Welcome to the Term project program : Network Attack Monitoring Tool

Made by the PBoys: Tyler deLoughery, Mitchell Zinck, Braeden Sherritt

In this readme, you will find the following:

- How to set up the program
- Program commands
- An example test suite
- FAQ

What to do with Attack.txt and Graph.txt:

Make sure to put all Attack.txt and Graph.txt files under src\resources. Ensure that both the Graph.txt and Attack.txt files are named as such, any additional attack files need to be saved at the same location and can be loaded when needed. Furthermore, ensure that the nodes and connections in the Graph.txt file are separated by "----------" to have them properly loaded. The .java file for the program can be found under src\monitoring\tool.

Program commands are as follows

"Help”	Shows commands
“load 'filename.txt' “	Loads a new attack file
"show names:”	Shows all nodes
"show connections:	Shows current connections of active nodes
"show xypos:	Shows the coordinates of the nodes
"show latlon:	Shows real latitudes and longitudes of the nodes
"show attacks:	Shows all attacks of city, virus type, date and time
"show onlinestatus:	Shows current online and offline nodes
"show firewall:	Shows current nodes with active firewall
"show firewalllog:	Shows attack attempts on nodes
"show firewallattacked:	Shows all firewalls with attacks on them
"show infected:	Shows current infection status of nodes
"show inactive:	Shows all inactive nodes
"show outbreaks:	Shows all nodes with outbreaks
"show adjmatrix:	Generates adjacency matrix that correspond with active connections

Node Commands:

“show status:'node_name_here'	Shows current status of selected node
"show alerts:'node_name_here';	Shows alerts of selected node
"show firewalllog:'node_name_here'	Shows attempts at breaching node firewall(s)
"show viruses:'node_name_here'	Shows current virus locations

"show saferoutes:'origin_node_name_here'>'destination_node_name_here'
Shows all possible safe routes between 2 nodes
"show shortestpath:'origin_node_name_here'>'destination_node_name_here'
Shows the shortest safest path between 2 nodes

Example **test suite**

4.1

a) The status of a node (active or inactive);

Example: show status:Miami

Output: Miami's online status is currently: true

b) Each virus type infecting a node at a given point, and for each listed type, how many attacks of that type have infected that node. This information must be sorted as specified in 3.4.a.

Example: show viruses:Shanghai

Output: Shanghai has the following viruses:

Attack:: Name: Shanghai Colour: red Date: 2021-03-21 Time: 14:08:52
Attack:: Name: Shanghai Colour: red Date: 2021-03-21 Time: 14:08:52
Attack:: Name: Shanghai Colour: red Date: 2021-03-21 Time: 14:08:52
Attack:: Name: Shanghai Colour: red Date: 2021-03-21 Time: 14:08:52
Attack:: Name: Shanghai Colour: red Date: 2021-03-21 Time: 14:08:52
Attack:: Name: Shanghai Colour: red Date: 2021-03-21 Time: 14:08:52
Attack:: Name: Shanghai Colour: red Date: 2021-03-21 Time: 14:08:52
Attack:: Name: Shanghai Colour: red Date: 2021-03-21 Time: 14:08:52

For a node that has a firewall, you must report the presence of that firewall, as well as the list of attacks on that node, sorted as specified in 3.4.a.

Example: show firewalllog:Vancouver

Output: Vancouver has a firewall:

Example: show firewalllog:Chongqing

Output: Chongqing has a firewall:

Attack:: Name: Chongqing Colour: red Date: 2021-03-21 Time: 14:07:33
Attack:: Name: Chongqing Colour: red Date: 2021-03-21 Time: 14:08:52
Attack:: Name: Chongqing Colour: black Date: 2021-05-26 Time: 3:30:00

c) The deletion of all links connected to an inactive node. In order to show this, you must output an adjacency graph showing the current connectivity of the whole map.
Example: show adjmatrix
Output: This is the current adjacency matrix:

X	0	1	2	3	4	5	6	7	8	9	10	11
0	0	1	0	0	1	0	0	1	0	0	0	
1	1	0	0	0	0	0	1	1	0	0	0	
2	0	0	0	1	0	0	0	0	0	0	1	0
3	0	0	1	0	1	1	0	0	0	0	0	
4	1	0	0	1	0	0	0	0	0	0	0	1
5	0	0	0	1	0	0	1	0	1	0	0	0
6	0	1	0	0	0	1	0	1	0	0	0	
7	1	1	0	0	0	0	1	0	1	0	0	0
8	0	0	0	0	0	0	1	0	1	0	0	1
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	1	0	0	0	0	0	0	0	0	1
11	0	0	0	0	1	0	0	0	1	0	1	0

d) The generation of safe routes by allowing a user to input a pair of nodes. If one or both of these nodes have viruses, an appropriate message must be output. Otherwise, each safe route between these two input nodes must be output in the form of text consisting of the start node, a series of other nodes and the end node.
Example: show saferoutes:Vancouver>Sao Paulo
Output: Cannot display safe routes between Vancouver and Sao Paulo, Sao Paulo has a virus

Example: show saferoutes:Vancouver>Mumbai
Output: Safe routes between Vancouver and Mumbai are:
Vancouver, Tokyo, Miami, Mumbai
Vancouver, Dhaka, Sao Paulo, Mumbai

e) The reporting of the shortest path(s) (output as in 4.1.4) between two input nodes.
Example: show shortestpath:Vancouver>Mumbai
Output: Shortest path between Vancouver and Mumbai is:
Vancouver, Tokyo, Miami, Mumbai

4.1.2 Your monitoring tool must be able to use a new map (i.e, a new instance of a graph) by reading a graph.txt file that will be provided. Need clarification
See: What to do with Attack.txt and Graph.txt section above

4.1.3. Your monitoring tool must also be able to import the attack.txt file that will contain all the attacks to happen on different nodes at different times.
See: What to do with Attack.txt and Graph.txt section above

4.1.4. Upon importing a new attack.txt file, your tool must be able to generate all relevant alerts and outbreaks created by the processing of the attacks specified in that file. In order to observe the consequences of one outbreak or of a chain of outbreaks, your tool must output a complete adjacency graph (showing the connectivity of the whole map) after this outbreak or set of outbreaks.
Will automatically appear when attacks are loaded in.

FAQ and solutions

P: I got a blank screen when running the app.
S: check "backgroundImagePath" in "UI" and make sure it leads to src\resources\map_1810x908.PNG
check "graphPath"and "attackPath" in "Main" and make sure it leads to src\resources\Graph.txt / Attack.txt
you will get a blank screen if the program can't find these things. change them to absolute paths if need be

P: I got a blank screen when running the app with a new Attack.txt
S: make sure the new Attack.txt has at least 1 line of text even if its just the city name with no attack
you will get random errors if Attack.txt is empty

P: I got an error/blank screen with Graph.txt
S: make sure Graph.txt does not have a empty line at the end of the file, this will cause problems

Other notes:
- If running this app on a Mac laptop, the app window size may seem really big for your screen. Unfortunately it is not dynamically resizable

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