KANDRA KSHEERAJ **19BCE0829**

CSE 1004 – Network and Communication

SLOT: L47+L48

Faculty: SRIMATHI C mam

LAB Digital Assignment- 5

Lab Date: 12-05-2021

CONSTRUCTION OF WIRED NETWORK WITH RING TOPOLOGY USING TCL SCRIPT. UPLOAD THE SAME AS PDF FILE AND HEREWITH ATTACH

One of the most popular simulator among networking researchers.
Discrete event, Packet level simulator
Events like 'received an ack packet', 'enqueued a data packet'
Network protocol stack written in C++
Tcl (Tool Command Language) used for specifying scenarios and events.
Unix Based. Runs also in windows using cygwin
Simulates both wired and wireless networks

Installation:
Installation of NS2 (ns-2.35) in Ubuntu 20.04 LTS

Step 1: Install the basic libraries like
$] sudo apt install build-essential autoconf automake libxmu-dev

Step 2: install gcc-4.8 and g++-4.8

open the file using sudo mode
$] sudo nano /etc/apt/sources.list

Include the following line
deb http://in.archive.ubuntu.com/ubuntu bionic main universe

$] sudo apt update
$] sudo apt install gcc-4.8 g++-4.8

Step 3:
Unzip the ns2 packages to home folder

$] tar zxvf ns-allinone-2.35.tar.gz
$] cd ns-allinone-2.35/ns-2.35

Modify the following make files.

~ns-2.35/Makefile.in

Change @CC@ to gcc-4.8
change @CXX@ to g++-4.8

~nam-1.15/Makefile.in
~xgraph-12.2/Makefile.in
~otcl-1.14/Makefile.in

Change in all places
@CC@ to gcc-4.8
@CPP@ or @CXX@ to g++-4.8

open the file:
~ns-2.35/linkstate/ls.h

Change at the Line no 137
void eraseAll() { erase(baseMap::begin(), baseMap::end()); }

to This
void eraseAll() { this- erase(baseMap::begin(), baseMap::end()); }

All changes made

Step 4: Open a new terminal

$] cd ns-allinone-2.35/

$] ./install

Step 5 - Set the PATH
Open a new Terminal,

$] gedit .bashrc

Paste the following lines

export PATH=$PATH:/home/yourusername/ns-allinone-2.35/bin:/home/yourusername/ns-allinone-2.35/tcl8.5.10/unix:/home/yourusername/ns-allinone-2.35/tk8.5.10/unix

export LD_LIBRARY_PATH=/home/yourusername/ns-allinone-2.35/otcl-1.14:/home/yourusername/ns-allinone-2.35/lib

Logout and Login back
OR
$] source .bashrc

```
ksheeraj@ksheeraj-VirtualBox:~$ sudo apt install build-essential autoconf autom
ake libxmu-dev
[sudo] password for ksheeraj:
Sorry, try again.
[sudo] password for ksheeraj:
sudo: 1 incorrect password attempt
ksheeraj@ksheeraj-VirtualBox:~$ sudo apt install build-essential autoconf autom
ake libxmu-dev
[sudo] password for ksheeraj:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  linux-headers-5.4.0-26 linux-headers-5.4.0-26-generic
  linux-image-5.4.0-26-generic linux-modules-5.4.0-26-generic
  linux-modules-extra-5.4.0-26-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  autotools-dev dpkg-dev fakeroot libalgorithm-diff-perl
  libalgorithm-diff-xs-perl libalgorithm-merge-perl libfakeroot libice-dev
  libpthread-stubs0-dev libsigsegv2 libsm-dev libx11-dev libxau-dev
  libxcb1-dev libxdmcp-dev libxext-dev libxmu-headers libxt-dev m4 make
  x11proto-core-dev x11proto-dev x11proto-xext-dev xorg-sgml-doctools
  xtrans-dev
Suggested packages:
  autoconf-archive gnu-standards autoconf-doc libtool gettext debian-keyring
  libice-doc libsm-doc libx11-doc libxcb-doc libxext-doc libxt-doc m4-doc
  make-doc
```

```
ksheeraj@ksheeraj-VirtualBox:~$ install gcc-4.8 and g++-4.8
install: target 'g++-4.8' is not a directory
ksheeraj@ksheeraj-VirtualBox:~$ sudo apt install gcc-4.8 g++-4.8
Reading package lists... Done
Building dependency tree
Reading state information... Done
Package gcc-4.8 is not available, but is referred to by another package.
This may mean that the package is missing, has been obsoleted, or
is only available from another source

Package g++-4.8 is not available, but is referred to by another package.
This may mean that the package is missing, has been obsoleted, or
is only available from another source

E: Package 'gcc-4.8' has no installation candidate
E: Package 'g++-4.8' has no installation candidate
ksheeraj@ksheeraj-VirtualBox:~$ sudo nano /etc/apt/sources.list
ksheeraj@ksheeraj-VirtualBox:~$ sudo apt update
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:3 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:4 http://in.archive.ubuntu.com/ubuntu bionic InRelease [242 kB]
Get:5 http://security.ubuntu.com/ubuntu focal-security InRelease [109 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu focal-updates/main i386 Packages [474
 kB]
Get:7 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [98
3 kB]
Get:8 http://in.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [22
2 kB]
```

```
ksheeraj@ksheeraj-VirtualBox:~$ sudo apt update
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu bionic InRelease
Hit:5 http://security.ubuntu.com/ubuntu focal-security InRelease
^C
ksheeraj@ksheeraj-VirtualBox:~$ sudo apt update
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu bionic InRelease
Hit:5 http://security.ubuntu.com/ubuntu focal-security InRelease
^C
ksheeraj@ksheeraj-VirtualBox:~$ sudo apt install gcc-4.8 g++-4.8
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is h
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is h
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is h
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is h
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is h
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is h
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is h
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is h
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is h
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is h
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is h
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is h
Waiting for cache lock: Could not get lock /var/lib/dpkg/lock-frontend. It is h
```

```
ksheeraj@ksheeraj-VirtualBox:~$ sudo nano /etc/apt/sources.list
[sudo] password for ksheeraj:
ksheeraj@ksheeraj-VirtualBox:~$ sudo apt update
Hit:1 http://in.archive.ubuntu.com/ubuntu focal InRelease
Hit:2 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu bionic InRelease
Hit:5 http://security.ubuntu.com/ubuntu focal-security InRelease
Reading package lists... Done
Building dependency tree
Reading state information... Done
404 packages can be upgraded. Run 'apt list --upgradable' to see them.
ksheeraj@ksheeraj-VirtualBox:~$ sudo apt install gcc-4.8 g++-4.8
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  linux-headers-5.4.0-26 linux-headers-5.4.0-26-generic
  linux-image-5.4.0-26-generic linux-modules-5.4.0-26-generic
  linux-modules-extra-5.4.0-26-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  cpp-4.8 gcc-4.8-base libasan0 libgcc-4.8-dev libstdc++-4.8-dev
Suggested packages:
  gcc-4.8-locales g++-4.8-multilib gcc-4.8-doc libstdc++6-4.8-dbg
  gcc-4.8-multilib libgcc1-dbg libgomp1-dbg libitm1-dbg libatomic1-dbg
  libasan0-dbg libtsan0-dbg libquadmath0-dbg libstdc++-4.8-doc
The following NEW packages will be installed:
  cpp-4.8 g++-4.8 gcc-4.8 gcc-4.8-base libasan0 libgcc-4.8-dev
```

```
ksheeraj@ksheeraj-VirtualBox:~/Downloads$ ls
ns-allinone-2.35.tar.gz
ksheeraj@ksheeraj-VirtualBox:~/Downloads$ cd
ksheeraj@ksheeraj-VirtualBox:~$ ls
allocbestfit.cpp   disklook.cpp  netcom2.out              sawarq.c
allocfirstfit.cpp  diskscan.cpp  netcon2                  selarq
allocnextfit.cpp   Documents     ns-allinone-2.35.tar.gz  selarq.c
allocworstfit.cpp  Downloads     pagefifo.cpp             TCPclient.c
a.out              gbnarq        pagelru.cpp              TCPserver.c
checksum           gbnarq.c      pageoptimal.cpp          Templates
checksum.c         hamcode       Pictures                 udpclient.c
crc                hamcode.c     Public                   udpserver.c
crc.c              Music         q1.c                     UDPserver.c
Desktop            netcom1.c     q2.c                     UPDclient.c
diskclook.cpp      netcom2       saarq                    Videos
diskcscan.cpp      netcom2.c     sawarq
ksheeraj@ksheeraj-VirtualBox:~$ tar zxvf ns-allinone-2.35.tar.gz
ns-allinone-2.35/
ns-allinone-2.35/xgraph-12.2/
ns-allinone-2.35/xgraph-12.2/ps.c
ns-allinone-2.35/xgraph-12.2/configure.in
ns-allinone-2.35/xgraph-12.2/README.GENERAL
ns-allinone-2.35/xgraph-12.2/xgraph.c
ns-allinone-2.35/xgraph-12.2/Makefile.in
ns-allinone-2.35/xgraph-12.2/autoconf.h.in~
ns-allinone-2.35/xgraph-12.2/init.c
ns-allinone-2.35/xgraph-12.2/INSTALL
ns-allinone-2.35/xgraph-12.2/stamp-h.in
ns-allinone-2.35/xgraph-12.2/params.h
```

```
ns-allinone-2.35/dei80211mr-1.1.4/src/adt/DLList.cc
ns-allinone-2.35/dei80211mr-1.1.4/src/adt/DLList.h
ns-allinone-2.35/dei80211mr-1.1.4/src/adt/Object.h
ns-allinone-2.35/dei80211mr-1.1.4/src/rbar.cc
ns-allinone-2.35/dei80211mr-1.1.4/src/Makefile.am
ns-allinone-2.35/dei80211mr-1.1.4/src/wireless-channelpa.h
ns-allinone-2.35/dei80211mr-1.1.4/src/phymodes.h
ns-allinone-2.35/dei80211mr-1.1.4/src/libinit.cc
ns-allinone-2.35/dei80211mr-1.1.4/src/peerstatsdb_static.h
ns-allinone-2.35/dei80211mr-1.1.4/src/peerstats.cc
ns-allinone-2.35/dei80211mr-1.1.4/src/test_power_profile.cc
ns-allinone-2.35/dei80211mr-1.1.4/src/rbar.h
ns-allinone-2.35/dei80211mr-1.1.4/src/wireless-phymr.cc
ns-allinone-2.35/dei80211mr-1.1.4/src/ra-snr.h
ns-allinone-2.35/dei80211mr-1.1.4/src/mac-802_11mr.cc
ns-allinone-2.35/dei80211mr-1.1.4/src/Mac80211EventHandler.h
ns-allinone-2.35/dei80211mr-1.1.4/src/PER.h
ns-allinone-2.35/dei80211mr-1.1.4/src/power_profile.h
ns-allinone-2.35/dei80211mr-1.1.4/src/mac-timersmr.h
ns-allinone-2.35/dei80211mr-1.1.4/src/PER.cc
ns-allinone-2.35/dei80211mr-1.1.4/src/papropagation.h
ns-allinone-2.35/dei80211mr-1.1.4/src/per_table_80211b_intersil_HFA3861B.tcl
ns-allinone-2.35/dei80211mr-1.1.4/src/rateadapter.h
ns-allinone-2.35/dei80211mr-1.1.4/src/mac-timersmr.cc
ns-allinone-2.35/dei80211mr-1.1.4/src/ra-snr.cc
ns-allinone-2.35/install
ksheeraj@ksheeraj-VirtualBox:~$ cd ns-allinone-2.35/ns-2.35
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35$ gedit Makefile.in
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35$
```

```
28 # Pathname of directory to install the binary
29 BINDEST         = @prefix@/bin
30 # Pathname of directory to install the man page
31 MANDEST         = @prefix@/man
32
33 BLANK   = # make a blank space.  DO NOT add anything to this line
34
35 # The following will be redefined under Windows (see WIN32 lable below)
36 CC      = gcc-4.8
37 CPP     = g++-4.8
38 LINK    = $(CPP)
39 LINK_SHLIB = @SHLIB_LD@
40 MKDEP   = ./conf/mkdep
41 TCLSH   = @V_TCLSH@
42 TCL2C   = @V_TCL2CPP@
43 AR      = ar rc $(BLANK)
44
45 RANLIB  = @V_RANLIB@
46 INSTALL         = @INSTALL@
47 LN      = ln
48 TEST    = test
49 RM      = rm -f
50 MV       = mv
51 PERL    = @PERL@
52
53 # for diffusion
54 #DIFF_INCLUDES = "./diffusion3/main ./diffusion3/lib ./diffusion3/nr ./-
   diffusion3/ns"
```

```
ksheeraj@ksheeraj-VirtualBox:~$ cd ns-allinone-2.35/ns-2.35
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35$ gedit Makefile.in
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35$ cd ..
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35$ cd nam-1.15/
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/nam-1.15$ ls
address.cc          enetmodel.cc     netgraph.cc      tag.cc
address.h           enetmodel.h      netgraph.h       tag.h
agent.cc            ex               netmodel.cc      tcl
agent.h             feature.cc       netmodel.h       testview.cc
anetmodel.cc        feature.h        netview.cc       testview.h
anetmodel.h         FILES            netview.cc.tk    tkcompat.c
animation.cc        fix-script.tcl   netview.h        tkcompat.h
animation.h         getopt.c         node.cc          tkUnixInit.c
animator.cc         graphview.cc     node.h           TODO.html
animator.h          graphview.h      packet.cc        trace.cc
autoconf.h.in       group.cc         packet.h         trace.h
autoconf-win32.h    group.h          paint.cc         tracehook.cc
bbox.h              iecdemos         paint.h          tracehook.h
bin                 install-sh       parser.cc        trafficsource.cc
bitmap              INSTALL.WIN32    parser.h         trafficsource.h
canvas.tcl          lan.cc           psview.cc        transform.cc
CHANGES.html        lan.h            psview.h         transform.h
conf                lossmodel.cc     queue.cc         validate
config.guess        lossmodel.h      queue.h          VERSION
config.h            main.cc          queuehandle.cc   view.cc
config.sub          Makefile.in      queuehandle.h    view.h
configure           makefile.vc      random.h         win32.c
configure.in        monitor.cc       README           wnetmodel.cc
```

```
animator.h          graphview.h      packet.cc        trace.cc
autoconf.h.in       group.cc         packet.h         trace.h
autoconf-win32.h    group.h          paint.cc         tracehook.cc
bbox.h              iecdemos         paint.h          tracehook.h
bin                 install-sh       parser.cc        trafficsource.cc
bitmap              INSTALL.WIN32    parser.h         trafficsource.h
canvas.tcl          lan.cc           psview.cc        transform.cc
CHANGES.html        lan.h            psview.h         transform.h
conf                lossmodel.cc     queue.cc         validate
config.guess        lossmodel.h      queue.h          VERSION
config.h            main.cc          queuehandle.cc   view.cc
config.sub          Makefile.in      queuehandle.h    view.h
configure           makefile.vc      random.h         win32.c
configure.in        monitor.cc       README           wnetmodel.cc
drop.cc             monitor.h        rng.cc           wnetmodel.h
drop.h              monitors.gif     rng.h            xstuff.h
edge.cc             nam.1            route.cc         xwd.c
edge.h              nam.h            route.h          XWDFile.h
editview.cc         nam_stream.cc    sincos.h         xwd.h
editview.h          nam_stream.h     state.cc
edu                 nam.tcl.tk       state.h
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/nam-1.15$ gedit Makefile.in
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/nam-1.15$ cd ..
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35$ cd otcl-1.14/
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/otcl-1.14$ gedit Makefile.in
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/otcl-1.14$ cd ..
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35$ cd xgraph-12.2/
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/xgraph-12.2$ gedit Makefile.in
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/xgraph-12.2$
```

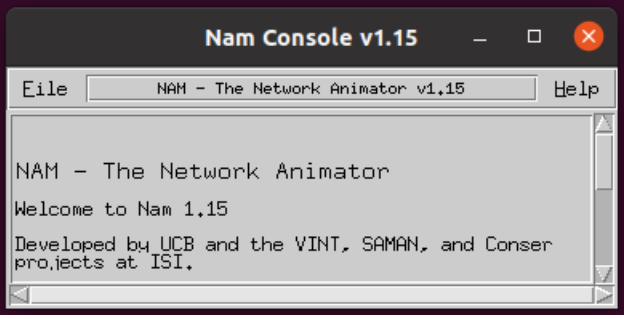
```
config.sub          Makefile.in     queuehandle.h   view.h
configure           makefile.vc     random.h        win32.c
configure.in        monitor.cc      README          wnetmodel.cc
drop.cc             monitor.h       rng.cc          wnetmodel.h
drop.h              monitors.gif    rng.h           xstuff.h
edge.cc             nam.1           route.cc        xwd.c
edge.h              nam.h           route.h         XWDFile.h
editview.cc         nam_stream.cc   sincos.h        xwd.h
editview.h          nam_stream.h    state.cc
edu                 nam.tcl.tk      state.h
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/nam-1.15$ gedit Makefile.in
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/nam-1.15$ cd ..
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35$ cd otcl-1.14/
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/otcl-1.14$ gedit Makefile.in
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/otcl-1.14$ cd ..
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35$ cd xgraph-12.2/
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/xgraph-12.2$ gedit Makefile.in
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/xgraph-12.2$ cd
ksheeraj@ksheeraj-VirtualBox:~$ cd ns-allinone-2.35/ns-2.35
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35$ gedit ns-2.35/linkstat
e/ls.h
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35$ gedit ns-2.35/linkstat
e/ls.h
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35$ cd
ksheeraj@ksheeraj-VirtualBox:~$ gedit ns-2.35/linkstate/ls.h
ksheeraj@ksheeraj-VirtualBox:~$ cd ns-allinone-2.35/ns-2.35
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35$ cd linkstate
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35/linkstate$ gedit ls.h
```

```
120
121 template<class Key, class T>
122 class LsMap : public map<Key, T, less<Key> > {
123 public:
124         typedef less<Key> less_key;
125         typedef map<Key, T, less_key> baseMap;
126         LsMap() : baseMap() {}
127
128         // this next typedef of iterator seems extraneous but is required
    by gcc-2.96
129         typedef typename map<Key, T, less<Key> >::iterator iterator;
130         typedef pair<iterator, bool> pair_iterator_bool;
131         iterator insert(const Key & key, const T & item) {
132                 typename baseMap::value_type v(key, item);
133                 pair_iterator_bool ib = baseMap::insert(v);
134                 return ib.second ? ib.first : baseMap::end();
135         }
136
137         void eraseAll() { this- erase(baseMap::begin(), baseMap::end()); }
138         T* findPtr(Key key) {
139                 iterator it = baseMap::find(key);
140                 return (it == baseMap::end()) ? (T *)NULL :
    &((*it).second);
141         }
142 };
143
144 /*
```

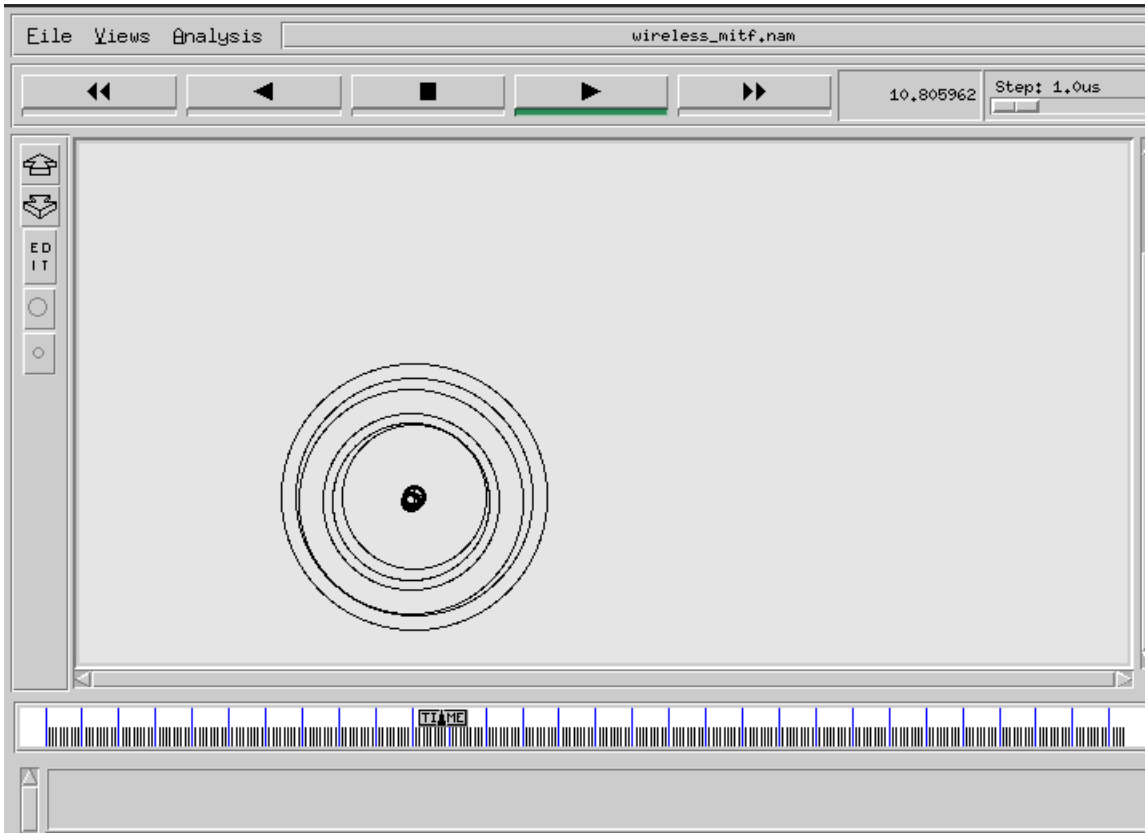
```
IMPORTANT NOTICES:

(1) You MUST put /home/ksheeraj/ns-allinone-2.35/otcl-1.14, /home/ksheeraj/ns-a
llinone-2.35/lib,
    into your LD_LIBRARY_PATH environment variable.
    If it complains about X libraries, add path to your X libraries
    into LD_LIBRARY_PATH.
    If you are using csh, you can set it like:
                setenv LD_LIBRARY_PATH <paths>
    If you are using sh, you can set it like:
                export LD_LIBRARY_PATH=<paths>

(2) You MUST put /home/ksheeraj/ns-allinone-2.35/tcl8.5.10/library into your TC
L_LIBRARY environmental
    variable. Otherwise ns/nam will complain during startup.


After these steps, you can now run the ns validation suite with
cd ns-2.35; ./validate

For trouble shooting, please first read ns problems page
http://www.isi.edu/nsnam/ns/ns-problems.html. Also search the ns mailing list a
rchive
for related posts.

ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35$ cd
ksheeraj@ksheeraj-VirtualBox:~$ gedit ./.bashrc
ksheeraj@ksheeraj-VirtualBox:~$ source .bashrc
ksheeraj@ksheeraj-VirtualBox:~$
```

```
 1 # ~/.bashrc: executed by bash(1) for non-login shells.
 2 # see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
 3 # for examples
 4 export PATH=$PATH:/home/ksheeraj/ns-allinone-2.35/bin:/home/ksheeraj/ns-
   allinone-2.35/tcl8.5.10/unix:/home/ksheeraj/ns-allinone-2.35/tk8.5.10/unix
 5 # If not running interactively, don't do anything
 6 export LD_LIBRARY_PATH=/home/ksheeraj/ns-allinone-2.35/otcl-1.14:/home/-
   ksheeraj/ns-allinone-2.35/lib
 7 case $- in
 8     *i*) ;;
 9       *) return;;
10 esac
11
12 # don't put duplicate lines or lines starting with space in the history.
13 # See bash(1) for more options
14 HISTCONTROL=ignoreboth
15
16 # append to the history file, don't overwrite it
17 shopt -s histappend
18
19 # for setting history length see HISTSIZE and HISTFILESIZE in bash(1)
20 HISTSIZE=1000
21 HISTFILESIZE=2000
22
23 # check the window size after each command and, if necessary,
24 # update the values of LINES and COLUMNS.
25 shopt -s checkwinsize
```

```
ksheeraj@ksheeraj-VirtualBox:~$ ls
allocbestfit.cpp   disklook.cpp  netcom2.out             sawarq
allocfirstfit.cpp  diskscan.cpp  netcon2                 sawarq.c
allocnextfit.cpp   Documents     ns-allinone-2.35        selarq
allocworstfit.cpp  Downloads     ns-allinone-2.35.tar.gz selarq.c
a.out              gbnarq        pagefifo.cpp            TCPclient.c
checksum           gbnarq.c      pagelru.cpp             TCPserver.c
checksum.c         hamcode       pageoptimal.cpp         Templates
crc                hamcode.c     Pictures                udpclient.c
crc.c              Music         Public                  udpserver.c
Desktop            netcom1.c     q1.c                    UDPserver.c
diskclook.cpp      netcom2       q2.c                    UPDclient.c
diskcscan.cpp      netcom2.c     saarq                   Videos
ksheeraj@ksheeraj-VirtualBox:~$ ns
% ^C
ksheeraj@ksheeraj-VirtualBox:~$ ns --version
% ^C
ksheeraj@ksheeraj-VirtualBox:~$ nam
```




```
a.out              gbnarq        pagefifo.cpp            TCPclient.c
checksum           gbnarq.c      pagelru.cpp             TCPserver.c
checksum.c         hamcode       pageoptimal.cpp         Templates
crc                hamcode.c     Pictures                udpclient.c
crc.c              Music         Public                  udpserver.c
Desktop            netcom1.c     q1.c                    UDPserver.c
diskclook.cpp      netcom2       q2.c                    UPDclient.c
diskcscan.cpp      netcom2.c     saarq                   Videos
ksheeraj@ksheeraj-VirtualBox:~$ ns
% ^C
ksheeraj@ksheeraj-VirtualBox:~$ ns --version
% ^C
ksheeraj@ksheeraj-VirtualBox:~$ nam
ksheeraj@ksheeraj-VirtualBox:~$ cd ns-allinone-2.35/
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35$ cd ns-2.35
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35$ cd tcl
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35/tcl$ cd ex
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35/tcl/ex$ ns wireless-mit
f.tcl
num_nodes is set 2
INITIALIZE THE LIST xListHead
Starting Simulation...
channel.cc:sendUp - Calc highestAntennaZ_ and distCST_
highestAntennaZ_ = 1.5,  distCST_ = 550.0
SORTING LISTS ...DONE!
NS EXITING...
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35/tcl/ex$ nam wireless_mi
tf.nam
```



Code:

```
#Create a simulator object
set ns [new Simulator]

#Tell the simulator to use dynamic routing
$ns rtproto DV

#Open the nam trace file
set nf [open out.nam w]
$ns namtrace-all $nf


#Define a 'finish' procedure
proc finish {} {
        global ns nf
        $ns flush-trace
          #Close the trace file
        close $nf
```

```
        #Execute nam on the trace file
    exec nam out.nam &
    exit 0
}

#Create seven nodes
for {set i 0} {$i < 7} {incr i} {
    set n($i) [$ns node]
}



#Create links between the nodes
for {set i 0} {$i < 7} {incr i} {
    $ns duplex-link $n($i) $n([expr ($i+1)%7]) 1Mb 10ms DropTail
}

#Create a UDP agent and attach it to node n(0)
set udp0 [new Agent/UDP]
$ns attach-agent $n(0) $udp0

# Create a CBR traffic source and attach it to udp0
set cbr0 [new Application/Traffic/CBR]
$cbr0 set packetSize_ 500
$cbr0 set interval_ 0.005
$cbr0 attach-agent $udp0

#Create a Null agent (a traffic sink) and attach it to node n(3)
set null0 [new Agent/Null]
$ns attach-agent $n(3) $null0

#Connect the traffic source with the traffic sink
$ns connect $udp0 $null0

#Schedule events for the CBR agent and the network dynamics
$ns at 0.5 "$cbr0 start"
```

```
$ns rtmodel-at 1.0 down $n(1) $n(2)
$ns rtmodel-at 2.0 up $n(1) $n(2)
$ns at 4.5 "$cbr0 stop"
#Call the finish procedure after 5 seconds of simulation time
$ns at 5.0 "finish"

#Run the simulation
$ns run
```

```
#Create a simulator object
set ns [new Simulator]
#Open the trace file
set nt [open sample.tr w]
$ns trace-all $nt
#Open the nam trace file
set nf [open program8.nam w]
$ns namtrace-all $nf

#Routing Protocol used is Distance Vector
#$ns rtproto DV

#Define a 'finish' procedure
proc finish {} {
   global ns nf nt
   $ns flush-trace
   #Close the trace file
   close $nf
   close $nt
   #Executenam on the trace file
   exec nam program8.nam &
   exit 0
}

#Create four nodes
```

```
set n0 [$ns node]
set n1 [$ns node]
set n2 [$ns node]
set n3 [$ns node]
set n4 [$ns node]
set n5 [$ns node]

#Create links between the nodes
$ns duplex-link $n0 $n1 1Mb 10ms DropTail
$ns duplex-link $n1 $n2 1Mb 10ms DropTail
$ns duplex-link $n2 $n3 1Mb 10ms DropTail
$ns duplex-link $n3 $n4 1Mb 10ms DropTail
$ns duplex-link $n4 $n5 1Mb 10ms DropTail
$ns duplex-link $n5 $n0 1Mb 10ms DropTail

$ns duplex-link-op $n0 $n1 orient right-up
$ns duplex-link-op $n1 $n2 orient right-down
$ns duplex-link-op $n2 $n3 orient down
$ns duplex-link-op $n3 $n4 orient left-down
$ns duplex-link-op $n4 $n5 orient left-up
$ns duplex-link-op $n5 $n0 orient up

#Create a TCP agent and attach it to node n0
set tcp0 [new Agent/TCP]
$tcp0 set class_ 1
$ns attach-agent $n1 $tcp0

#Create a TCP Sink agent (a traffic sink) for TCP and attach it to node n3
set sink0 [new Agent/TCPSink]
$ns attach-agent $n3 $sink0

#Connect the traffic sources with the traffic sink
$ns connect $tcp0 $sink0

# Create a CBR traffic source and attach it to tcp0
```

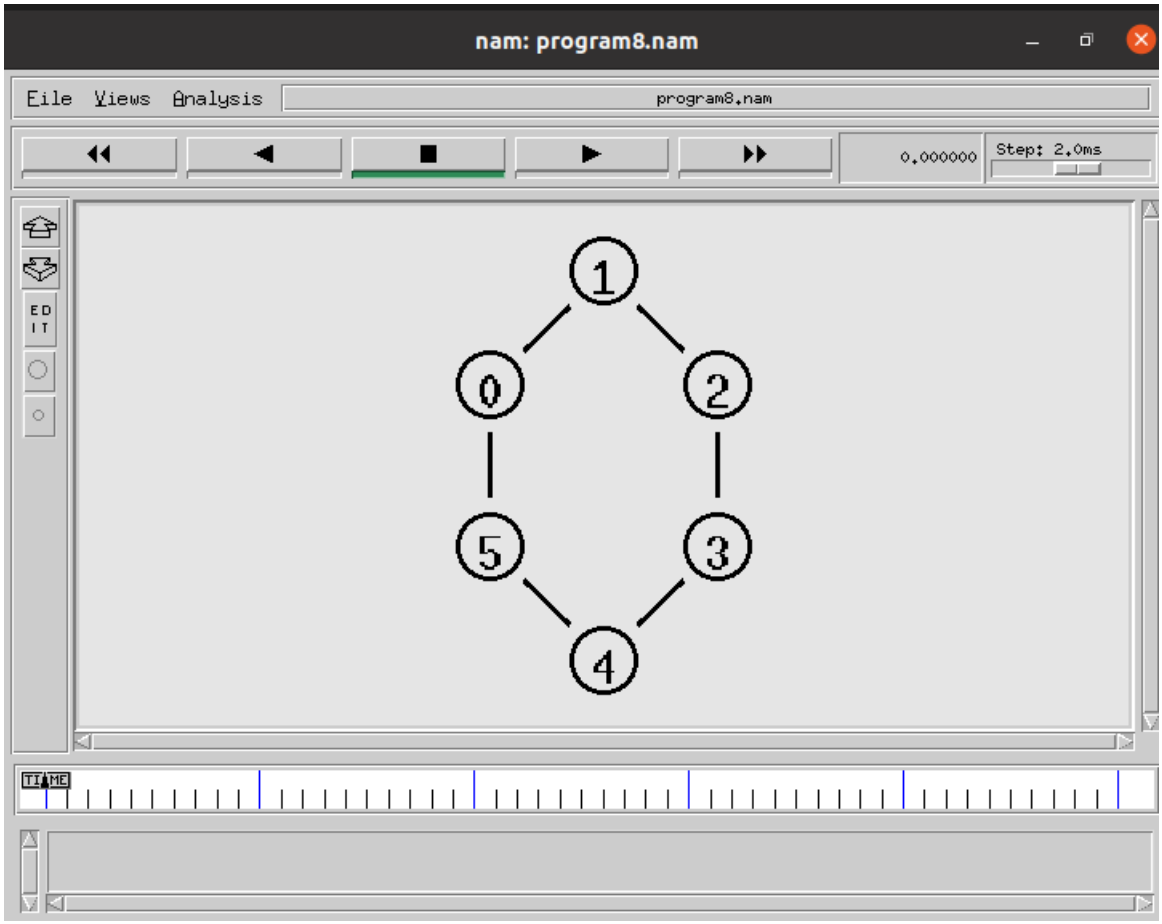
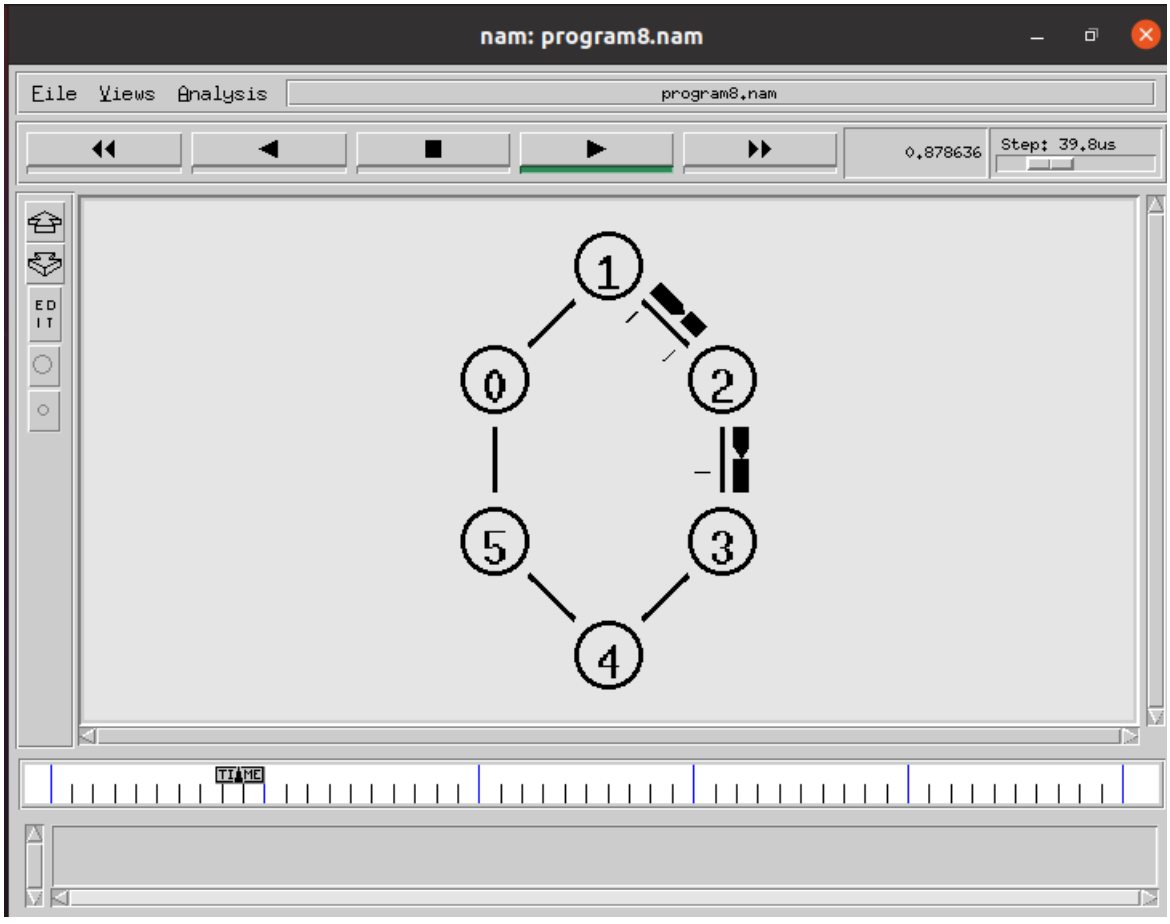
```
set cbr0 [new Application/Traffic/CBR]
$cbr0 set packetSize_ 500
$cbr0 set interval_ 0.01
$cbr0 attach-agent $tcp0

# Break link n2---n3 at 1.3ms
$ns rtmodel-at 1.3 down $n2 $n3
$ns rtmodel-at 2.0 up $n2 $n3
$ns at 4.5 "$cbr0 stop"

#Schedule events for the CBR agents
$ns at 0.5 "$cbr0 start"

#Call the finish procedure after 5 seconds of simulation time
$ns at 5.0 "finish"

#Run the simulation
$ns run
```

```
#Create a simulator object
set ns [new Simulator]

#Tell the simulator to use dynamic routing
$ns rtproto DV

#Open the nam trace file
set nf [open out.nam w]
$ns namtrace-all $nf


#Define a 'finish' procedure
proc finish {} {
    global ns nf
    $ns flush-trace
```

```
        #Close the trace file
    close $nf
        #Execute nam on the trace file
    exec nam out.nam &
    exit 0
}

#Create seven nodes
for {set i 0} {$i < 7} {incr i} {
    set n($i) [$ns node]
}



#Create links between the nodes
for {set i 0} {$i < 7} {incr i} {
    $ns duplex-link $n($i) $n([expr ($i+1)%7]) 1Mb 10ms DropTail
}

#Create a UDP agent and attach it to node n(0)
set udp0 [new Agent/UDP]
$ns attach-agent $n(0) $udp0

# Create a CBR traffic source and attach it to udp0
set cbr0 [new Application/Traffic/CBR]
$cbr0 set packetSize_ 500
$cbr0 set interval_ 0.005
$cbr0 attach-agent $udp0

#Create a Null agent (a traffic sink) and attach it to node n(3)
set null0 [new Agent/Null]
$ns attach-agent $n(3) $null0

#Connect the traffic source with the traffic sink
$ns connect $udp0 $null0
```

#Schedule events for the CBR agent and the network dynamics
$ns at 0.5 "$cbr0 start"
$ns rtmodel-at 1.0 down $n(1) $n(2)
$ns rtmodel-at 2.0 up $n(1) $n(2)
$ns at 4.5 "$cbr0 stop"
#Call the finish procedure after 5 seconds of simulation time
$ns at 5.0 "finish"

#Run the simulation
$ns run

```
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35/tcl/ex$ gedit ring.tcl
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35/tcl/ex$ ns ring.tcl
ksheeraj@ksheeraj-VirtualBox:~/ns-allinone-2.35/ns-2.35/tcl/ex$ Nam syntax has
changed: v -t 1.3 link-down 1.3 3 2
Please use this format in the future.
v -t <time> -e <tcl expression>

Nam syntax has changed: v -t 1.3 link-down 1.3 3 2
Please use this format in the future.
v -t <time> -e <tcl expression>

Nam syntax has changed: v -t 1.3 link-down 1.3 2 3
Please use this format in the future.
v -t <time> -e <tcl expression>

Nam syntax has changed: v -t 1.3 link-down 1.3 2 3
Please use this format in the future.
v -t <time> -e <tcl expression>

Nam syntax has changed: v -t 2 link-up 2 3 2
Please use this format in the future.
v -t <time> -e <tcl expression>
```

KANDRA KSHEERAJ
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