NETWORK SIMULATION LAB

WEEK - 07

DATE:

NAME: Vivekananda Shonti

ROLL NO: 19R21A05H2

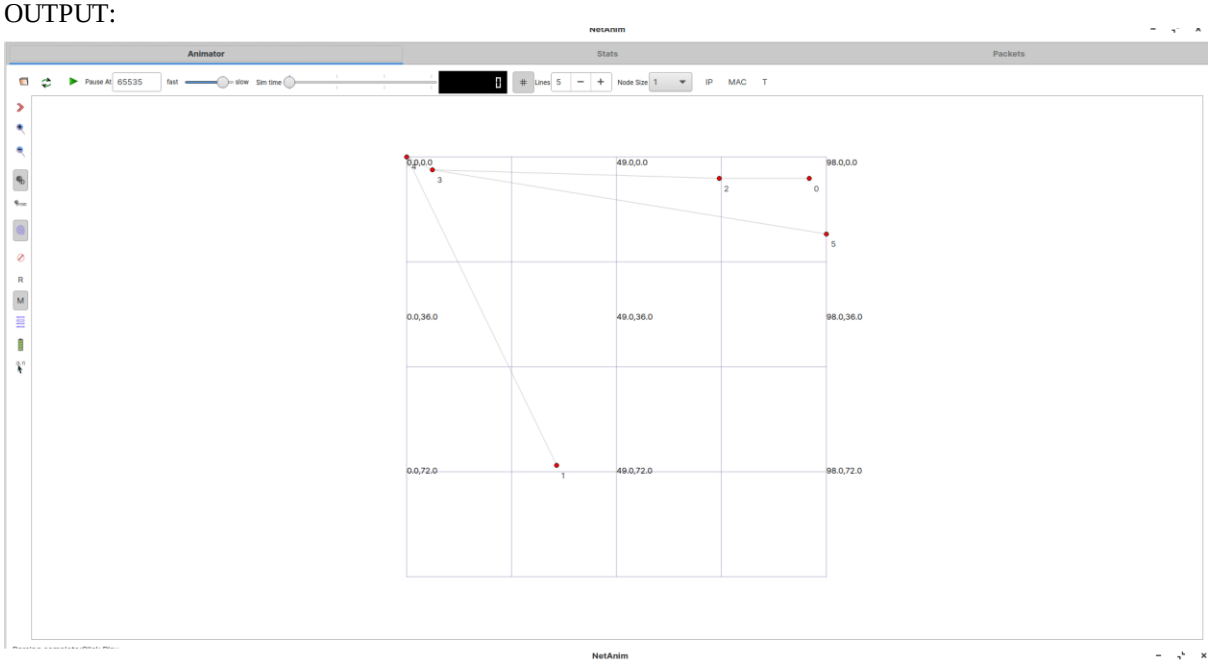
PROBLEM STATEMENT: 07

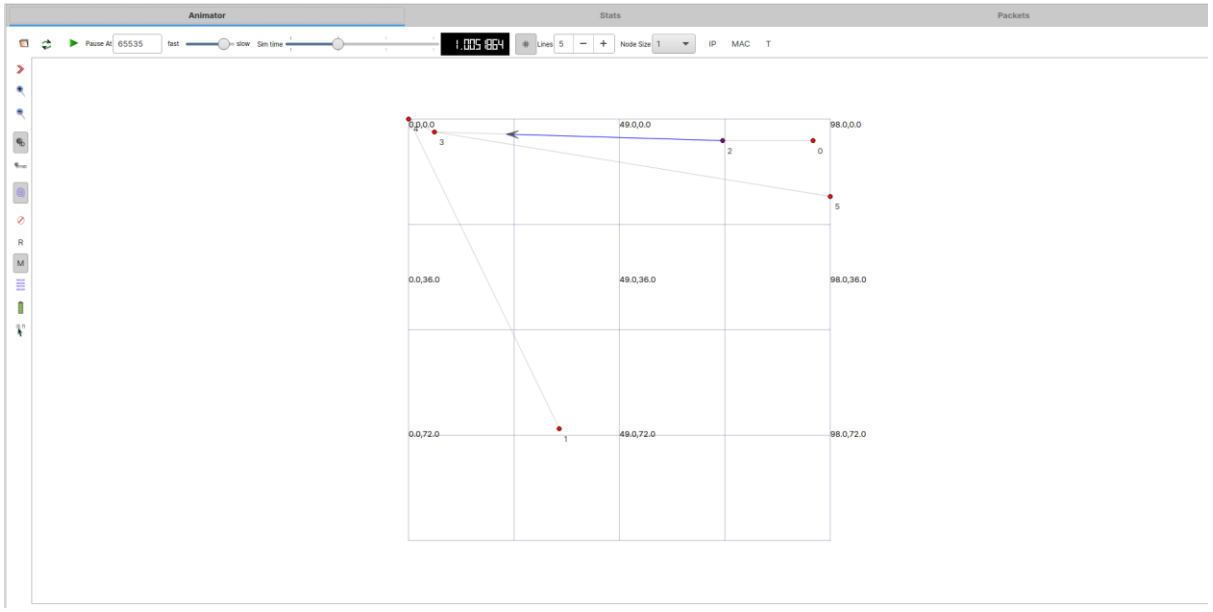
Providing Multiple Routers and Nodes and building a Hybrid Topology.

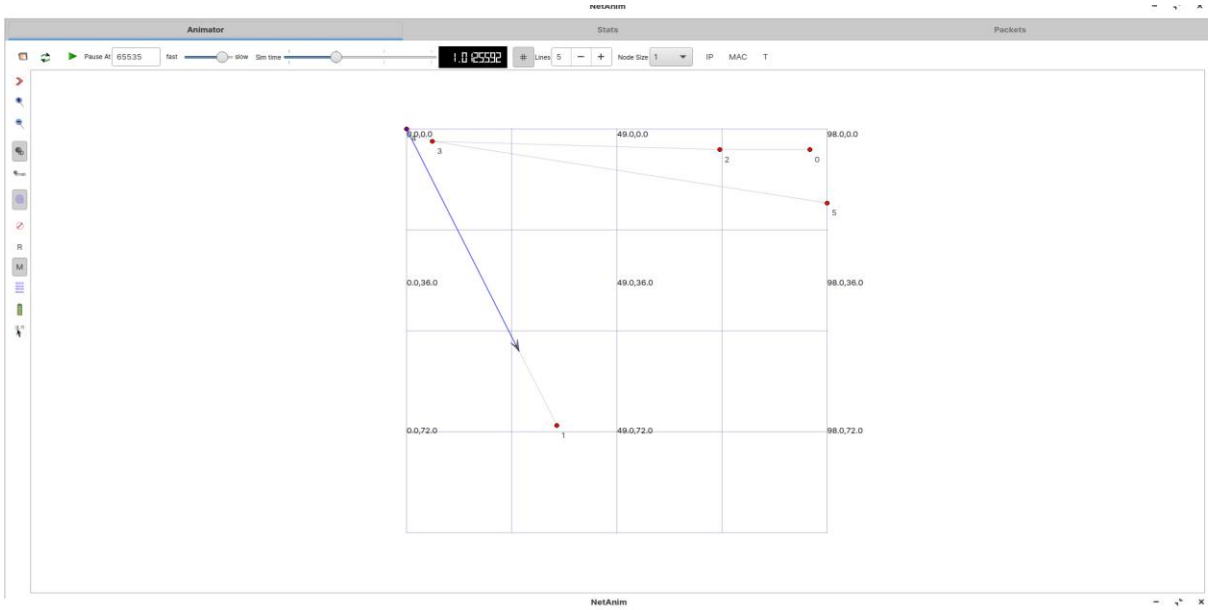
```
#include "ns3/core-module.h"
#include "ns3/network-module.h"
#include "ns3/csma-module.h"
#include "ns3/internet-module.h"
#include "ns3/point-to-point-module.h"
#include "ns3/applications-module.h"
#include "ns3/ipv4-global-routing-helper.h"
#include "ns3/netanim-module.h"
// Default Network Hybrid Topology 10.1.5.0
// r2.........n1
// / 10.1.3.0
// no.........r0........r1
// 10.1.1.0 10.1.2.0 \ 10.1.4.0
// r3
using namespace ns3;
NS_LOG_COMPONENT_DEFINE ("SecondScriptExample");
int
main (int argc, char *argv[])
{
bool verbose = true;
if (verbose)
{
LogComponentEnable ("UdpEchoClientApplication", LOG_LEVEL_INFO);
LogComponentEnable ("UdpEchoServerApplication", LOG_LEVEL_INFO);
}
NodeContainer host, router, host1;
host.Create (2);
router.Create (4);
NodeContainer subnet1;
subnet1.Add (host.Get (0));
subnet1.Add (router.Get (0));
PointToPointHelper pointToPoint;
pointToPoint.SetDeviceAttribute ("DataRate", StringValue ("5Mbps"));
pointToPoint.SetChannelAttribute ("Delay", StringValue ("2ms"));
NetDeviceContainer subnet1Devices;
subnet1Devices = pointToPoint.Install (subnet1);
InternetStackHelper stack;
stack.Install (router);
stack.Install (host);
Ipv4AddressHelper address1, address2, address3, address4, address5, address6;
address1.SetBase ("10.1.1.0", "255.255.255.0");
Ipv4InterfaceContainer subnet1Interfaces;
subnet1Interfaces = address1.Assign (subnet1Devices);
NodeContainer subnet2;
```

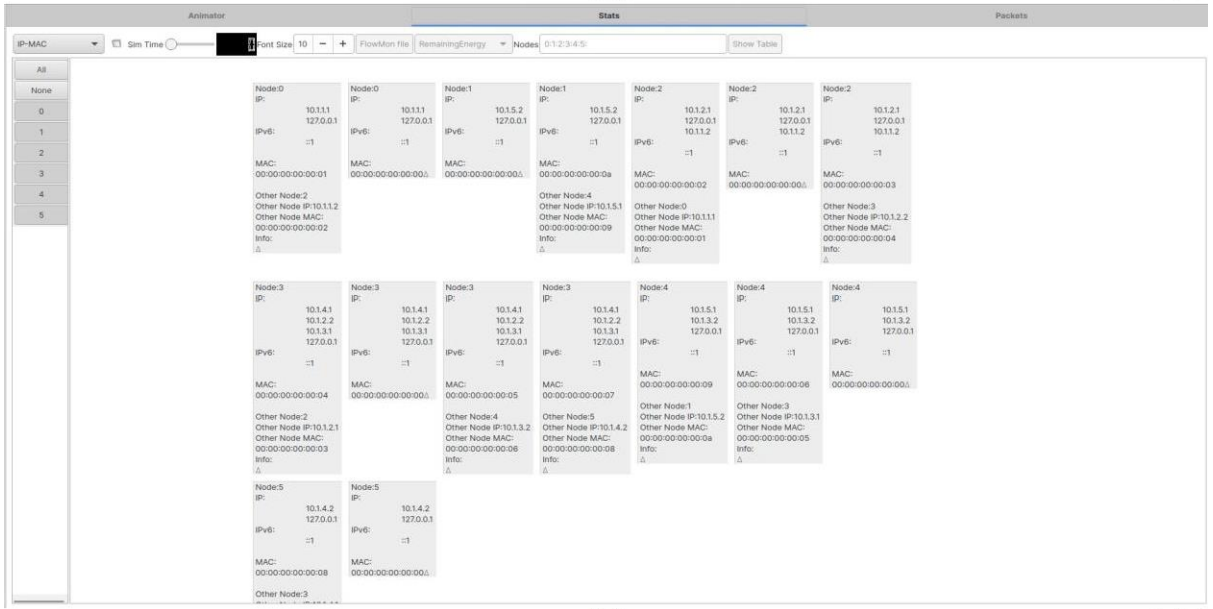
```
subnet2.Add (router.Get (0));
subnet2.Add (router.Get (1));
NetDeviceContainer subnet2Devices;
subnet2Devices = pointToPoint.Install (subnet2);
address2.SetBase ("10.1.2.0", "255.255.255.0");
Ipv4InterfaceContainer subnet2Interfaces;
subnet2Interfaces = address2.Assign (subnet2Devices);
NodeContainer subnet3;
subnet3.Add (router.Get (1));
subnet3.Add (router.Get (2));
NetDeviceContainer subnet3Devices;
subnet3Devices = pointToPoint.Install (subnet3);
address3.SetBase ("10.1.3.0", "255.255.255.0");
Ipv4InterfaceContainer subnet3Interfaces;
subnet3Interfaces = address3.Assign (subnet3Devices);
NodeContainer subnet4;
subnet4.Add (router.Get (1));
subnet4.Add (router.Get (3));
NetDeviceContainer subnet4Devices;
subnet4Devices = pointToPoint.Install (subnet4);
address4.SetBase ("10.1.4.0", "255.255.255.0");
Ipv4InterfaceContainer subnet4Interfaces;
subnet4Interfaces = address4.Assign (subnet4Devices);
NodeContainer subnet5;
subnet5.Add (router.Get (2));
subnet5.Add (host.Get (1));
NetDeviceContainer subnet5Devices;
subnet5Devices = pointToPoint.Install (subnet5);
address5.SetBase ("10.1.5.0", "255.255.255.0");
Ipv4InterfaceContainer subnet5Interfaces;
subnet5Interfaces = address5.Assign (subnet5Devices);
UdpEchoServerHelper echoServer (9);
ApplicationContainer serverApps = echoServer.Install (subnet5.Get (1));
serverApps.Start (Seconds (1.0));
serverApps.Stop (Seconds (10.0));
UdpEchoClientHelper echoClient (subnet5Interfaces.GetAddress (1), 9);
echoClient.SetAttribute ("MaxPackets", UintegerValue (3));
echoClient.SetAttribute ("Interval", TimeValue (Seconds (1.0)));
echoClient.SetAttribute ("PacketSize", UintegerValue (1024));
ApplicationContainer clientApps = echoClient.Install (subnet1.Get (0));
clientApps.Start (Seconds (1.0));
clientApps.Stop (Seconds (10.0));
Ipv4GlobalRoutingHelper::PopulateRoutingTables ();
AnimationInterface anim("Hybrid .xml");
Simulator::Run ();
Simulator::Destroy ();
return 0;
}
```

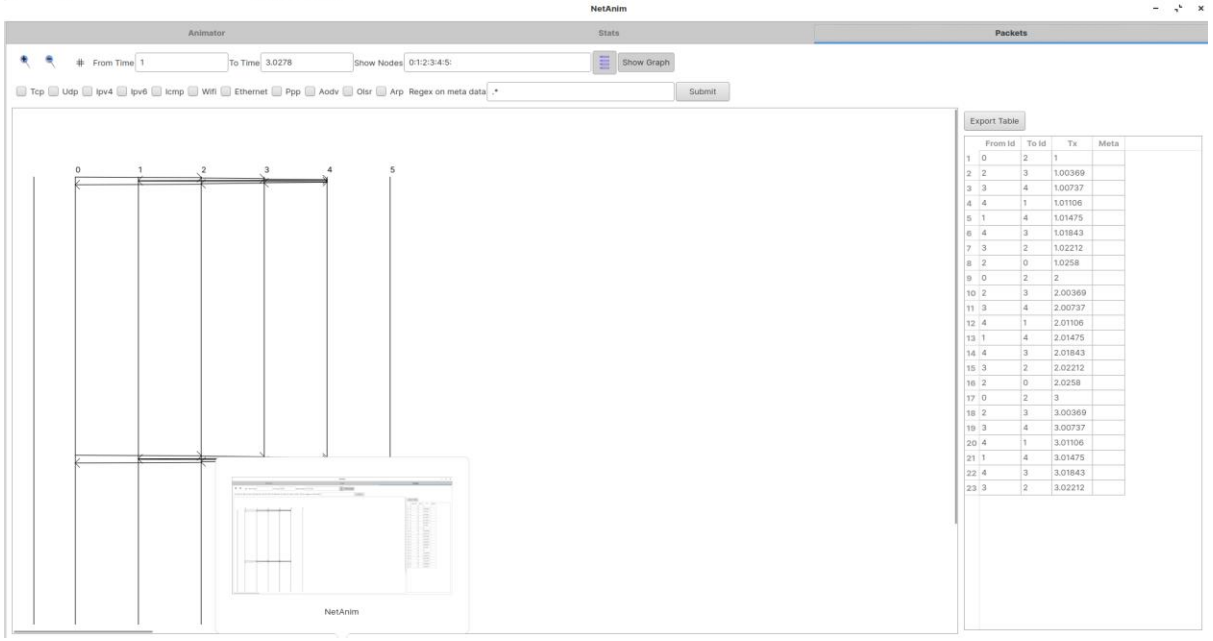
OUTPUT:


NetAnim
Animator
Stats
Packets
Pause At
65535
fast
slow
Sim time
Lines
5
Node Size
1
IP
MAC
T
0.0,0.0
49.0,0.0
98.0,0.0
0.0,36.0
49.0,36.0
98.0,36.0
0.0,72.0
49.0,72.0
98.0,72.0
3
2
0
5
1


NetAnim
Animator
Stats
Packets
Pause At
65535
fast
slow
Sim time
1.005 864
Lines
5
Node Size
1
IP
MAC
T
0.0,0.0
49.0,0.0
98.0,0.0
0.0,36.0
49.0,36.0
98.0,36.0
0.0,72.0
49.0,72.0
98.0,72.0
3
2
0
5
1


NetAnim
Animator
Stats
Packets
Pause At
65535
fast
slow
Sim time
Lines
Node Size
IP
MAC
T
0.0,0.0
49.0,0.0
98.0,0.0
0.0,36.0
49.0,36.0
98.0,36.0
0.0,72.0
49.0,72.0
98.0,72.0


NetAnim
Animator
Stats
Packets
IP-MAC
Sim Time
Font Size
FlowMon file
RemainingEnergy
Nodes
Show Table
All
None
0
1
2
3
4
5


NetAnim
Animator
Stats
Packets
From Time
To Time
Show Nodes
Show Graph
Tcp
Udp
Ipv4
Ipv6
Icmp
Wifi
Ethernet
Ppp
Aodv
Olsr
Arp
Regex on meta data
Submit
Export Table
From Id
To Id
Tx
Meta