EXPERIMENT-5:

Aim: Creating a three node network and identify one node as a central node.

Description:

In this program, we create 3 nodes. Out of these 3, we designate one as the server and the other 2 as the clients. We also create 2 point to point channels. Each of them connects one of the clients to the server. We set the respective channel and device attributes and run the program.
The IP adresses also have to be different for the different devices.

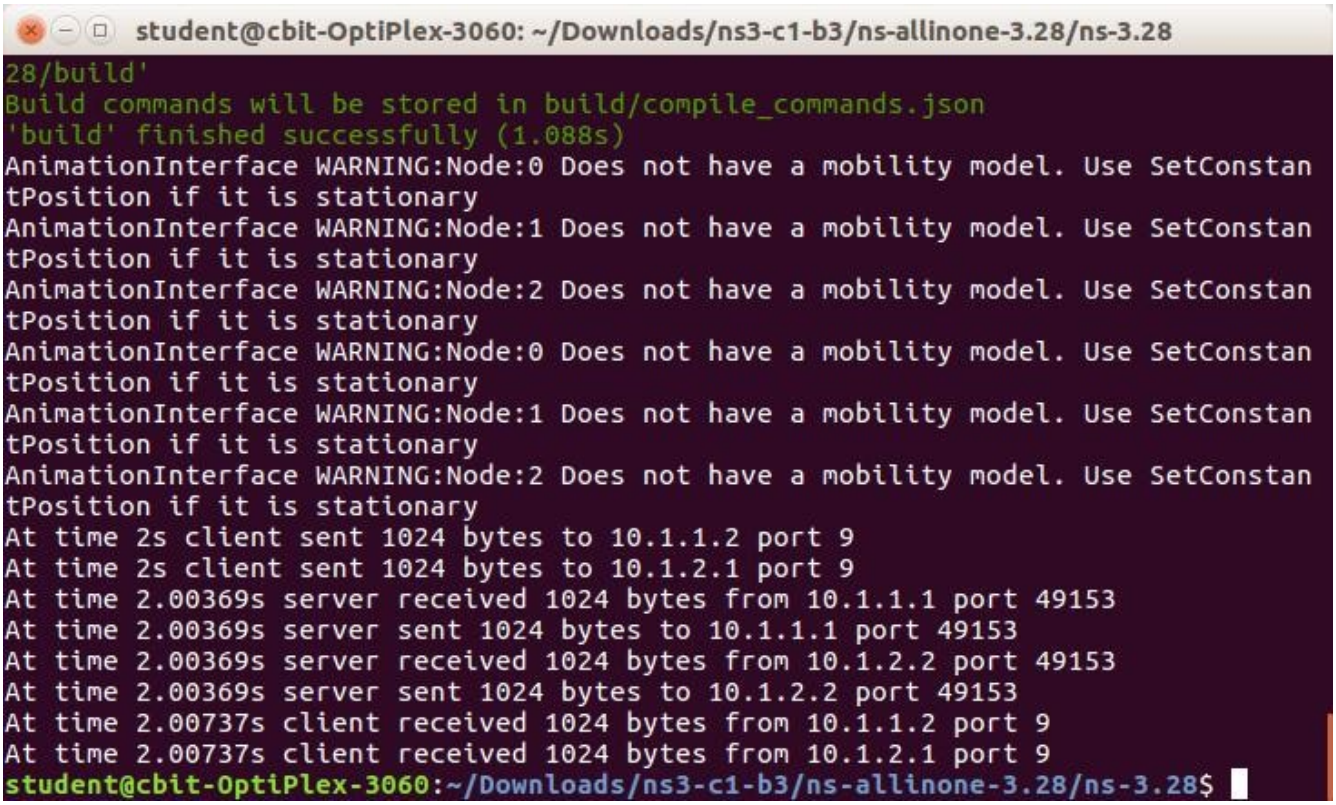
Scorce code:

```
#include "ns3/core-module.h"
#include "ns3/network-module.h"
#include "ns3/internet-module.h"
#include "ns3/point-to-point-module.h"
#include "ns3/applications-module.h"
#include "ns3/netanim-module.h"

using namespace ns3;

NS_LOG_COMPONENT_DEFINE ("FirstScriptExample");

int
main (int argc, char *argv[])
{
  CommandLine cmd;
  cmd.Parse (argc, argv);

  Time::SetResolution (Time::NS);
  LogComponentEnable ("UdpEchoClientApplication", LOG_LEVEL_INFO);
  LogComponentEnable ("UdpEchoServerApplication", LOG_LEVEL_INFO);

  NodeContainer nodes;
  nodes.Create(3);

  PointToPointHelper p2p1;
  PointToPointHelper p2p2;

  p2p1.SetDeviceAttribute ("DataRate",StringValue ("5Mbps"));
```

```
p2p2.SetDeviceAttribute ("DataRate",StringValue ("5Mbps"));
p2p1.SetChannelAttribute ("Delay",StringValue ("2ms"));
p2p2.SetChannelAttribute ("Delay",StringValue ("2ms"));

NetDeviceContainer device1,device2;
device1 = p2p1.Install(nodes.Get(0),nodes.Get(1));
device2 = p2p2.Install(nodes.Get(1),nodes.Get(2));

InternetStackHelper stack;
stack.Install (nodes);

Ipv4AddressHelper h1,h2;
h1.SetBase ("10.1.1.0", "255.255.255.0");
Ipv4InterfaceContainer inter1 = h1.Assign (device1);

h2.SetBase("10.1.2.0","255.255.255.0");
Ipv4InterfaceContainer inter2 = h2.Assign (device2);

UdpEchoServerHelper echoServer(9);

ApplicationContainer serverApps = echoServer.Install (nodes.Get(1));
serverApps.Start (Seconds (1.0));
serverApps.Stop (Seconds (10.0));

UdpEchoClientHelper echoClient1 (inter1.GetAddress(1),9);
echoClient1.SetAttribute("MaxPackets",UintegerValue(1));
echoClient1.SetAttribute("Interval",TimeValue(Seconds(1.0)));
echoClient1.SetAttribute("PacketSize",UintegerValue(1024));

ApplicationContainer clientApps1 = echoClient1.Install(nodes.Get(0));
clientApps1.Start(Seconds(2.0));
clientApps1.Stop(Seconds(10.0));

UdpEchoClientHelper echoClient (inter2.GetAddress (0), 9);
echoClient.SetAttribute ("MaxPackets", UintegerValue (1));
echoClient.SetAttribute ("Interval", TimeValue (Seconds (1.0)));
echoClient.SetAttribute ("PacketSize", UintegerValue (1024));

ApplicationContainer clientApps2 = echoClient.Install (nodes.Get (2));
clientApps2.Start (Seconds (2.0));
clientApps2.Stop (Seconds (10.0));
```

```
  AnimationInterface anim("three_nodes.xml");

  Simulator::Run ();
  Simulator::Destroy ();
return 0;
}
```

Output:



Conclusion:

The central node acts as server and the data is communicated between the two nodes through the central server.