ALGORITHM

1. Create a simulator object
2. Define different colours for different data flows
3. Open a Nam trace file and define the finish procedure then close the trace file, and execute Nam on the trace file.
4. Create six nodes that form a network numbered from 0 to 5
5. Create duplex links between the nodes
6. Setup UDP Connection between n(0) and n(2)
7. Apply CBR Traffic over UDP
8. Choose distance vector routing protocol as a high-level data link control.
9. Make any one of the links go down to check the working nature of HDLC
10. Schedule events and run the program.

Network Simulation Code with Comments

```
set ns [new Simulator]
#Tell the simulator to use dynamic routing
$ns rtproto DV
$ns macType Mac/Sat/UnslottedAloha
#Open the nam trace file
set nf [open aloha.nam w]
$ns namtrace-all $nf
#Open the output files
set f0 [open aloha.tr w]
$ns trace-all $f0
#Define a finish procedure
proc finish {} {
global ns f0 nf
$ns flush-trace
#Close the trace file
close $f0
close $nf
exec nam aloha.nam &
exit 0
}
# Create six 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 duplex links between nodes with bandwidth and distance
$ns duplex-link $n0 $n4 1Mb 50ms DropTail
$ns duplex-link $n1 $n4 1Mb 50ms DropTail
$ns duplex-link $n2 $n5 1Mb 1ms DropTail
$ns duplex-link $n3 $n5 1Mb 1ms DropTail
$ns duplex-link $n4 $n5 1Mb 50ms DropTail
$ns duplex-link $n2 $n3 1Mb 50ms DropTail
# Create a duplex link between nodes 4 and 5 as queue position
$ns duplex-link-op $n4 $n5 queuePos 0.5
#Create a UDP agent and attach it to node n(0)
set udp0 [new Agent/UDP]
$ns attach-agent $n0 $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(2)
set null0 [new Agent/Null]
$ns attach-agent $n2 $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 $n5 $n2
$ns rtmodel-at 2.0 up $n5 $n2
$ns at 4.5 “$cbr0 stop”
#Call the finish procedure after 5 seconds of simulation time
```

```
$ns at 5.0 “finish”
#Run the simulation
$ns run
```