PRACTICAL-11

AIM:

Demonstrate wireless communication between peer computer using Omnet++

THEORY:

Omnet++:

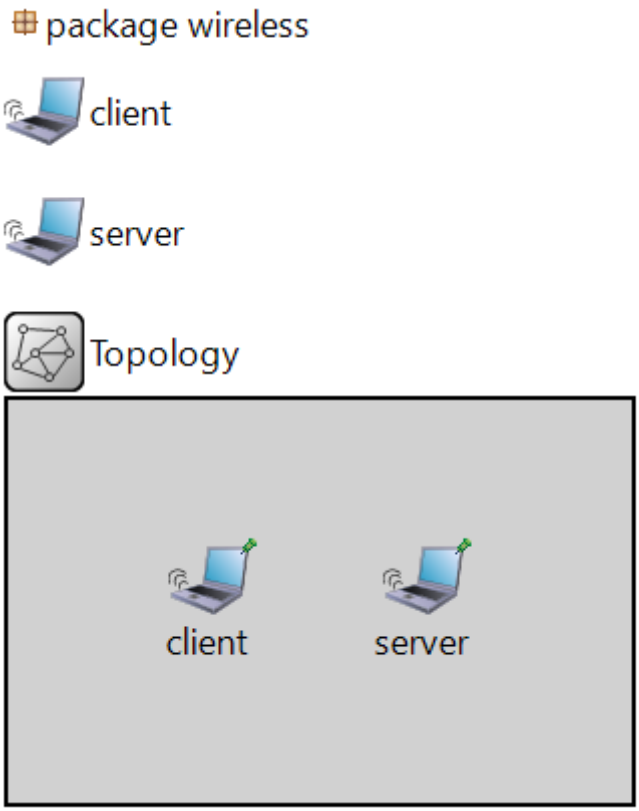
- Omnet++ stands for "Objective Modular Network Testbed in C++"
- It is a modular, component-based C++ simulation library and framework, primarily for building network simulators.
- **OMNeT++** is a simulation platform for discrete-event systems.
- Even though it is primarily targeted at simulating computer networks and distributed systems, it cannot be used without any extensions for wireless communication

PRACTICAL IMPLEMENTATION:

- Firstly, create a new project in omnet++.
- Create .ned file in source folder.
- Then, in this practical, we will code the topology.
- So, the code is below:

```
package wireless;

//
// TODO auto-generated type
//

simple client
{
    @display("i=device/wifilaptop;p=230,45");
    gates:
        input radioIn @directIn;
}

simple server
{
    @display("i=device/wifilaptop;p=230,45");
    gates:
        input radioIn @directIn;
}
network Topology
{
    submodules:
        server: server {
            @display("p=207,90");
        }

        client:client{
            @display("p=100,90");
        }
}
```

TOPOLOGY looks like:



- Now, we will create 2 source files.

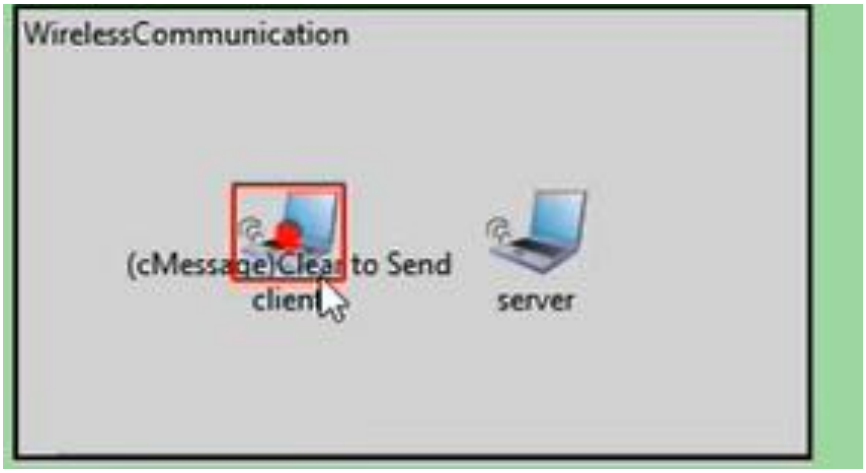
- File 1: client.cc:

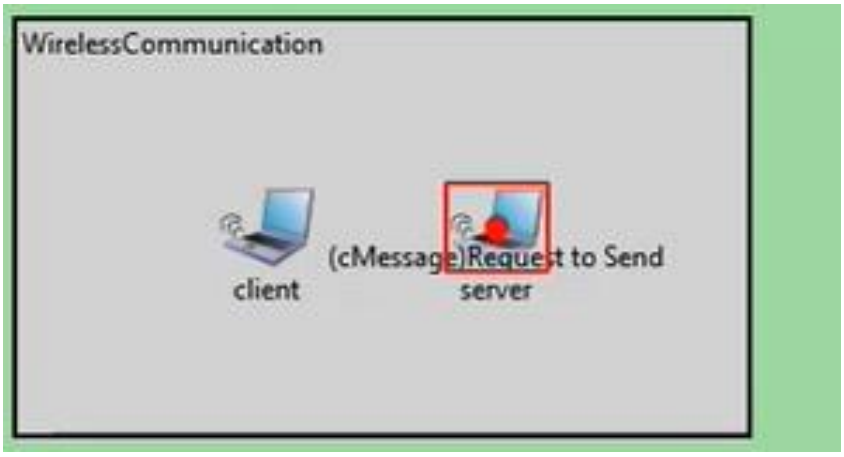
```
#include <omnetpp.h>
using namespace omnetpp;

class client: public cSimpleModule
{
    cMessage *msg;
    virtual void initialize();
    virtual void handleMessage(cMessage *msg);
};

Define_Module(client);

void client::initialize()
{
    EV << "client Initialize" << "\n";
    msg = new cMessage("Request to Send");
    scheduleAt(simTime() + dblrand(),msg->dup());
    EV << "client Initialize Complete" << "\n";
}

void client::handleMessage(cMessage *msg)
{
    EV << "client handle message Initialize" << "\n";
    msg = new cMessage("Request to Send");
    cModule *target = getParentModule()->getSubmodule("server");
    sendDirect(msg,target,"radioIn");
    scheduleAt(simTime() + dblrand(),msg->dup());
    EV << "client handle message Initialize Complete" << "\n";
}
```

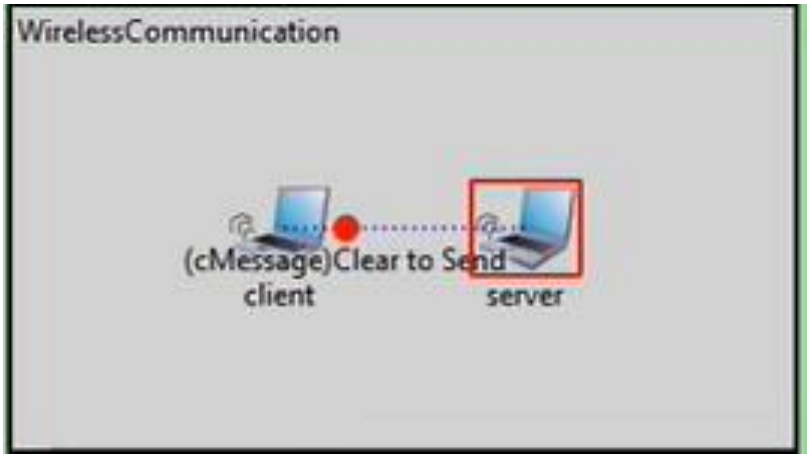
- File 2: server.cc:

```
#include <omnetpp.h>
using namespace omnetpp;

class server: public cSimpleModule
{
    cMessage *msg;
    virtual void initialize();
    virtual void handleMessage(cMessage *msg);
};

Define_Module(server);

void server::initialize()
{

}

void server::handleMessage(cMessage *msg)
{
    msg = new cMessage("Clear to Send");
    cModule *target = getParentModule()->getSubmodule("client");
    sendDirect(msg,target,"radioIn");
}
```

OUTPUT:


WirelessCommunication
(cMessage)Clear to Send
client
server


WirelessCommunication
client
(cMessage)Request to Send
server


WirelessCommunication
(cMessage)Clear to Send
client
server

CONCLUSION:

- By performing the above practical, we learnt how to configure wireless topology and how to make it work in omnet++.