

PeerSim Lab

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Reminders

- Your classpath should include: jep-2.3.0.jar et djep-1.0.0.jar, as well as the src folder.
- Look at this tutorial: <http://peersim.sourceforge.net/tutorial1/tutorial1.pdf>
- A peer's neighborhood is stored in an object : Linkable.
- Update your configuration files when you create a new protocol.
- Links between protocols are defined in the configuration file.

1 Warm Up

Start reading the tutorial.

Example1

QU. 1 | Comment the lines the config-example1.txt file, Figure 1 (the file is in the example folder).

QU. 2 | What is this simulation supposed to do?

QU. 3 | Start the simulation as indicated in the tutorial using the « config-example1.txt » configuration file.

QU. 4 | Analyze the output, does the protocol work? The output should be similar to the following.

```
control.avgo:  0  1.0  100.0  50000  50.49999999999998  816.7990066335468  1  1
               ↑    ↑    ↑    ↑    ↑                ↑          ↑  ↑
```

QU. 5 | Oops, if you look at the code of src/example/aggregation/AverageFunction.java/ there's something missing. Fix it!

QU. 6 | Re-execute the program, does it work now

QU. 7 | what do the values in the output represent?

QU. 8 | Edit config-example1.txt so that the simulation runs only one cycle and add the following DegreeStats controller to the configuration file:

```
1 control.degree DegreeStats
2 control.degree.protocol lnk
3 control.degree.undir
4 control.degree.method freq
```

```
1  # PEERSIM EXAMPLE 1
2
3  random.seed 1234567890
4  simulation.cycles 30
5
6  control.shf Shuffle
7
8
9  network.size 50000
10
11 protocol.lnk IdleProtocol
12
13 protocol.avg example.aggregation.AverageFunction
14 protocol.avg.linkable lnk
15
16 init.rnd WireKOut
17 init.rnd.protocol lnk
18 init.rnd.k 20
19
20 init.peak example.aggregation.PeakDistributionInitializer
21 init.peak.value 10000
22 init.peak.protocol avg
23
24 init.lin LinearDistribution
25 init.lin.protocol avg
26 init.lin.max 100
27 init.lin.min 1
28
29 # you can change this to select the peak initializer instead
30 include.init rnd lin
31
32 control.avgo example.aggregation.AverageObserver
33 control.avgo.protocol avg
```

Figure 1: config-example1.txt

QU. 9 | What is being printed when you run the simulation?

2 Editing the algorithm

- QU. 10 | Change the algorithm as follows so that at each cycle a peer averages the values of all its neighbors. What happens?

3 Visualization

Download Gnuplot (<http://www.gnuplot.info/>).

Static Graph

- QU. 11 | Test the following configuration file:

```

1  # PEERSIM EXAMPLE 2
2
3  random.seed 1234567890
4  simulation.cycles 1
5
6  network.size 10000
7
8  protocol.link IdleProtocol
9
10 protocol.coord example.hot.InetCoordinates
11
12 init.0 example.hot.InetInitializer
13 init.0.protocol coord
14
15 init.1 example.hot.WireInetTopology
16 init.1.protocol link #the linkable to be wired
17 init.1.coord_protocol coord
18 init.1.alpha 20
19
20 control.io example.hot.InetObserver
21 control.io.protocol link
22 control.io.coord_protocol coord
23 control.io.file_base graph
24
25 control.degree DegreeStats
26 control.degree.protocol link
27 control.degree.undir
28 control.degree.method freq
29
30 include.control io degree

```

Figure 2: config-example2.txt

Open the file graph00000000.dat using gnuplot: run gnuplot in a terminal. Select the folder containing the file and run: plot "graph00000000.dat" with lines

- QU. 12 | Modify the value of alpha in the configuration file for init.1 ($\alpha = 10, 50, 100$). What is the impact of alpha?