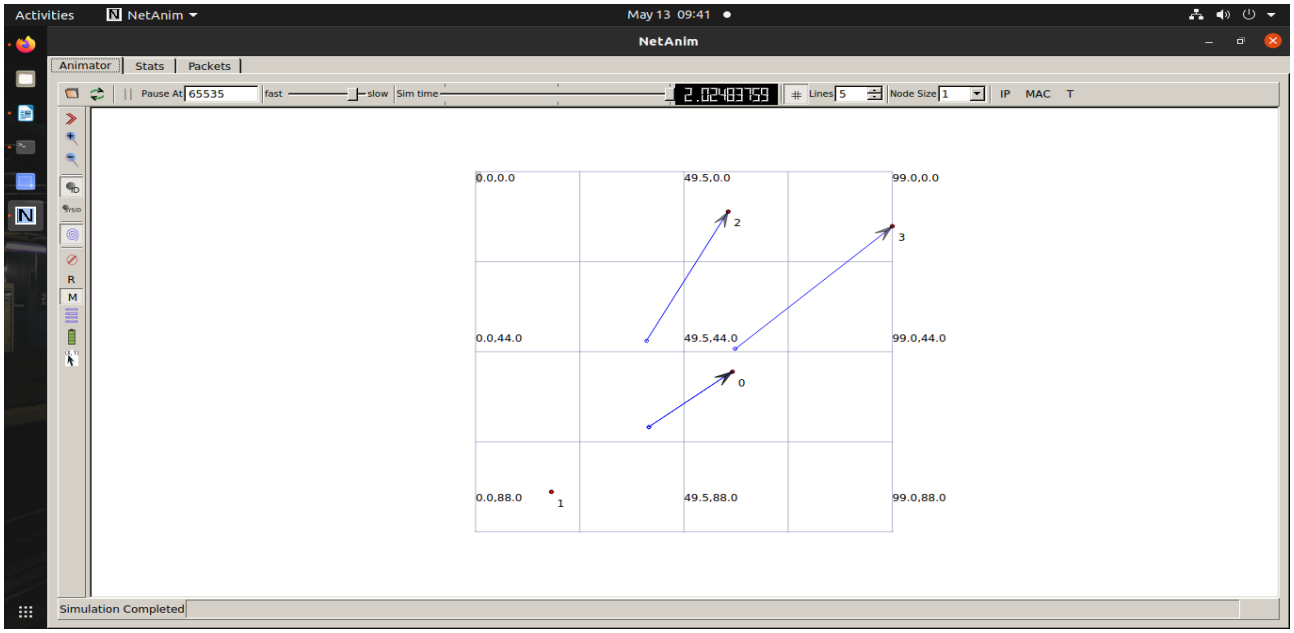
Program 2: Point To Point Protocol, LAN, CSMA

Program:

```
#include <fstream>
#include "ns3/core-module.h"
#include "ns3/csma-module.h"
#include "ns3/applications-module.h"
#include "ns3/internet-module.h"
#include "ns3/netanim-module.h"
using namespace ns3;
int main (int argc, char *argv[])
{
 Address serverAddress;
NodeContainer n;
  n.Create (4);
InternetStackHelper internet;
  internet.Install (n);
CsmaHelper csma;
  csma.SetChannelAttribute ("DataRate", DataRateValue (DataRate (5000000)));
  csma.SetChannelAttribute ("Delay", TimeValue (MilliSeconds (2)));
  csma.SetDeviceAttribute ("Mtu", UintegerValue (1400));
  NetDeviceContainer d = csma.Install (n);
Ipv4AddressHelper ipv4;
      ipv4.SetBase ("10.1.1.0", "255.255.255.0");
      Ipv4InterfaceContainer i = ipv4.Assign (d);
      serverAddress = Address(i.GetAddress (1));
  uint16_t port = 9;  // well-known echo port number
  UdpEchoServerHelper server (port);
```

```
  ApplicationContainer apps = server.Install (n.Get (1));
  apps.Start (Seconds (1.0));
  apps.Stop (Seconds (10.0));
  uint32_t packetSize = 1024;
  uint32_t maxPacketCount = 1;
  Time interPacketInterval = Seconds (1.);
  UdpEchoClientHelper client (serverAddress, port);
  client.SetAttribute ("MaxPackets", UintegerValue (maxPacketCount));
  client.SetAttribute ("Interval", TimeValue (interPacketInterval));
  client.SetAttribute ("PacketSize", UintegerValue (packetSize));
  apps = client.Install (n.Get (0));
  apps.Start (Seconds (2.0));
  apps.Stop (Seconds (10.0));
client.SetFill (apps.Get (0), "Hello World");
client.SetFill (apps.Get (0), 0xa5, 1024);
uint8_t fill[] = { 0, 1, 2, 3, 4, 5, 6};
  client.SetFill (apps.Get (0), fill, sizeof(fill), 1024);
#endif
AnimationInterface anim ("second.xml");
  Simulator::Run ();
  Simulator::Destroy ();
}
```

Output:



Github Link:

https://github.com/raghav3102/NPLab/blob/main/B2.cc