“Spanning Tree Simulator”

6th Edition. November 2023

Tools

In this laboratory we will use the Lan Bridge Spanning Tree Animation (LBSTA) applications. This is a JAVA application, which can be used to simulate the Spanning Tree algorithm on top of a computer network composed by bridges and hosts.

You can find all the information about this simulator in:

http://simon.arlott.org/hwu/lbsta/

On AulaGlobal you can find a zip file with extra content where will find the application. After you have downloaded that zip file, unzip the file in a new directory.

Setup (Linux/MAC)

To run the application, just run it using the command "**sh lbsta.sh**" in a Linux machine. You can have access to a Linux machine in the virtual laboratory.

Setup (Windows)

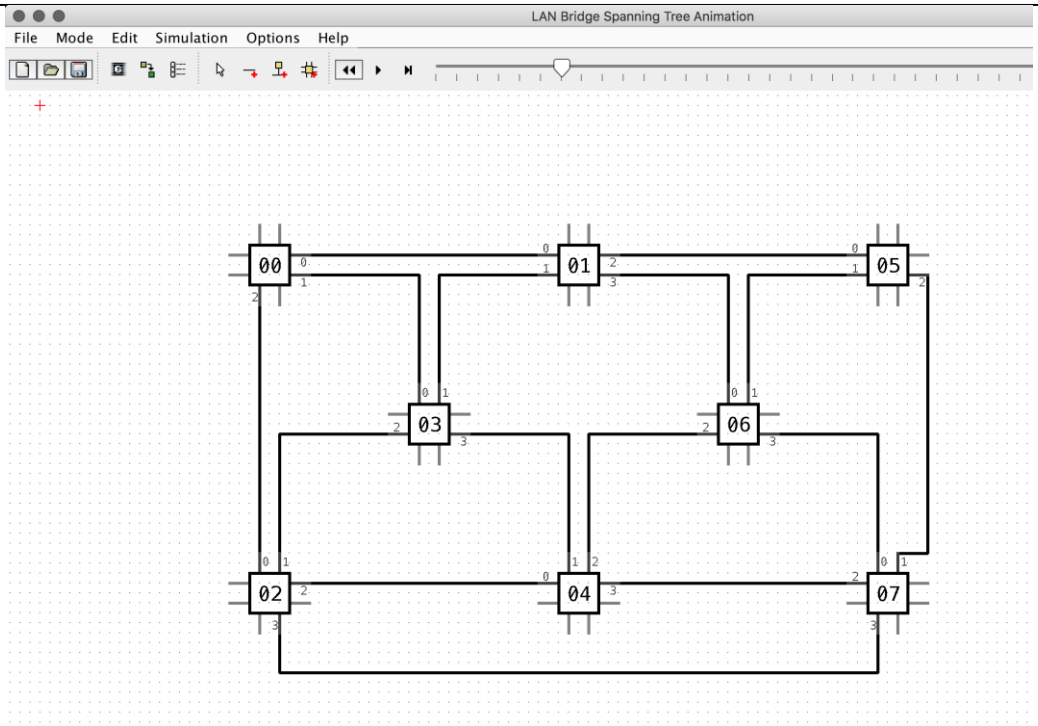
First, you will need to download the Java Runtime Environment (JRE) from here:

https://www.java.com/en/download/manual.jsp

Afterwards, you can click on "**lbsta.bat"** and the simulator will open

Instructions

Given the following scenario (you can load it from the provided file):



where every box represents a bridge, the number inside each box identifies the bridge and the numbers outside the box, near a line represents a port identifier of the bridge.

Question 1:

1. Compute by hand, the resulting spanning tree after running the STP.
2. Load the previous network scenario in the LBSTA simulator.
3. Run the simulator.
4. Check if your results match with the output of the simulator.

Question 2:

1. Select Edit->Modify Components to switch to “edition mode”.
2. Select Bridge 2. A new window emerges at the right side of the screen with several parameters associated to the selected bridge. After changing the cost of port 3 to 1000, press Enter (this is very important to actually modify the cost). These costs values are not standard, but they will be OK for these tests.
3. After selecting Bridge 7, change the cost of port 3 to 1000.
4. Compute by hand, the resulting spanning tree after running the STP.

5. Run the simulator and check your results against the output of the simulator.

Question 3:

1. Select Edit->Modify Components to switch to “edition mode”.

2. Connect host00 to an empty port of bridge 00, and host01 to bridge 01, by using the Edit->Create hosts option (first of all, extend a port using the “Create LAN” tool).

3. After the STP finishes, select host00. A new window emerges at the right side of the screen. You can send one frame from this host to host01. It is possible to follow this frame through the network. Check the learning tables of the bridges after a frame is received and transmitted at each bridge.

4. Now, send an “ack” from host01 to host00 and check the path from the receiver to the sender.

It is possible to load other files from compatible xml files.

Evaluation

Provide your answers to the quiz in Aula Global.