-10

```

for {set i 0} {$i < $val(nn)} {incr i} {
  set node_($i) [$ns node]
}

```

\$node_(0) set X_ \$val(R)

\$node_(0) set Y_ \$val(R)

\$node_(0) set Z_ 0

\$node_(1) set X_ \$val(R)

\$node_(1) set Y_ 0

\$node_(1) set Z_ 0

\$node_(2) set X_ 0

\$node_(2) set Y_ \$val(R)

\$node_(2) set Z_ 0

\$node_(3) set X_ [expr \$val(R) *2]

\$node_(3) set Y_ \$val(R)

\$node_(3) set Z_ 0

\$node_(4) set X_ \$val(R)

\$node_(4) set Y_ [expr \$val(R) *2]

\$node_(4) set Z_ 0

```

for {set i 0} {$i<$val(nn)} {incr i} {
  $ns initial_node_pos $node_($i) 30
}

```

Generation of movements

\$ns at 0 "\$node_(1) setdest \$val(R) \$val(R) 3.0"

\$ns at 0 "\$node_(2) setdest \$val(R) \$val(R) 3.0"

\$ns at 0 "\$node_(3) setdest \$val(R) \$val(R) 3.0"

\$ns at 0 "\$node_(4) setdest \$val(R) \$val(R) 3.0"

Set a TCP connection between node_(0) and node_(1)

set tcp [new Agent/TCP/Newreno]

#\$tcp set class_ 2

set tcp [new Agent/UDP]

\$tcp set class_ 2

set sink [new Agent/Null]

\$ns attach-agent \$node_(1) \$tcp

\$ns attach-agent \$node_(0) \$sink

\$ns connect \$tcp \$sink

set ftp [new Application/Traffic/CBR]

\$ftp attach-agent \$tcp

\$ns at 0.0 "\$ftp start"

#####

For coloring but doesnot work

```

#####
$tcp set fid_ 1
$ns color 1 blue
#####
set tcp [new Agent/UDP]
$tcp set class_ 2
set sink [new Agent/Null]
$ns attach-agent $node_(2) $tcp
$ns attach-agent $node_(0) $sink
$ns connect $tcp $sink
set ftp [new Application/Traffic/CBR]
$ftp attach-agent $tcp
$ns at 0.0 "$ftp start"
set tcp [new Agent/UDP]
$tcp set class_ 2
set sink [new Agent/Null]
$ns attach-agent $node_(3) $tcp
$ns attach-agent $node_(0) $sink
$ns connect $tcp $sink
set ftp [new Application/Traffic/CBR]
$ftp attach-agent $tcp
$ns at 0.0 "$ftp start"
set tcp [new Agent/UDP]
$tcp set class_ 2
set sink [new Agent/Null]
$ns attach-agent $node_(4) $tcp
$ns attach-agent $node_(0) $sink
$ns connect $tcp $sink
set ftp [new Application/Traffic/CBR]
$ftp attach-agent $tcp
$ns at 0.0 "$ftp start"
# Telling nodes when the simulation ends
#for {set i 0} {$i < $val(nn)} {incr i} {
#  $ns at $val(stop) "$node_($i) reset";
#}

# ending nam and the simulation
$ns at $val(stop) "$ns nam-end-wireless $val(stop)"
$ns at $val(stop) "stop"
$ns at $val(stop) "puts \"end simulation\" ; $ns halt"
proc stop {} {
  exec awk -f fil.awk out.tr > out.xgr
  exec xgraph out.xgr &

  global ns tracefd namtrace
  $ns flush-trace
  close $tracefd
  close $namtrace
  exec nam simwrls.nam &
}

```

\$ns run

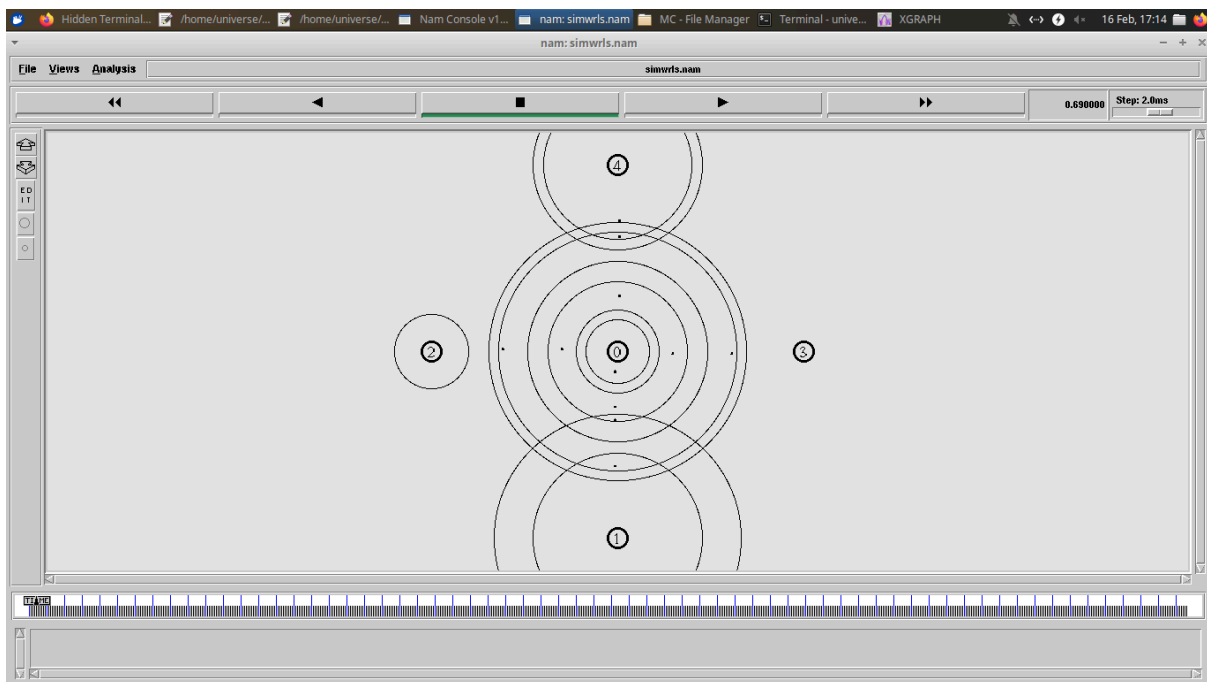
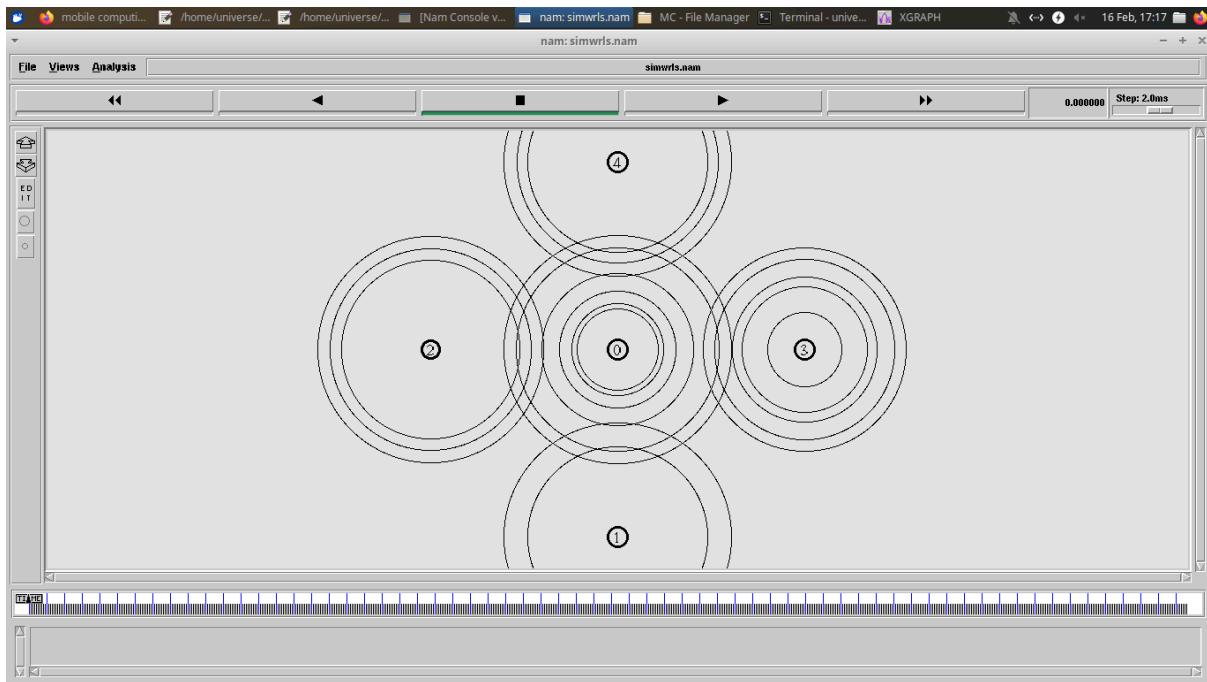
Fil.awk

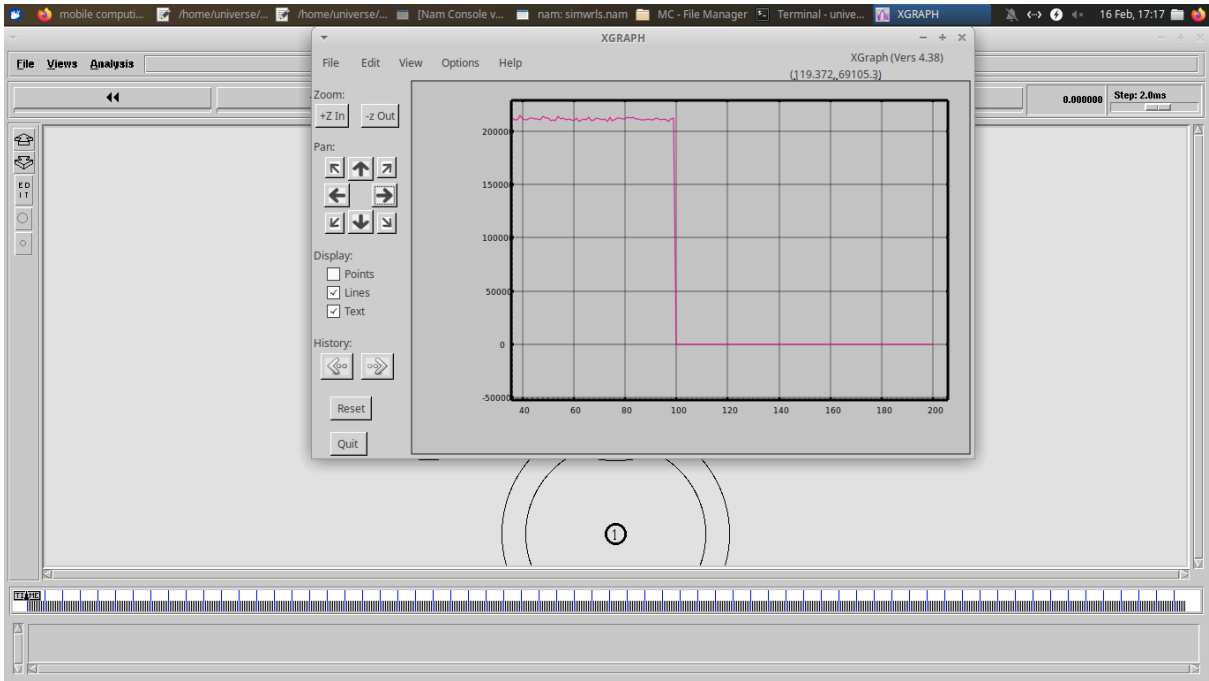
```
BEGIN{
    sim_end = 200;
    i=0;
    while (i<=sim_end) {sec[i]=0; i+=1;};
}

{
    if ($1=="r" && $7=="cbr"&& $3=="_0_") {
        sec[int($2)]+=$8;
    };
}

END{
    i=0;
    while (i<=sim_end) {print i " " sec[i]; i+=1;};
}
```

OUTPUT:





POSTLAB:

1. Explain in brief what is hidden terminal problem
2. How does HTP affect performance of wireless network
3. What is solution to hidden terminal problem
4. How does hidden terminal problem differ from exposed terminal problem