

Hands on with Gephi, Python and NetworkX: setup instructions

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Young discipline, young tools

- Many tools out there, “The Tool” does not exist
- Choice of software, programming language, library, module, ..., depends on your application, field, taste, problem
- See the following slides as a guidelines. If you know already another programming language, tool, library, feel free to use it

Gephi

Tutorial inspired by the official Gephi tutorial on <https://gephi.github.io>

Gephi

Download and install Gephi following the instructions here:

<http://gephi.github.io/>

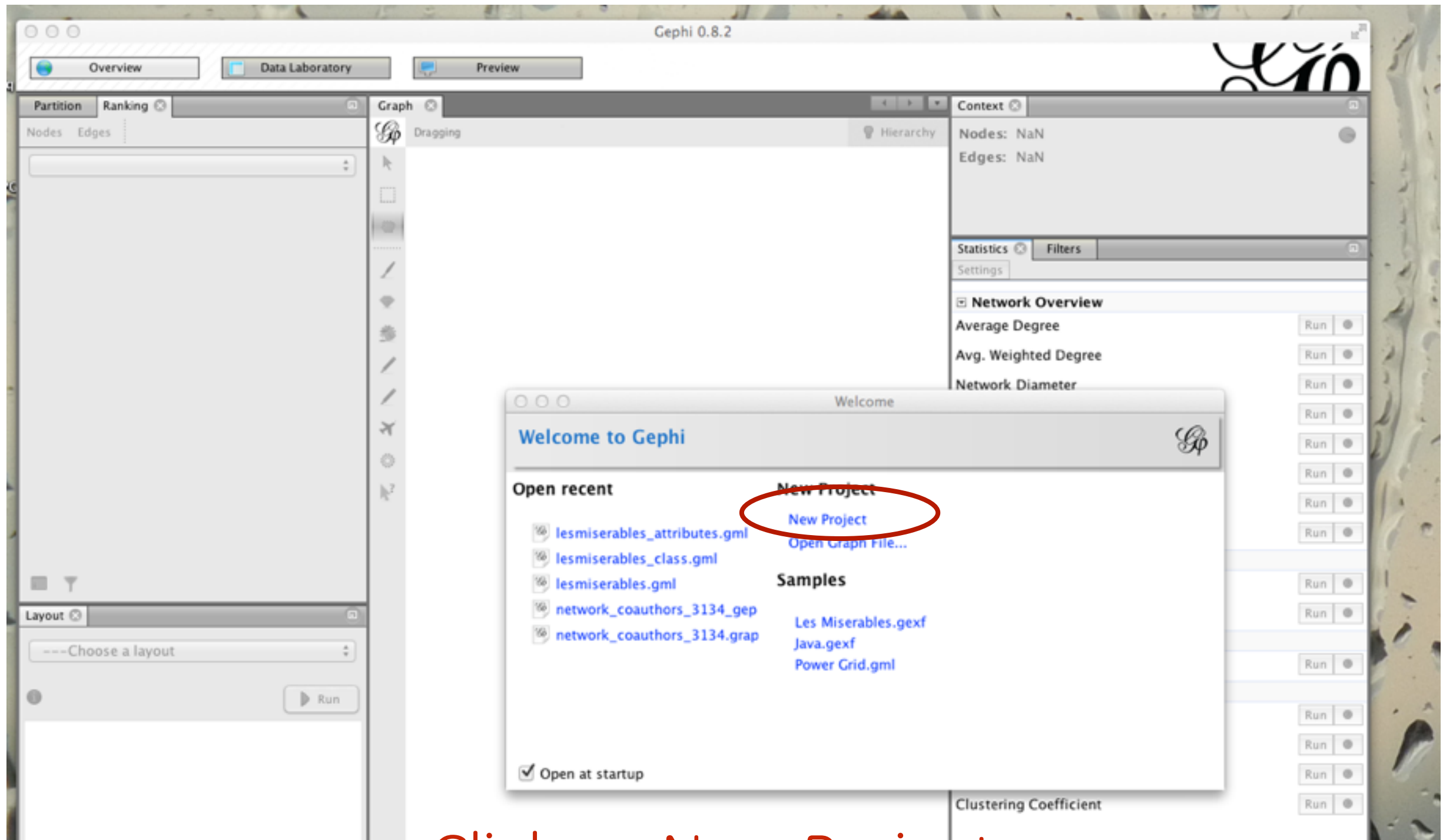
Sometimes Gephi might not open or work correctly, because it needs the Java Runtime Environment 6. In this case, follow instructions to fix the issue

- on Mac: <http://sumnous.github.io/blog/2014/07/24/gephi-on-mac/>
- on Windows: <https://forum.gephi.org/viewtopic.php?f=3&t=3580&p=10712#p10712>

In some cases, however, Gephi works fine even with higher versions of JRE or of OpenJDK. So just try to open it after installation before changing the JRE version.

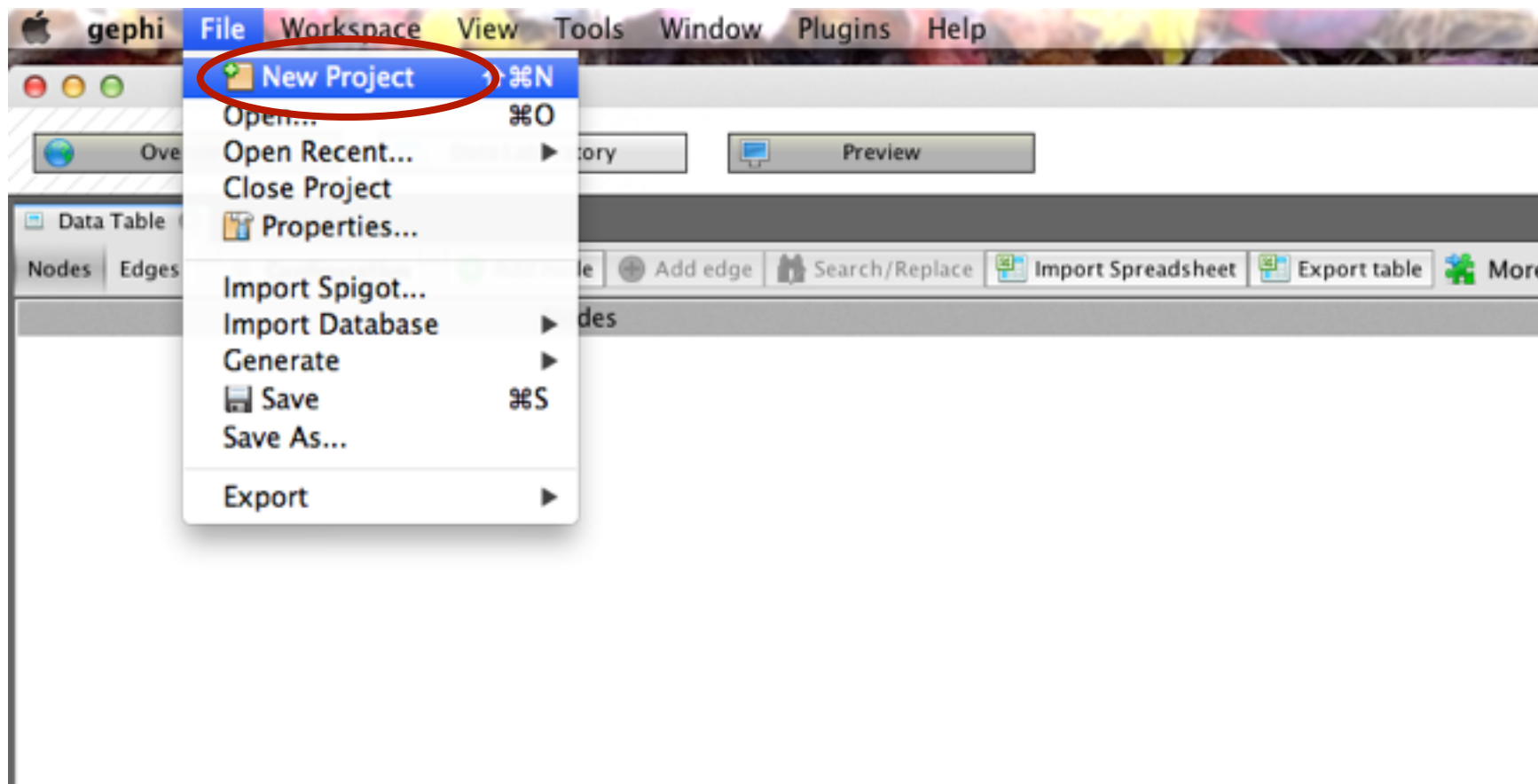
Then, load the files in the folder `lesmiserables_csv` as illustrated in the following slides.

Importing the file in Gephi (.csv)



Click on New Project

Importing the file in Gephi (.csv)



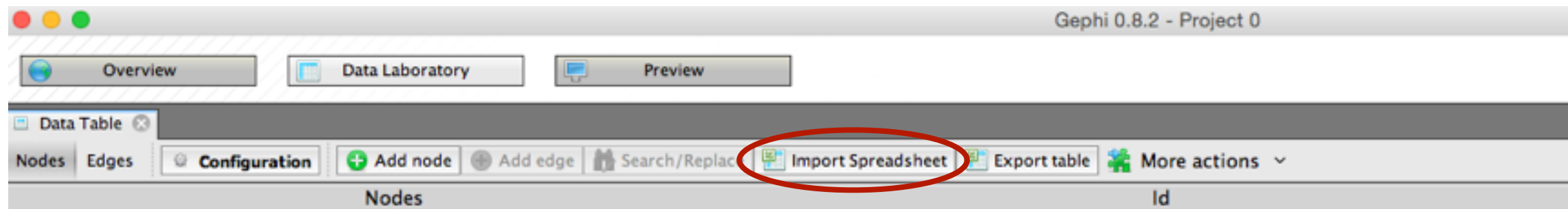
If you do not see the opening window from the previous slide, click on New Project from the menu “File”

Importing the file in Gephi (.csv)



Then click on “Data Laboratory”

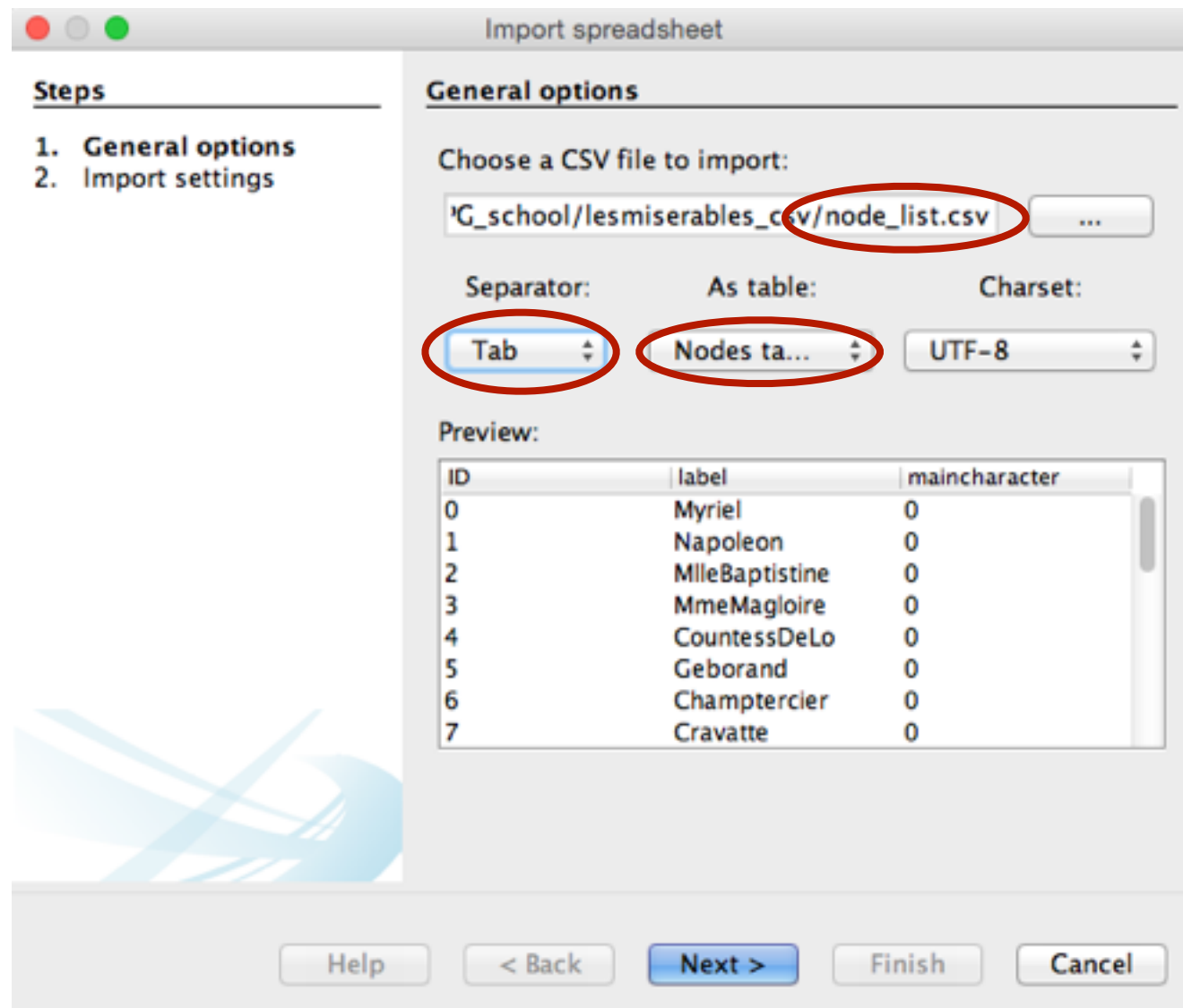
Importing the file in Gephi (.csv)



Click on “Import Spreadsheet”

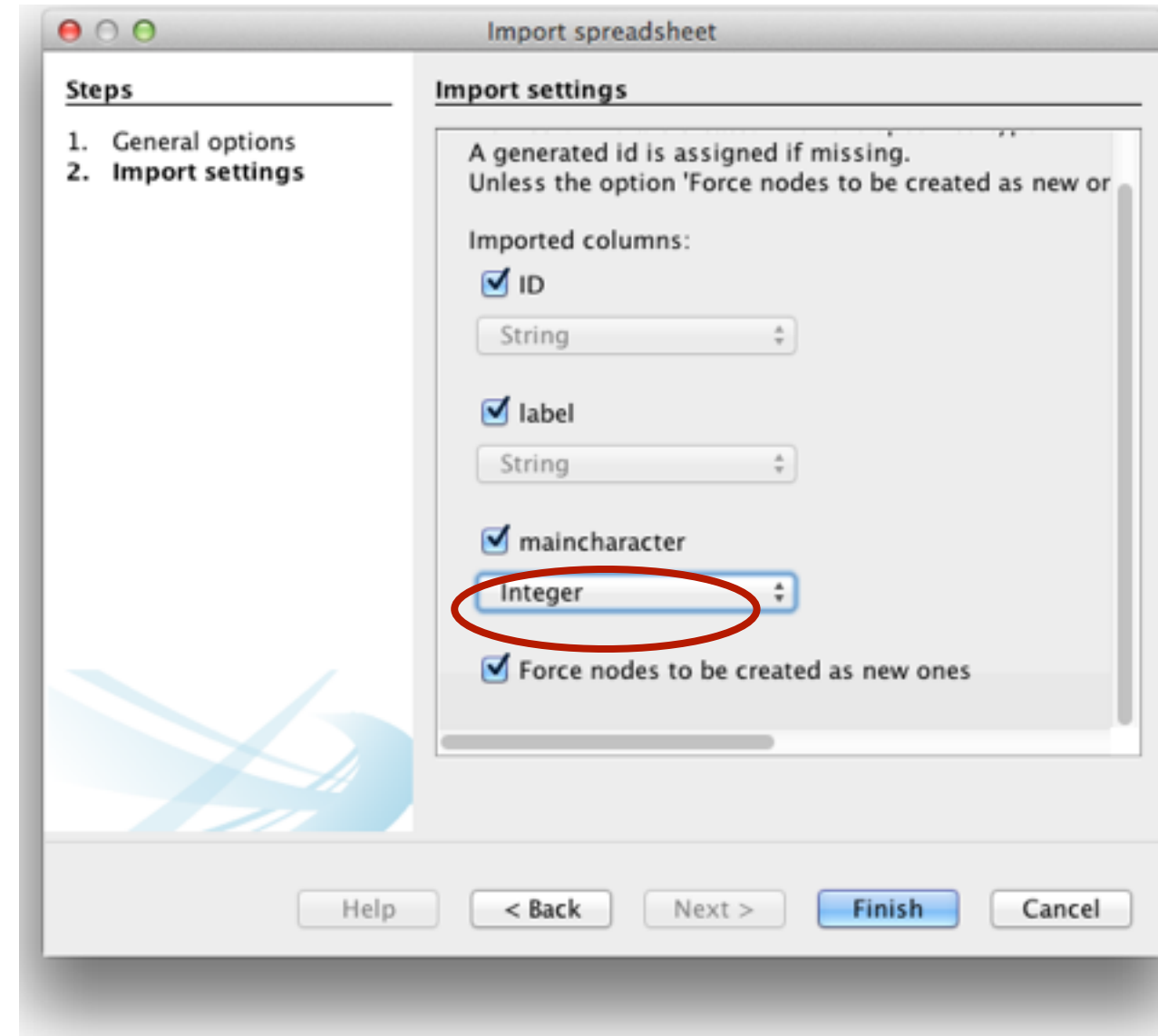
Importing the file in Gephi (.csv)

1



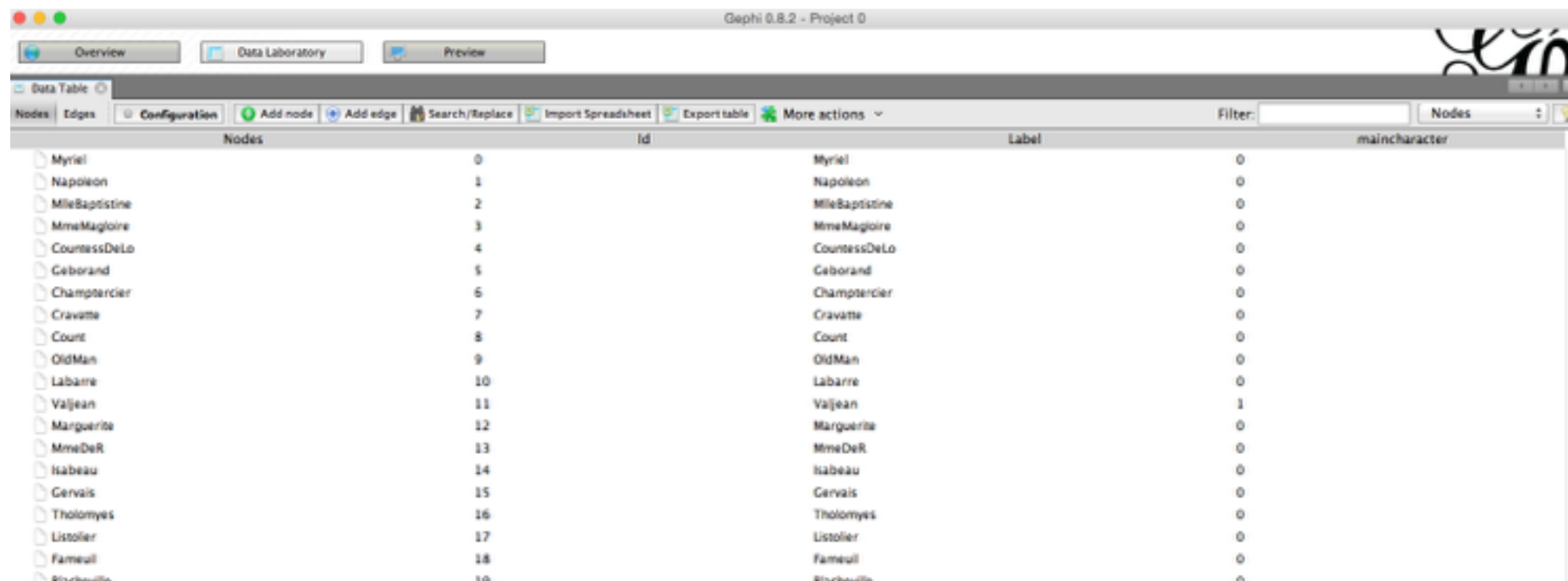
Choose the node_list.csv file making sure to select the options as shown. Click Next.

2



Select Integer (sometimes IntegerList) for maincharacter. Click Finish.

Importing the file in Gephi (.csv)

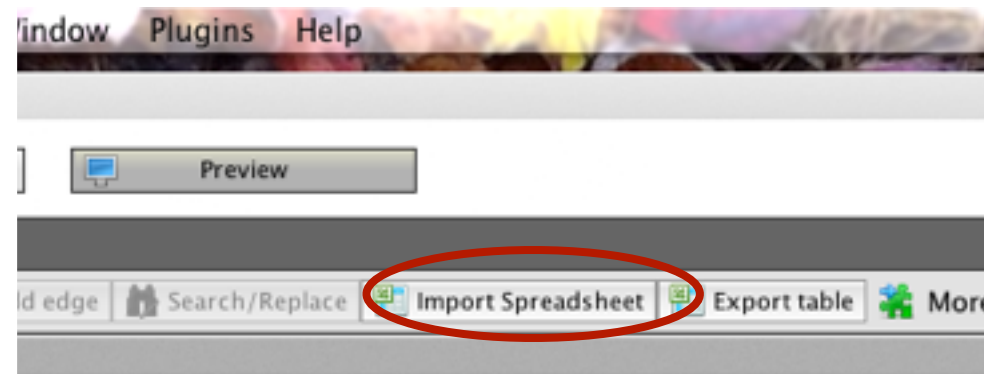


The screenshot shows the Gephi 0.8.2 interface with the 'Data Table' window open. The window displays a list of nodes with their attributes. The 'Nodes' tab is selected, and the 'maincharacter' attribute is visible. The table has columns for 'Id', 'Label', and 'maincharacter'. The 'Label' column contains the names of the characters, and the 'maincharacter' column contains a binary value (0 or 1).

Id	Label	maincharacter
0	Myriel	0
1	Napoleon	0
2	MlleBaptistine	0
3	MmeMagloire	0
4	CountessDeLo	0
5	Geborand	0
6	Champercier	0
7	Cravatte	0
8	Count	0
9	OldMan	0
10	Labarre	0
11	Valjean	1
12	Marguerite	0
13	MmeDeR	0
14	Isabeau	0
15	Gervais	0
16	Tholomyes	0
17	Listolier	0
18	Fameuil	0
19	Sturkville	0

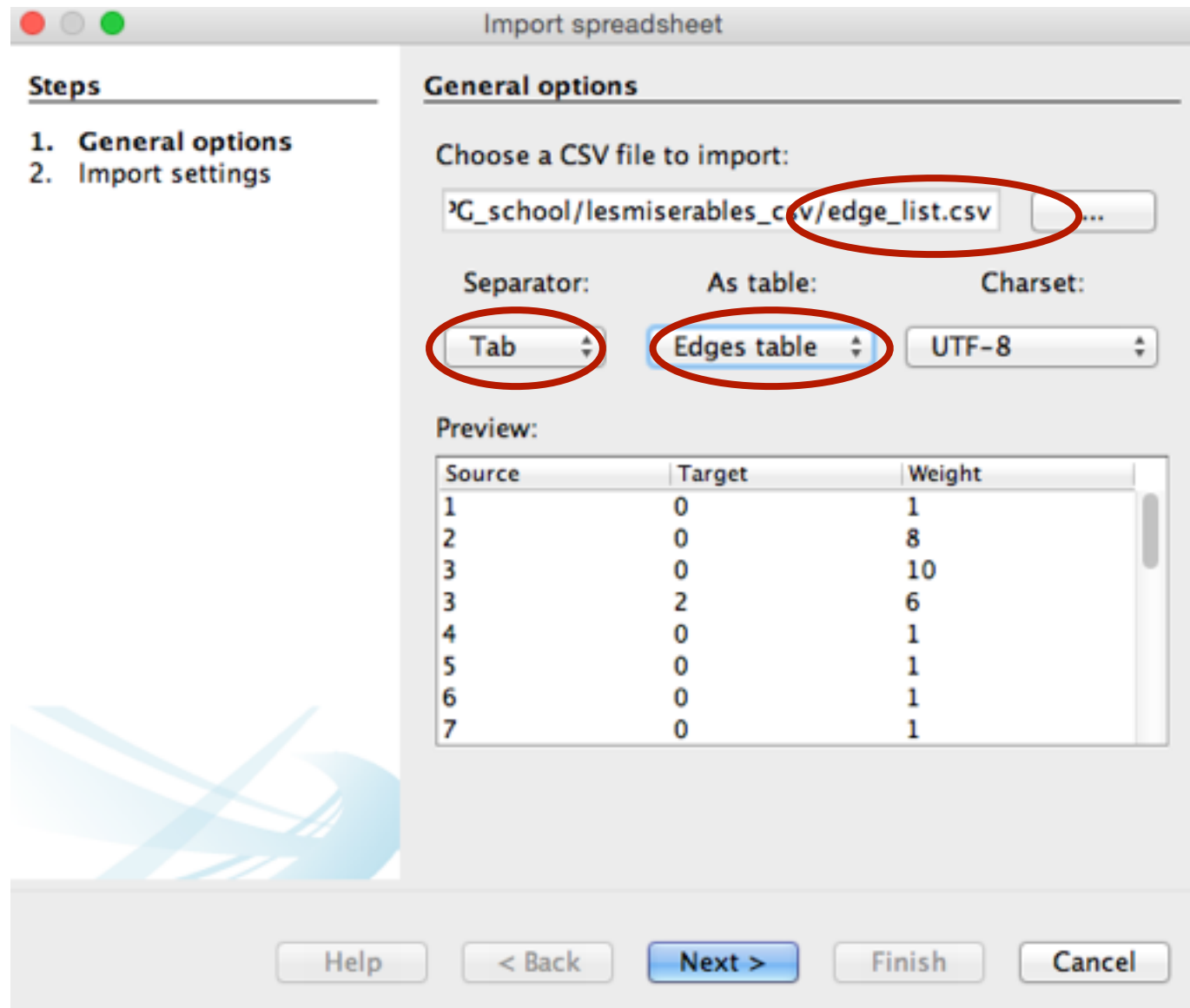
You should see something like this. You uploaded the nodes of the network. Let's upload the edges now.

Importing the file in Gephi (.csv)

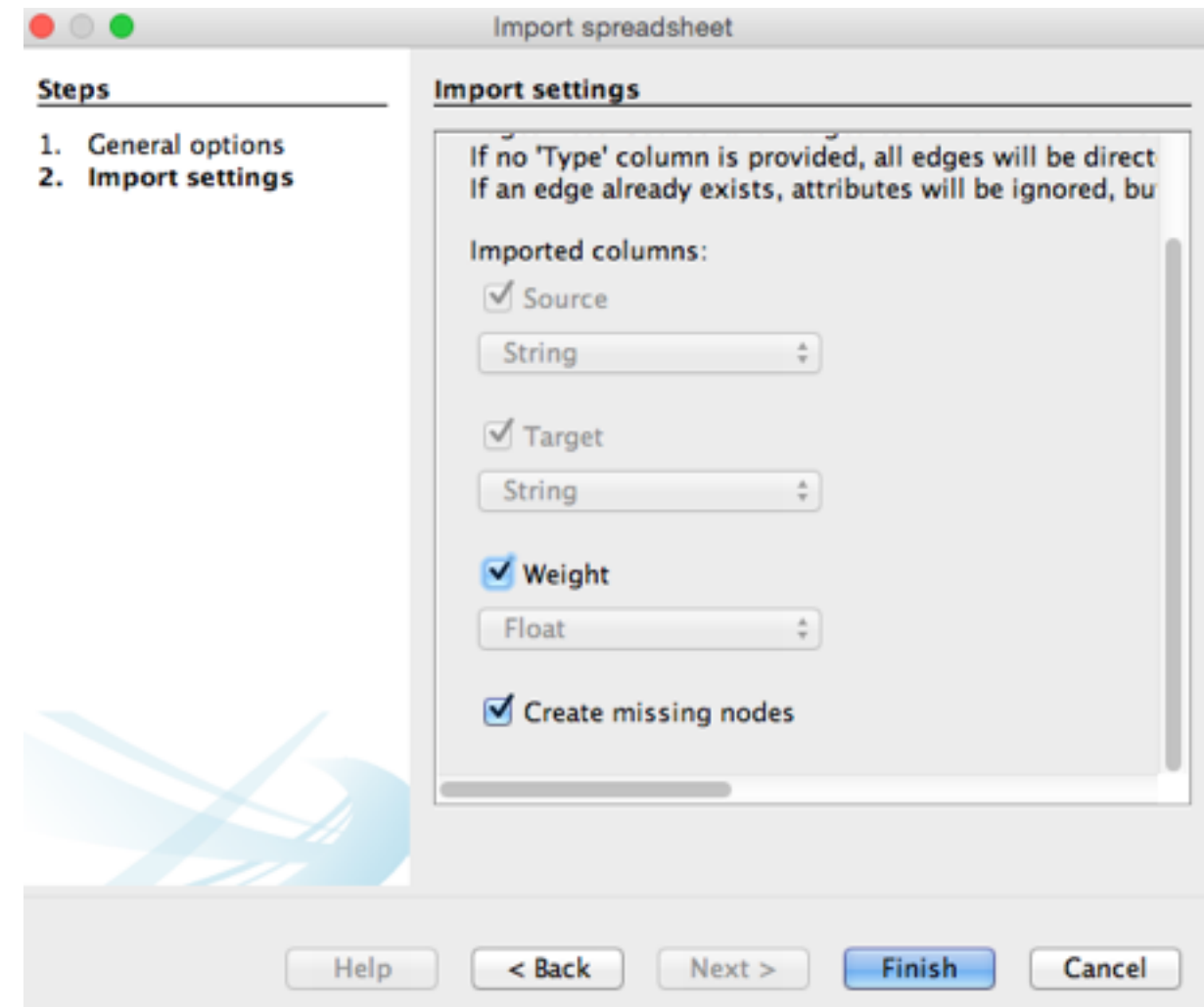


Click again on Import Spreadsheet.

Importing the file in Gephi (.csv)

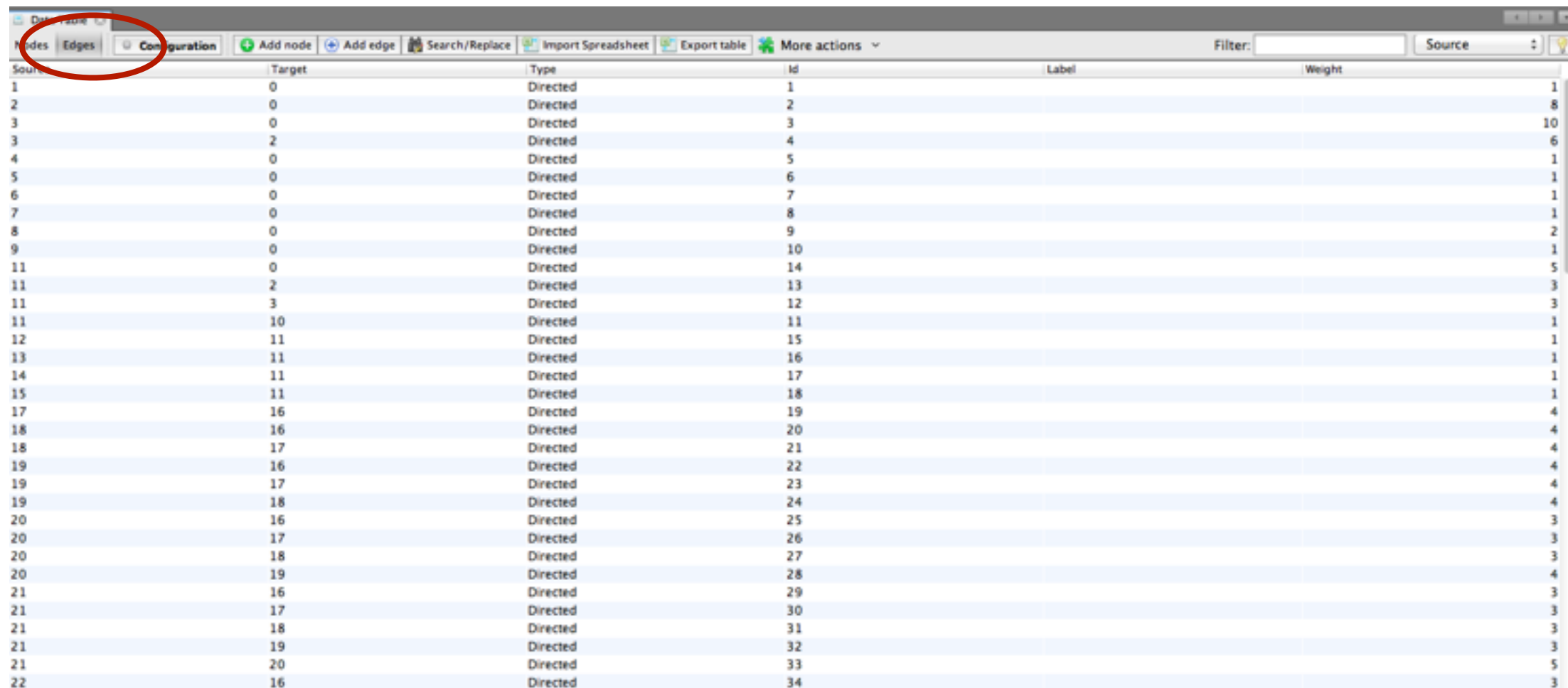


Choose the edge_list.csv file making sure to select the options as shown. Click Next.



Click Finish.

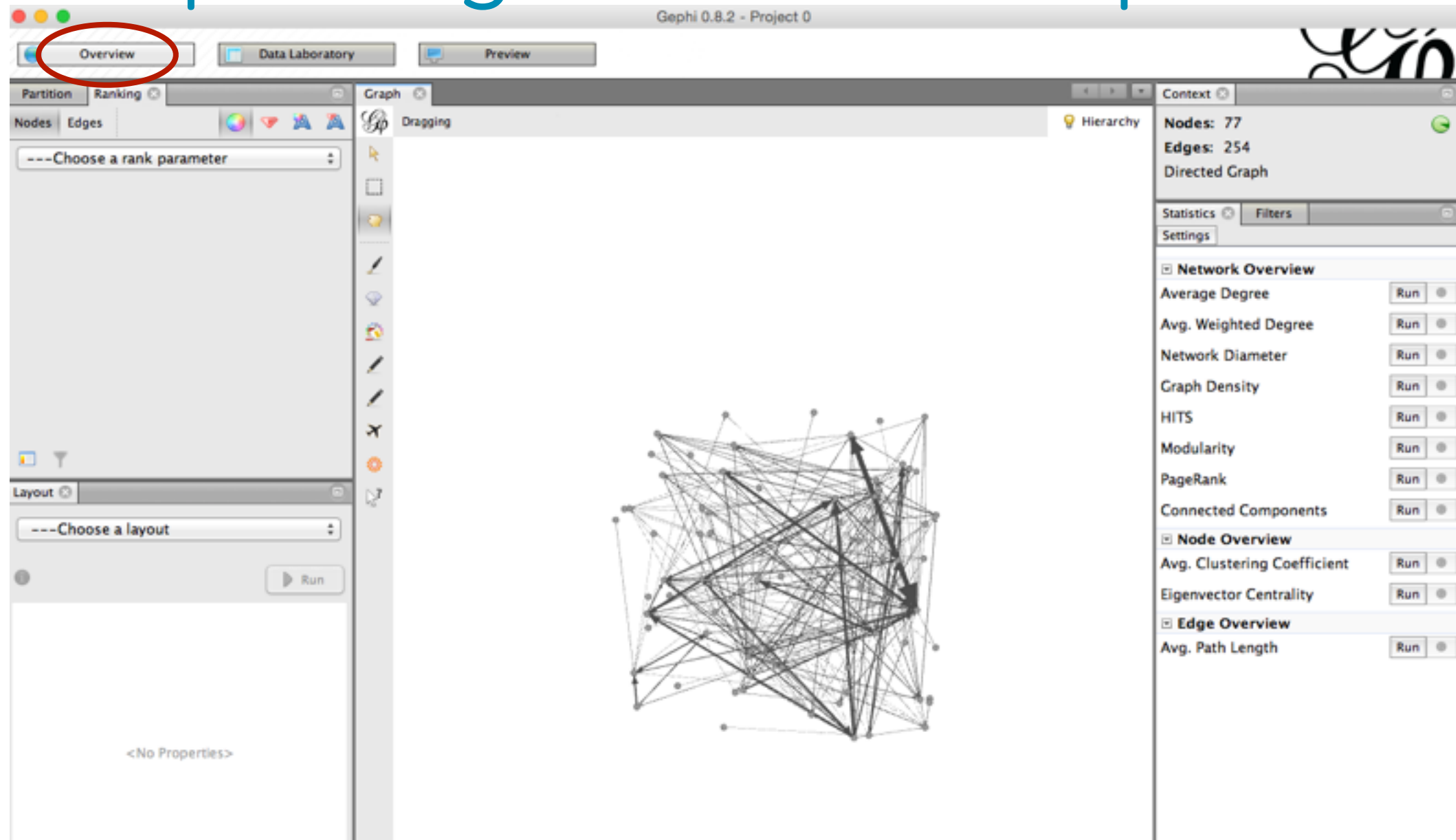
Importing the file in Gephi (.csv)



Source	Target	Type	Id	Label	Weight
1	0	Directed	1		1
2	0	Directed	2		8
3	0	Directed	3		10
3	2	Directed	4		6
4	0	Directed	5		1
5	0	Directed	6		1
6	0	Directed	7		1
7	0	Directed	8		1
8	0	Directed	9		2
9	0	Directed	10		1
11	0	Directed	14		5
11	2	Directed	13		3
11	3	Directed	12		3
11	10	Directed	11		1
12	11	Directed	15		1
13	11	Directed	16		1
14	11	Directed	17		1
15	11	Directed	18		1
17	16	Directed	19		4
18	16	Directed	20		4
18	17	Directed	21		4
19	16	Directed	22		4
19	17	Directed	23		4
19	18	Directed	24		4
20	16	Directed	25		3
20	17	Directed	26		3
20	18	Directed	27		3
20	19	Directed	28		4
21	16	Directed	29		3
21	17	Directed	30		3
21	18	Directed	31		3
21	19	Directed	32		3
21	20	Directed	33		5
22	16	Directed	34		3

On the tab “Edges” you should see something like this. You uploaded the edges of the network.

Importing the file in Gephi (.csv)



On the tab "Overview" you should see something that looks similar to this network (not exactly the same). If so, everything works properly.

NetworkX: a Python module

If you are already a python user

Just install the module "networkX":
networkx.github.io

It is easy to do on mac os x and unix - you should be able to install it with the commands:

```
easy_install networkx
```

or

```
pip install networkx
```


In a terminal, execute the code `sample_code.py` with the command

```
python /my/path/to/the/code/sample_code.py
```

Make sure you substitute `/my/path/to/the/code/` with the right path on your machine

When you execute the code, you should get the output

```
[1, 2, 'spam']
```

```
[(1, 2)]
```

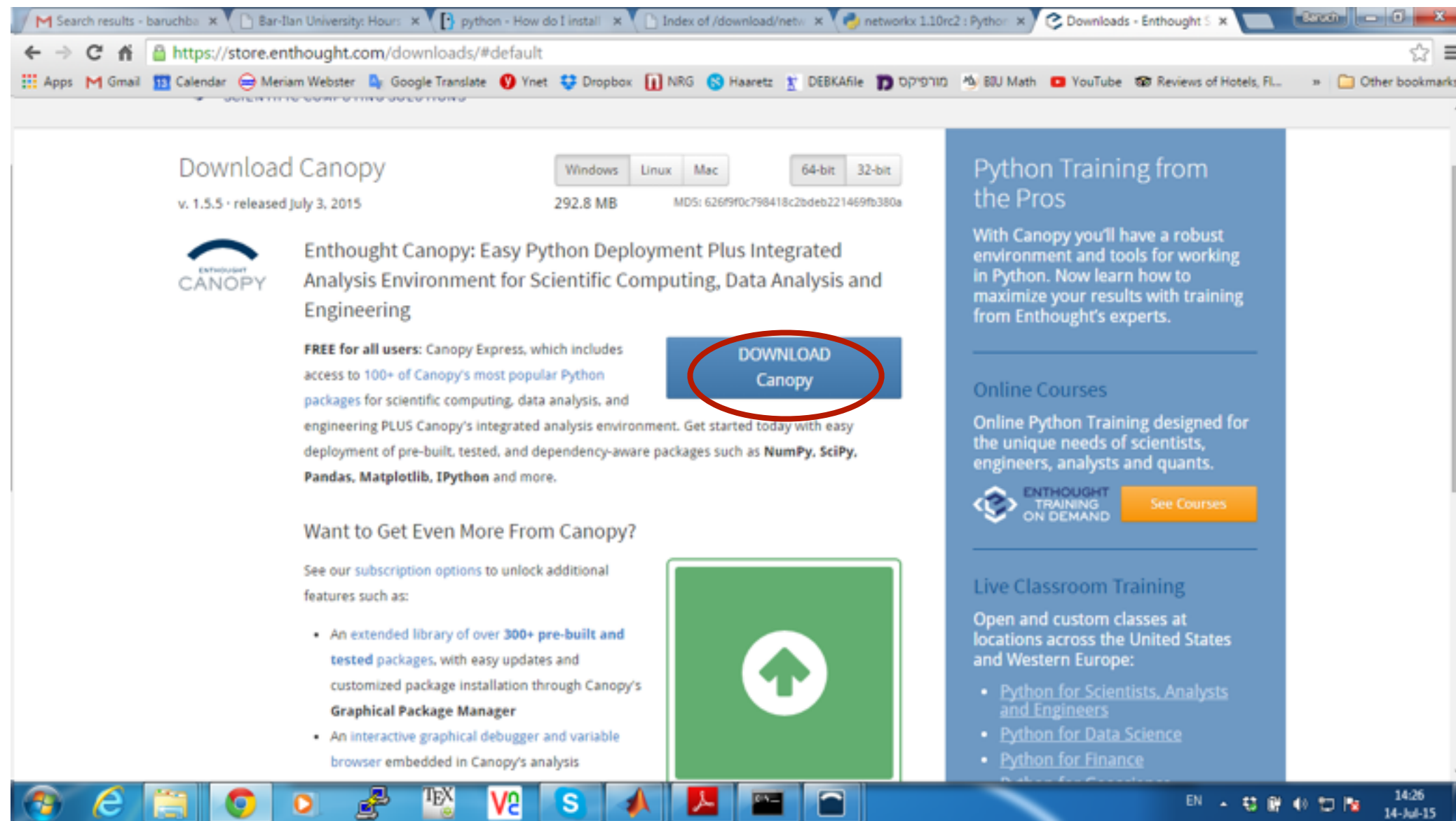
If you get this output, everything works fine.

If you are not a python user

There are many ways to install python and its modules, but we recommend that you install the Canopy suite from <https://www.enthought.com/products/canopy/> (free for academic purposes)

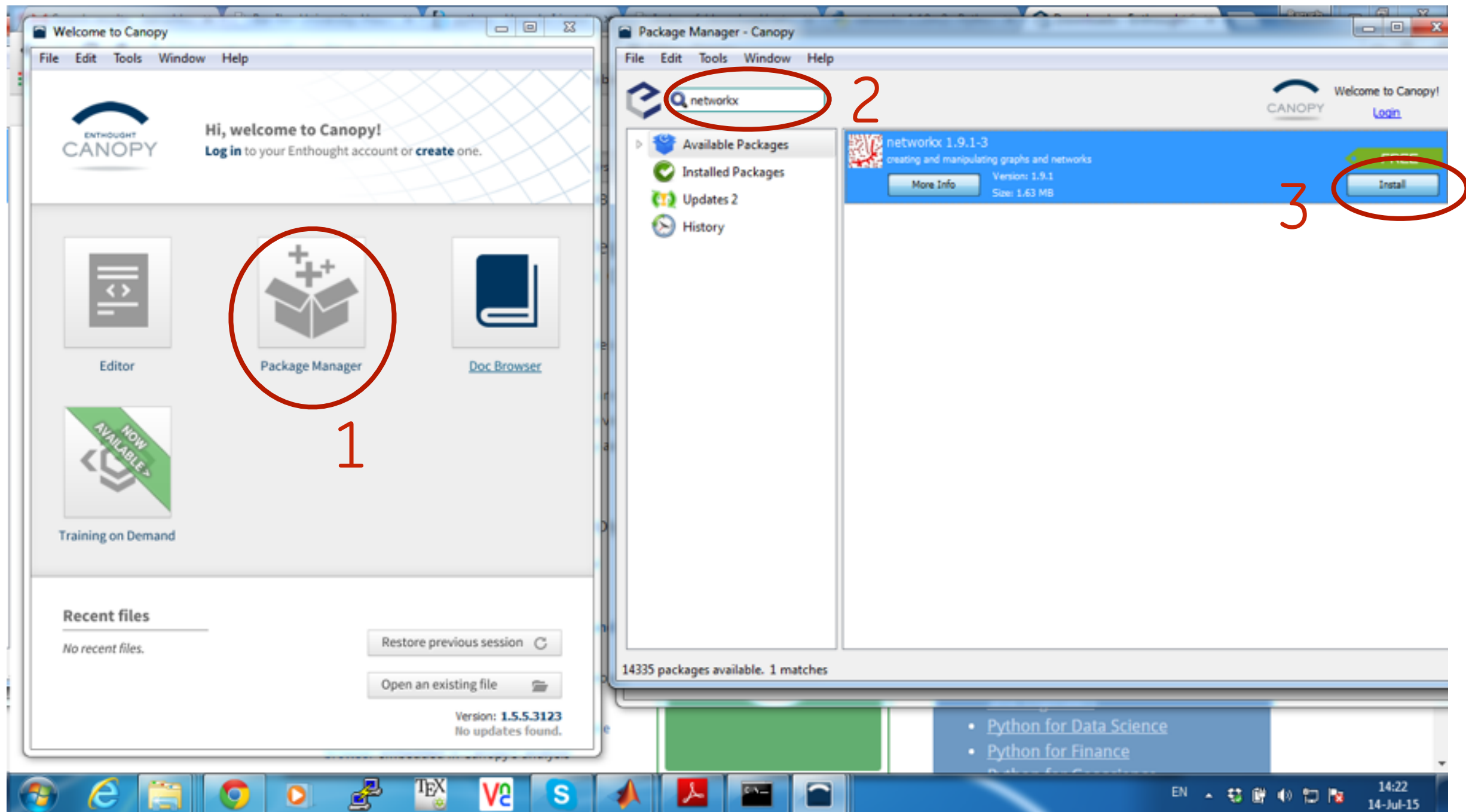
It is available for all Windows, Unix and Mac

Instructions for windows (equivalent for mac and unix)



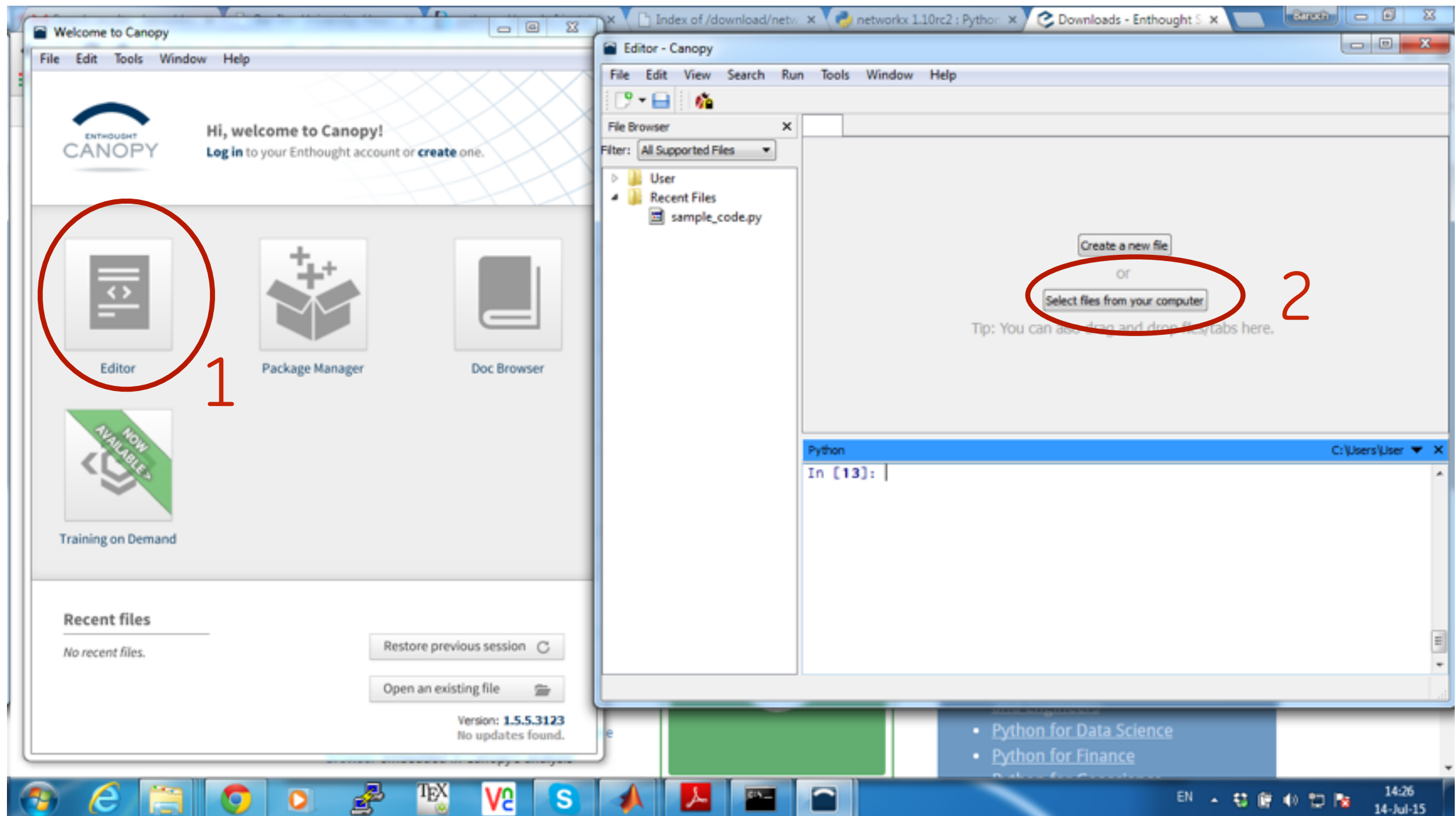
Download Canopy. It will require registration and that you agree to use it for academic purposes

Install NetworkX



After launching Canopy, (1) click on Package Manager, (2) search networkx, (3) install.

Execute the sample code



Then click on (1) Editor,
(2) Select Files from your computer

Execute the sample code

The screenshot illustrates the steps to execute sample code in the Canopy IDE. It shows three main components: a file browser, a code editor, and a Python console.

- File Browser (Left):** Displays the 'DPG_school_setupkit' folder. The file 'sample_code.py' is selected and circled in red, with a red number '3' next to it.
- Code Editor (Right):** Shows the contents of 'sample_code.py'. The code is:

```
1 import networkx as nx
2
3 G=nx.Graph()
4 G.add_node("spam")
5 G.add_edge(1,2)
6 print(G.nodes())
7 print(G.edges())
8
```

The green 'Run' button (a green arrow) in the toolbar is circled in red, with a red number '4' next to it.
- Python Console (Bottom):** Shows the execution output. The command 'In [2]: %run "/Users/robby/Desktop/DPG_school/DPG_school_setupkit/sample_code.py"' is entered. The output is:

```
[1, 2, 'spam']
[(1, 2)]
```

The output is circled in red, with a red number '5' next to it.

(3) choose file "sample_code.py", (4) execute the code by clicking on the green arrow.

If you get the output (5), everything works fine