Assignment 9

Problem Statement:
Study of any network simulation tools - To create a network with three nodes and establish a TCP connection between node 0 and node 1 such that node 0 will send TCP packet to node 2 via node 1.

Objectives:
i) Learn about TCP connections, acknowledge and sending data.
ii) Learn about network simulation tool and visualization of data send from sender to receiver.

Requirement:
NAM (Network Animator).
NS2 (Network simulator
Ubuntu.
Gedit

Theory:
Simulation is the process of learning by doing. Whenever there is something new in the world, we try to analyse it first by examining it and in the process get to learn a lot of things. This is simulation. Correlating to this process, in order to understand all the complexities one need to model the entire role-play in form of computer simulation the need is to build artificial objects and assign them roles dynamically.

Network Simulation (NS):
It is one of type of simulation which is used to simulate the networks such as in MANETs etc. It provides simulation for routing & multicast protocols for both wired & wireless networks. NS is licensed for use of GNU and is popularly known as NS2. It is an object-oriented discrete event driven simulator written in C++ & tcl.

NS2 can be used to implement network protocols such as TCP & UDP traffic source behaviour such as FTP, Telnet, Web, CBR & VBR router queue management mechanism such as DropTail, RED & CBQ In ns2, c++ is used for detailed protocol implementation & octl is used for setup.

Install Ns-2 used this command.
* sudo apt-get install ns2

Nam is also needed to install. NAM (Network Animator) is an animation tool to graphically represent the network & packet traces.
* sudo apt-get install nam

Basic Command:
1) Set a 8
   Set b [expr $a/e]

2) To open a file for reading:
   set testfile [open hello.dat w].

3) Execute a subprocess with another subprocess.
   exec rm $ testfile.

4) Run a simulator scenario, a network topology must first be created In ns2 the topology consists of a collection of nodes & links
   Set ns [new Simulator]

5) The simulator object has member function which enables to create the nodes and define links between them. The class simulator contains all the basic functions, since ns was defined to handle simulator object,
   In network topology nodes can be added in following manner
   Set n0 [$ns node]
   Set n1 [$ns node].

6) Tr
   in
   F

6) Traffic agents TCP and traffic sources FTP must be set up in the node is not a router.

FTP traffic source using TCP

```
set tcp [new Agent /TCP]
$ns attach-agent $n0 $tcp
set ftp [new Application/FTP].
$ftp attach-agent $tcp.
$tcp set packet_size - 512.
```

Conclusion:

Learnt TCP more easily with network simulation & Network animator and tcl.