ADVANCED COMPUTER NETWORK

PRACTICAL NO 9

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Practical 9:

Aim:

Create Single mobile network.

Source Code:

MobileNetwork.ned

```
package inet.examples.mobility;

network MobileNetwork
{
    parameters:
        int numHosts;
        @display("bgb=600,400");
    submodules:
        host[numHosts]: MobileHost {
            parameters:
                @display("p=300,300;r=,,#707070");
        }
}
```

omnetpp.ini

```
[General]
#scheduler-class = "cRealTimeScheduler" #so that speed appears realistic
#debug-on-errors = true
tkenv-plugin-path = ../../../etc/plugins
sim-time-limit = 10day

*.numHosts = 2
**.constraintAreaMinX = 0m
**.constraintAreaMinY = 0m
**.constraintAreaMinZ = 0m
**.constraintAreaMaxX = 600m
**.constraintAreaMaxY = 400m
**.constraintAreaMaxZ = 0m
**.updateInterval = 0.1s # test with 0s too, and let getCurrentPosition update the display string
from a test module
**.debug = true

**.mobility.initFromDisplayString = false

[Config ANSimMobility]
network = MobileNetwork
**.host*.mobilityType = "ANSimMobility"
```

```
**.host*.mobility.ansimTrace = xmldoc("ansimtrace.xml")
**.host*.mobility.nodeId = -1  #means "host module's index"

[Config BonnMotionMobility1]
network = MobileNetwork
description = "2 hosts"
**.host*.mobilityType = "BonnMotionMobility"
**.host*.mobility.traceFile = "bonnmotion_small.movements"
**.host*.mobility.nodeId = -1  #means "host module's index"

[Config BonnMotionMobility2]
network = MobileNetwork
description = "100 hosts"
*.numHosts = 100
**.host*.mobilityType = "BonnMotionMobility"
**.host*.mobility.traceFile = "bonnmotion_scenario.movements"
**.host*.mobility.nodeId = -1  #means "host module's index"

[Config ChiangMobility]
network = MobileNetwork
*.numHosts = 1
**.host*.mobilityType = "ChiangMobility"
**.host*.mobility.stateTransitionUpdateInterval = 3s
**.host*.mobility.speed = 10mps

[Config CircleMobility1]
network = MobileNetwork
*.numHosts = 3
**.host*.mobilityType = "CircleMobility"
**.host*.mobility.cx = 200m
**.host*.mobility.cy = 200m
**.host*.mobility.r = 150m
**.host*.mobility.speed = 40mps
**.host[0].mobility.startAngle = 0deg
**.host[1].mobility.startAngle = 120deg
**.host[2].mobility.startAngle = 240deg

[Config CircleMobility2]
network = MobileNetwork
*.numHosts = 3
**.host*.mobilityType = "CircleMobility"
**.host[0].mobility.cx = 100m
**.host[1].mobility.cx = 300m
**.host[2].mobility.cx = 500m
**.host*.mobility.cy = 200m
**.host*.mobility.r = 150m
**.host*.mobility.speed = 40mps
**.host*.mobility.startAngle = 0deg
```

```
[Config ConstSpeedMobility]
network = MobileNetwork
**.host*.mobilityType = "ConstSpeedMobility"
**.host*.mobility.initFromDisplayString = false
**.host*.mobility.speed = 50mps

[Config ConstSpeedMobility01]
extends = ConstSpeedMobility
**.updateInterval = 0.1s

[Config ConstSpeedMobility1]
extends = ConstSpeedMobility
**.updateInterval = 1s

[Config ConstSpeedMobility10]
extends = ConstSpeedMobility
**.updateInterval = 10s

[Config ConstSpeedMobility100]
extends = ConstSpeedMobility
**.updateInterval = 100s

[Config ConstSpeedMobility1000]
extends = ConstSpeedMobility
**.updateInterval = 1000s

[Config GaussMarkovMobility]
network = MobileNetwork
*.numHosts = 1
**.host*.mobilityType = "GaussMarkovMobility"
**.host*.mobility.alpha = 0.9
**.host*.mobility.speed = 10mps
**.host*.mobility.angle = 0deg
**.host*.mobility.variance = 40
**.host*.mobility.margin = 30m

[Config LinearMobility]
network = MobileNetwork
**.host*.mobilityType = "LinearMobility"
**.host*.mobility.initFromDisplayString = false
**.host*.mobility.speed = 50mps
**.host*.mobility.angle = 30deg  # degrees
#**.host*.mobility.acceleration = -0.5

[Config LinearMobility01]
extends = LinearMobility
**.updateInterval = 0.1s
```

```
[Config LinearMobility1]
extends = LinearMobility
**.updateInterval = 1s

[Config LinearMobility10]
extends = LinearMobility
**.updateInterval = 10s

[Config LinearMobility100]
extends = LinearMobility
**.updateInterval = 100s

[Config LinearMobility1000]
extends = LinearMobility
**.updateInterval = 1000s

[Config LinearMobility_accdown]
extends = LinearMobility
**.updateInterval = 0.1s
**.host*.mobility.acceleration = -1.0  # m/s2

[Config LinearMobility_accup]
extends = LinearMobility
**.updateInterval = 0.1s
**.host*.mobility.speed = 0mps
**.host*.mobility.acceleration = 1.0  # m/s2

[Config MassMobility]
network = MobileNetwork
*.numHosts = 5
**.host*.mobilityType = "MassMobility"
**.host*.mobility.initFromDisplayString = false
**.host*.mobility.changeInterval = truncnormal(2s, 0.5s)
**.host*.mobility.changeAngleBy = normal(0deg, 30deg)
**.host*.mobility.speed = truncnormal(15mps, 5mps)

[Config MassMobilityWithScenario]
network = MobileNetworkWithScenario
*.numHosts = 5
**.host*.mobilityType = "MassMobility"
**.host*.mobility.initFromDisplayString = false
**.host*.mobility.changeInterval = truncnormal(2s, 0.5s)
**.host*.mobility.changeAngleBy = normal(0deg, 30deg)
**.host*.mobility.speed = truncnormal(15mps, 5mps)
**.scenarioManager.script = xmldoc("scenario.xml")

[Config MoBANMobility1]
```

```
network = MoBANNetwork
**.constraintAreaMaxX = 1000m
**.constraintAreaMaxY = 1000m
**.constraintAreaMaxZ = 1000m
**.numNodes = 12
**.numMoBAN = 1

**.coordinator[*].postureSpecFile = xmldoc("postures1.xml")
**.coordinator[*].configFile = xmldoc("configMoBAN1.xml")
**.coordinator[*].useMobilityPattern = false
**.coordinator[0].mobilityPatternFile = "MoBAN_Pattern_in0.txt"

**.node[*].mobilityType = "MoBANLocal"
**.node[*].mobility.coordinatorIndex = 0

[Config MoBANMobility2]
network = MoBANNetwork
**.constraintAreaMaxX = 1000m
**.constraintAreaMaxY = 1000m
**.constraintAreaMaxZ = 1000m
**.numNodes = 44
**.numMoBAN = 2

**.coordinator[*].postureSpecFile = xmldoc("postures1.xml")
**.coordinator[*].configFile = xmldoc("configMoBAN2.xml")
**.coordinator[*].useMobilityPattern = false
**.coordinator[*].mobilityPatternFile = ""

**.node[0..19].mobilityType = "ConstSpeedMobility"
**.node[0..19].mobility.speed = 30mps

**.node[20..43].mobilityType = "MoBANLocal"
**.node[20..31].mobility.coordinatorIndex = 0
**.node[32..43].mobility.coordinatorIndex = 1

**.node[0].mobility.initialX = 5m
**.node[0].mobility.initialY = 5m
**.node[0].mobility.initialZ = 4m

**.node[1].mobility.initialX = 12m
**.node[1].mobility.initialY = 10m
**.node[1].mobility.initialZ = 4m

**.node[2].mobility.initialX = 20m
**.node[2].mobility.initialY = 5m
**.node[2].mobility.initialZ = 4m

**.node[3].mobility.initialX = 30m
```

```
**.node[3].mobility.initialY = 8m
**.node[3].mobility.initialZ = 4m

**.node[4].mobility.initialX = 40m
**.node[4].mobility.initialY = 3m
**.node[4].mobility.initialZ = 4m

**.node[5].mobility.initialX = 6m
**.node[5].mobility.initialY = 18m
**.node[5].mobility.initialZ = 4m

**.node[6].mobility.initialX = 15m
**.node[6].mobility.initialY = 15m
**.node[6].mobility.initialZ = 4m

**.node[7].mobility.initialX = 20m
**.node[7].mobility.initialY = 8m
**.node[7].mobility.initialZ = 4m

**.node[8].mobility.initialX = 35m
**.node[8].mobility.initialY = 20m
**.node[8].mobility.initialZ = 4m

**.node[9].mobility.initialX = 45m
**.node[9].mobility.initialY = 15m
**.node[9].mobility.initialZ = 4m

**.node[10].mobility.initialX = 40m
**.node[10].mobility.initialY = 25m
**.node[10].mobility.initialZ = 4m

**.node[11].mobility.initialX = 16m
**.node[11].mobility.initialY = 25m
**.node[11].mobility.initialZ = 4m

**.node[12].mobility.initialX = 24m
**.node[12].mobility.initialY = 35m
**.node[12].mobility.initialZ = 4m

**.node[13].mobility.initialX = 35m
**.node[13].mobility.initialY = 32m
**.node[13].mobility.initialZ = 4m

**.node[14].mobility.initialX = 35m
**.node[14].mobility.initialY = 28m
**.node[14].mobility.initialZ = 4m

**.node[15].mobility.initialX = 45m
```

```
**.node[15].mobility.initialY = 40m
**.node[15].mobility.initialZ = 4m

**.node[16].mobility.initialX = 2m
**.node[16].mobility.initialY = 45m
**.node[16].mobility.initialZ = 4m

**.node[17].mobility.initialX = 10m
**.node[17].mobility.initialY = 40m
**.node[17].mobility.initialZ = 4m

**.node[18].mobility.initialX = 23m
**.node[18].mobility.initialY = 45m
**.node[18].mobility.initialZ = 4m

**.node[19].mobility.initialX = 37m
**.node[19].mobility.initialY = 43m
**.node[19].mobility.initialZ = 4m

[Config RandomWPMobility]
network = MobileNetwork
*.numHosts = 5
**.host*.mobilityType = "RandomWPMobility"
**.host*.mobility.initFromDisplayString = false
**.host[0].mobility.speed = 10*uniform(20mps,50mps)
**.host*.mobility.speed = uniform(20mps,50mps)
**.host*.mobility.waitTime = uniform(3s,8s)

[Config RectangleMobility]
network = MobileNetwork
**.host*.mobilityType = "RectangleMobility"
**.host*.mobility.constraintAreaMinX = 100m
**.host*.mobility.constraintAreaMinY = 100m
**.host*.mobility.constraintAreaMaxX = 500m
**.host*.mobility.constraintAreaMaxY = 300m
#**.host*.mobility.x1 = 100
#**.host*.mobility.y1 = 100
#**.host*.mobility.x2 = 500
#**.host*.mobility.y2 = 300
**.host[0].mobility.startPos = 0
**.host[1].mobility.startPos = 2.5
**.host[0].mobility.speed = 20mps
**.host[1].mobility.speed = -10mps

[Config StaticGridMobility]
network = MobileNetwork
*.numHosts = 20
**.host*.mobilityType = "StaticGridMobility"
```

```
**.host*.mobility.marginX = 100m
**.host*.mobility.marginY = 100m
**.host*.mobility.numHosts = 20

[Config StationaryMobility]
network = MobileNetwork
*.numHosts = 3
**.host*.mobilityType = "StationaryMobility"
# place it at a fixed position:
**.host[0].mobility.initialX = 50m
**.host[0].mobility.initialY = 200m
**.host[0].mobility.initFromDisplayString = false
# the second node is using the display string position (or placed randomly if position is not present
in display string)
**.host[1].mobility.initFromDisplayString = true
# place it at a random position:
**.host[2].mobility.initFromDisplayString = false

[Config TractorMobility]
network = MobileNetwork
*.numHosts = 1
**.host*.mobilityType = "TractorMobility"
**.host*.mobility.x1 = 100m
**.host*.mobility.y1 = 100m
**.host*.mobility.x2 = 500m
**.host*.mobility.y2 = 300m
**.host*.mobility.rowCount = 4
**.host*.mobility.speed = 50mps

[Config TurtleMobility1]
network = MobileNetwork
description = "square"
*.numHosts = 1
**.host*.mobilityType = "TurtleMobility"
**.host*.mobility.turtleScript = xmldoc("turtle.xml", "movements//movement[@id='1']")

[Config TurtleMobility2]
network = MobileNetwork
description = "two squares"
*.numHosts = 1
**.host*.mobilityType = "TurtleMobility"
**.host*.mobility.turtleScript = xmldoc("turtle.xml", "movements//movement[@id='2']")

[Config TurtleMobility3]
network = MobileNetwork
description = "random waypoint"
*.numHosts = 2
**.host*.mobilityType = "TurtleMobility"
```

```
**.host*.mobility.turtleScript = xmldoc("turtle.xml", "movements//movement[@id='3']")

[Config TurtleMobility4]
network = MobileNetwork
description = "mass+reflect"
*.numHosts = 2
**.host*.mobilityType = "TurtleMobility"
**.host*.mobility.turtleScript = xmldoc("turtle.xml", "movements//movement[@id='4']")

[Config TurtleMobility5]
network = MobileNetwork
description = "mass+wrap"
*.numHosts = 2
**.host*.mobilityType = "TurtleMobility"
**.host*.mobility.turtleScript = xmldoc("turtle.xml", "movements//movement[@id='5']")

[Config TurtleMobility6]
network = MobileNetwork
description = "mass+placerandomly"
*.numHosts = 2
**.host*.mobilityType = "TurtleMobility"
**.host*.mobility.turtleScript = xmldoc("turtle.xml", "movements//movement[@id='6']")
```

Output: