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# Filename:udpsetup.tcl

# Simulator Instance Creation
set ns [new Simulator]

#Fixing the co-ordinate of simulation area
set val(x) 500
set val(y) 500

# Define options
set val(chan) Channel/WirelessChannel      ;# channel type
set val(prop) Propagation/TwoRayGround      ;# 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) 50                         ;# max packet in ifq
set val(nn) 3                              ;# number of mobilenodes
set val(rp) AODV                           ;# routing protocol
set val(x) 500                             ;# X dimension of topography
set val(y) 500                             ;# Y dimension of topography
set val(████) 10.0                         ;# time of simulation end

# set up topography object
set topo [new Topography]
$topo load_flatgrid $val(x) $val(y)

#Nam File Creation  nam - network animator
set namfile [open udpsetup.nam w]

#Tracing all the events and cofiguration
$ns namtrace-all-wireless $namfile $val(x) $val(y)

#Trace File creation
set tracefile [open udpsetup.tr w]

#Tracing all the events and cofiguration
$ns trace-all $tracefile

# general operational descriptor- storing the hop details in the network
create-god $val(nn)

# 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 OFF \
               -movementTrace ON

# Node Creation

for {set i 0} {$i < 5} {incr i} {

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    set node_($i) [$ns node]
    $node_($i) color black
}

#Location fixing for a first and second node and randomly allotting other three nodes

$node_(0) set X_ 50
$node_(0) set Y_ 50
$node_(0) set Z_ 0

for {set i 1} {$i < 4} {incr i} {
    $node_($i) set X_ [expr ($i)*100]
    $node_($i) set Y_ [expr ($i)*100]
    $node_($i) set Z_ 0
}

$node_(4) set X_ 400
$node_(4) set Y_ 400
$node_(4) set Z_ 0

# Label and coloring

for {set i 0} {$i < 5} {incr i} {

    $ns at 0.1 "$node_($i) color blue"
    $ns at 0.1 "$node_($i) label Node$i"

}

#Size of the node

for {set i 0} {$i < 5} {incr i} {

    $ns initial_node_pos $node_($i) 30

}

*****Defining Communication Between node0 and all nodes
*****g

for {set i 1} {$i < 5} {incr i} {

# Defining a transport agent for sending
set udp [new Agent/UDP]

# Attaching transport agent to sender node
$ns attach-agent $node_(0) $udp

# Defining a transport agent for receiving
set null [new Agent/Null]

# Attaching transport agent to receiver node
$ns attach-agent $node_(4) $null

#Connecting sending and receiving transport agents
$ns connect $udp $null

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#Defining Application instance
set cbr [new Application/Traffic/CBR]

# Attaching transport agent to application agent
$cbr attach-agent $udp

#Packet size in bytes and interval in seconds definition
$cbr set packetSize_ 512
$cbr set interval_ 0.001

# data packet generation starting time
$ns at 1.0 "$cbr start"

# data packet generation ending time
$ns at 6.0 "$cbr ████"

}

# ending nam and the simulation
$ns at $val(████) "
$ns nam-end-wireless $val(████)"
$ns at $val(████) "████"

#████ping the scheduler
$ns at 10.01 "puts \"end simulation\" ; $ns halt"

#$ns at 10.01 "$ns halt"

proc ████ {} {
    global namfile tracefile ns
    $ns flush-trace
    close $namfile
    close $tracefile
    #executing nam file
    exec nam udpsetup.nam &
}

#Starting scheduler
$ns run

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