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CS 429/529 – Dynamic and Social Network Analysis

Assignment 1

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EXERCISE 1:

SOFTWARE INSTALLATION AND READINESS

- 1) As a generic social network analysis tool, I have decided to install ORA to familiarize myself with it. There are several reason for me to choose ORA. Initially, I have chosen it because Ms. Kaş mentioned that it has very detailed metrics and reports. The fact is that, it was looking stronger than some of its equivalents such as Gephi. Moreover, considering that it is my first experience in the social network field, in order to familiarize with a tool, I was definitely in need of some datasets which are prepared in advance, so that I could make a quick start. ORA has provided many datasets such as CASOS Tools. In addition, I learned that many API's and data types are supported by ORA thanks to its Data Import Wizard. Ultimately, I found the user interface of ORA pretty good looking and easy to use compared to its equivalents. Also, six month trial was also a plus, in case I will decide to use it in my project as well.
- 2) The steps that I followed to set up the tool is explained below:

- Initially, I have entered the following link:

<http://www.casos.cs.cmu.edu/projects/ora/software.php>

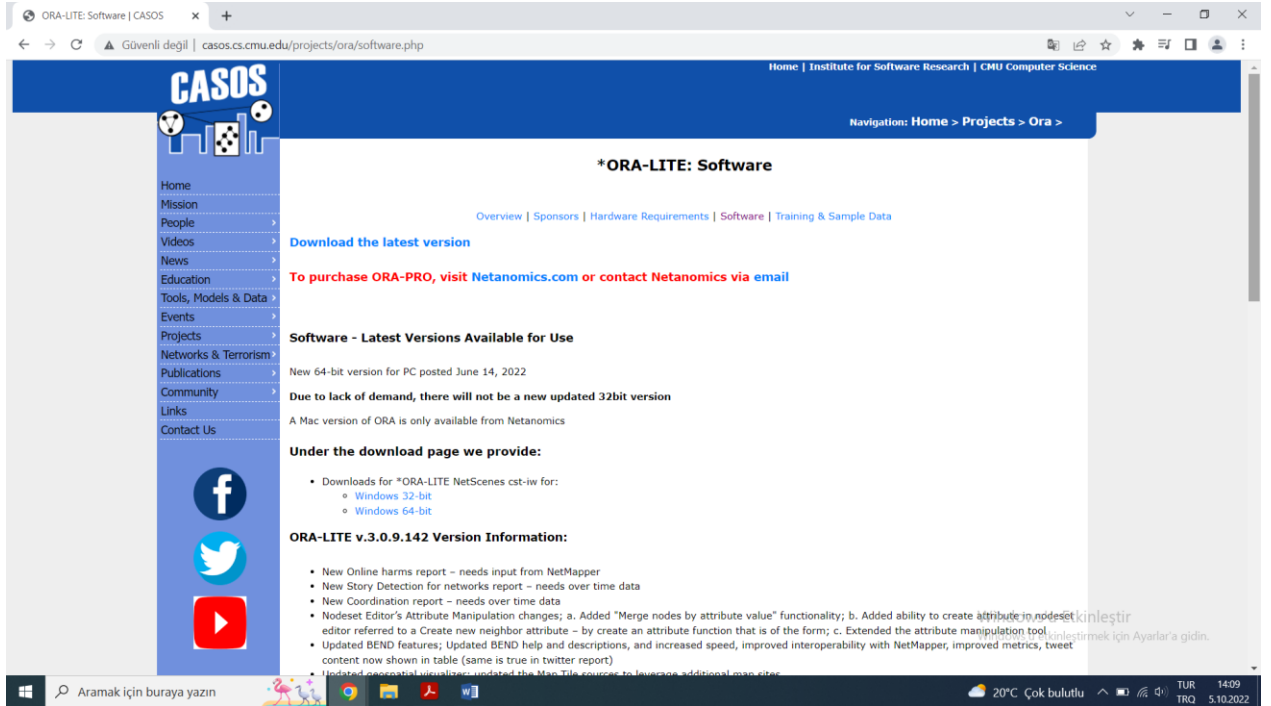


Figure 1: The Download Webpage of ORA

- Following, I have filled the registration information.

ORA - LITE Software Download

Registration Information

Name:

Email:

Country:

State:

Institution:

[continue](#)

[privacy policy](#)

Windows'u Etkinleştir
Windows'u etkinleştirmek için Ayarlar'a gidin.

Figure 2: Registration Information Screen

- I have chosen 64-bit download.

| Platform | Version | Notes | Download |
|----------|--|--|---|
| Windows | Student Edition - ORA-LITE v.3.0.9.9.142 | <ul style="list-style-type: none"> New Online harms report – needs input from NetMapper New Story Detection for networks report – needs over time data New Coordination report – needs over time data Nodeset Editor's Attribute Manipulation changes; a. Added "Merge nodes by attribute value" functionality; b. Added ability to create attribute in nodeset editor referred to a Create new neighbor attribute – by create an attribute function that is of the form; c. Extended the attribute manipulation tool Updated BEND features; Updated BEND help and descriptions, and increased speed, improved interoperability with NetMapper; improved metrics, tweet content now shown in table (same is true in twitter report) Updated geospatial visualizer; updated the Map Tile sources to leverage additional map sites Updated network visualizer; optimized to increase layout speed, Added option to export images as individual layers, labels now have a border that can be toggled on/off, Labels can now be set to scale with Node Size, links can now scale their transparency and dashed-ness to their value, Fixed a bug that was preventing the Backwards Influence tool from properly rendering, fixed a bug that prevented the Link Locator tool from properly searching for Links Added 3 measures of polarization now in group report and calculated in stance report. Can also be added to BEND report if only 2 groups; cross-platform analysis is now possible and is under data management/derived data dialog Data Export Dialog now supports Twitter API v and v2; searching for json fields to import is improved, user can now load/save a configuration of custom attributes, user can use a saved configuration from import during the export process to save out those fields, and expanded custom attribute support The Twitter v1 importer has become more lenient in date formats; it now accepts a few different formats by trying different patterns and choosing the one that works. It also supports filtering by hashtag There is not a Reddit importer and parser Attribute export now possible Miscellaneous bug fixes | <ul style="list-style-type: none"> 64-bit download 32-bit download You should receive an email with key information. If you have not received an email, check your junk mail or email the CASOS Center to receive an email with the key information. |

[User Guides for ORA-LITE](#)
ORA User's Guide 2022

Windows'u Etkinleştir
Windows'u etkinleştirmek için Ayarlar'a gidin.

Figure 3: Download Screen

- I have installed ORA by completing the loading steps.

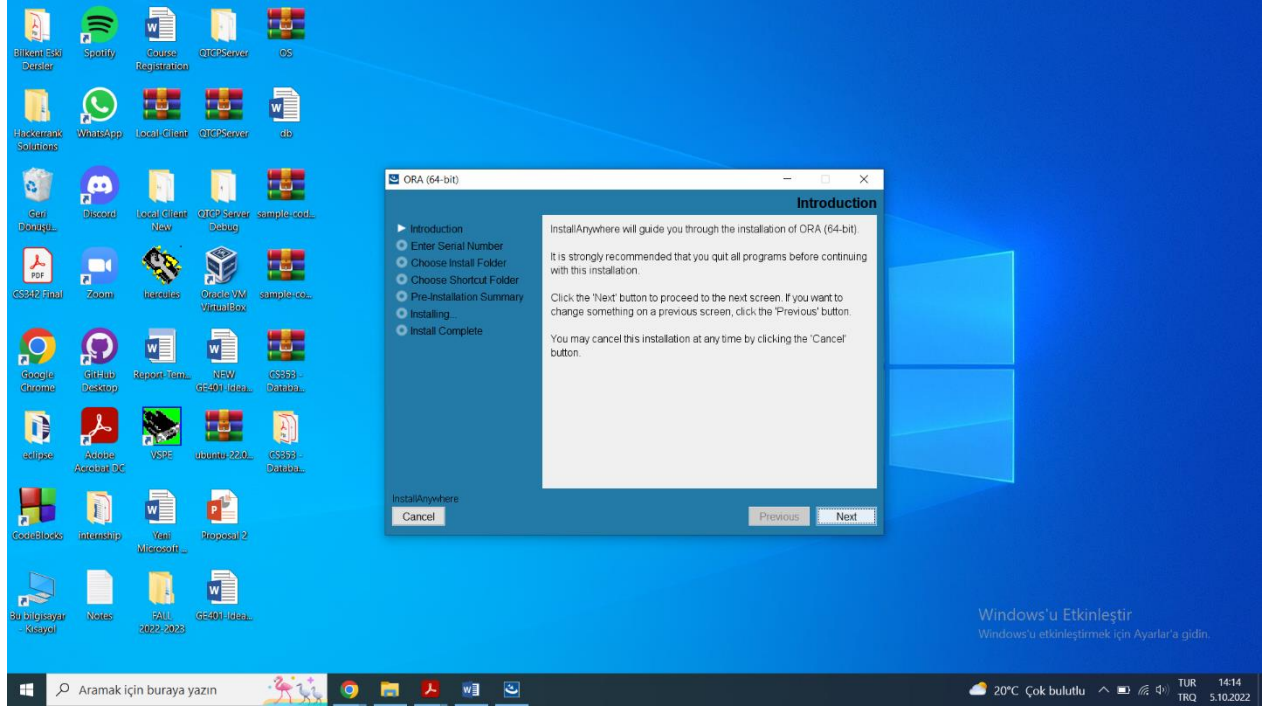


Figure 4: Loading Screen

- I have entered the serial number that is sent to my Bilkent e-mail.

ORA-LITE License Keys



From casos@cmu.edu on 2022-10-05 14:10

 [Details](#)

These are the license keys needed for the latest versions of ORA

64-bit: 64-GY33B33Z3H

32-bit: 32-7BRLVSNR7F

CASOS Center

Figure 5: Received License Information

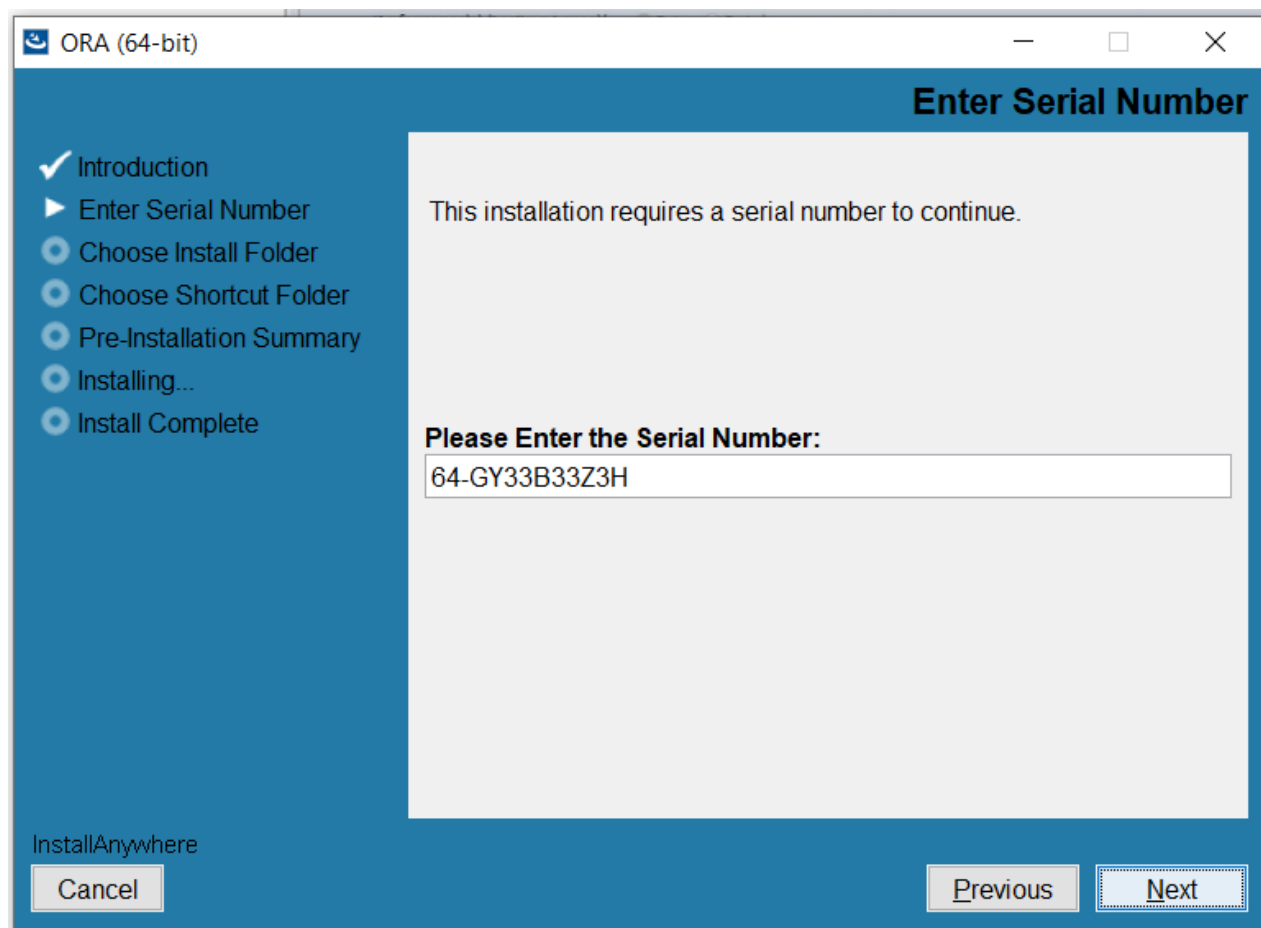


Figure 6: Entering License Information

- Next, I clicked *Use Trial Version* button.

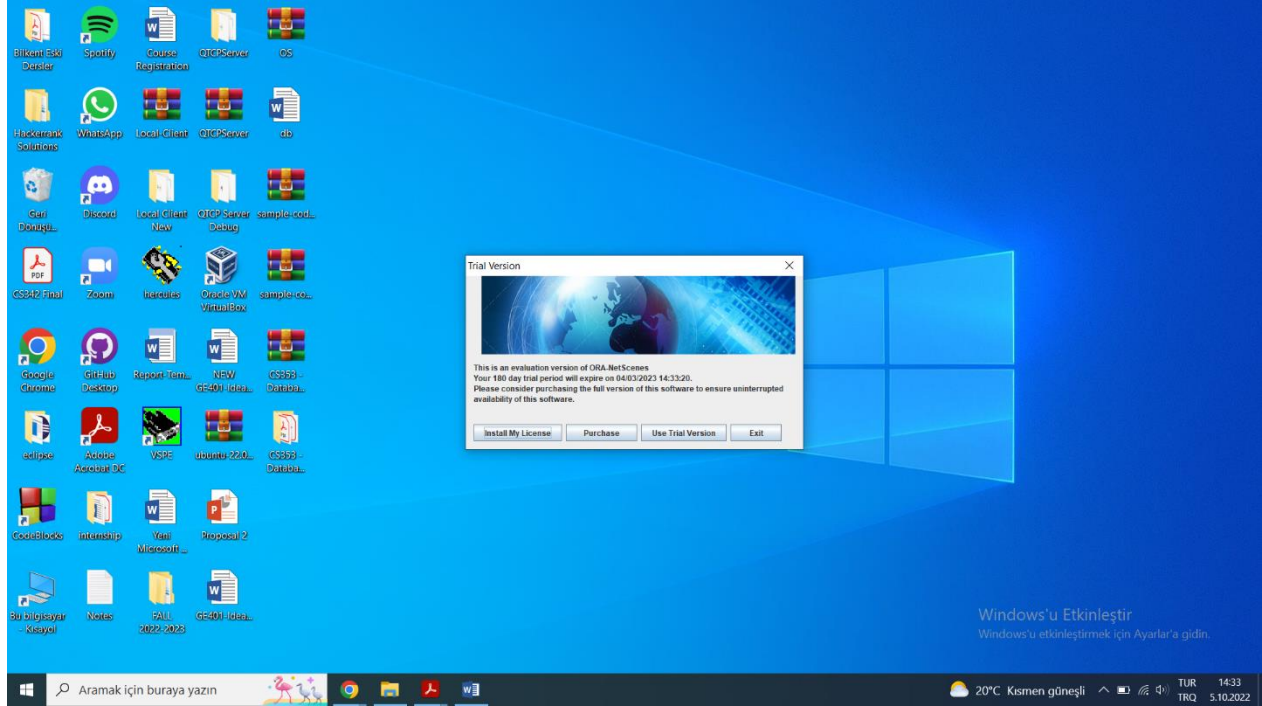


Figure 7: Finishing Up the Installation

- Ultimately, ORA was ready to use.

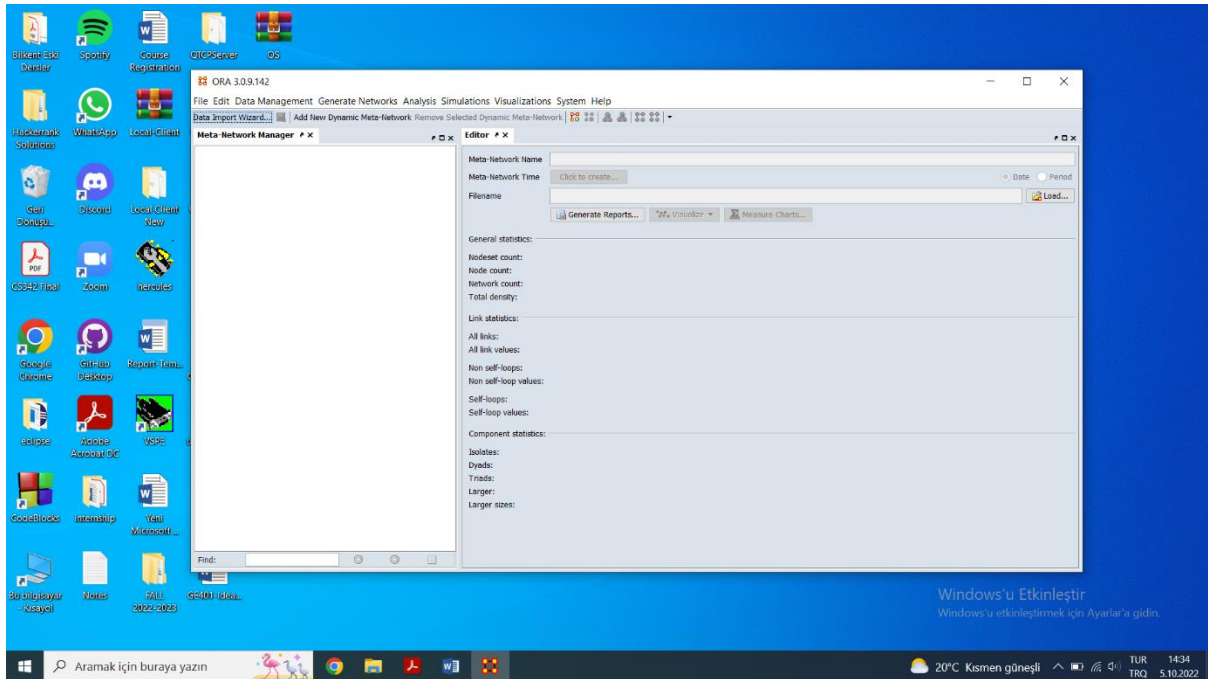


Figure 8: First Time Opening the ORA Application

EXERCISE 2:

SOFTWARE INSTALLATION AND READINESS

- 1) As an author, I have decided to visualize the network of Mr. Can Alkan, because he is the most cited researcher of Bilkent University with nearly 60.000 citations. To do this, I have entered webobscience.com, and followed the steps that Ms. Kaş showed us, then exported it as a tab delimited file. Following, VOS viewer has visualized the network by using the savedrecs.txt as follows:

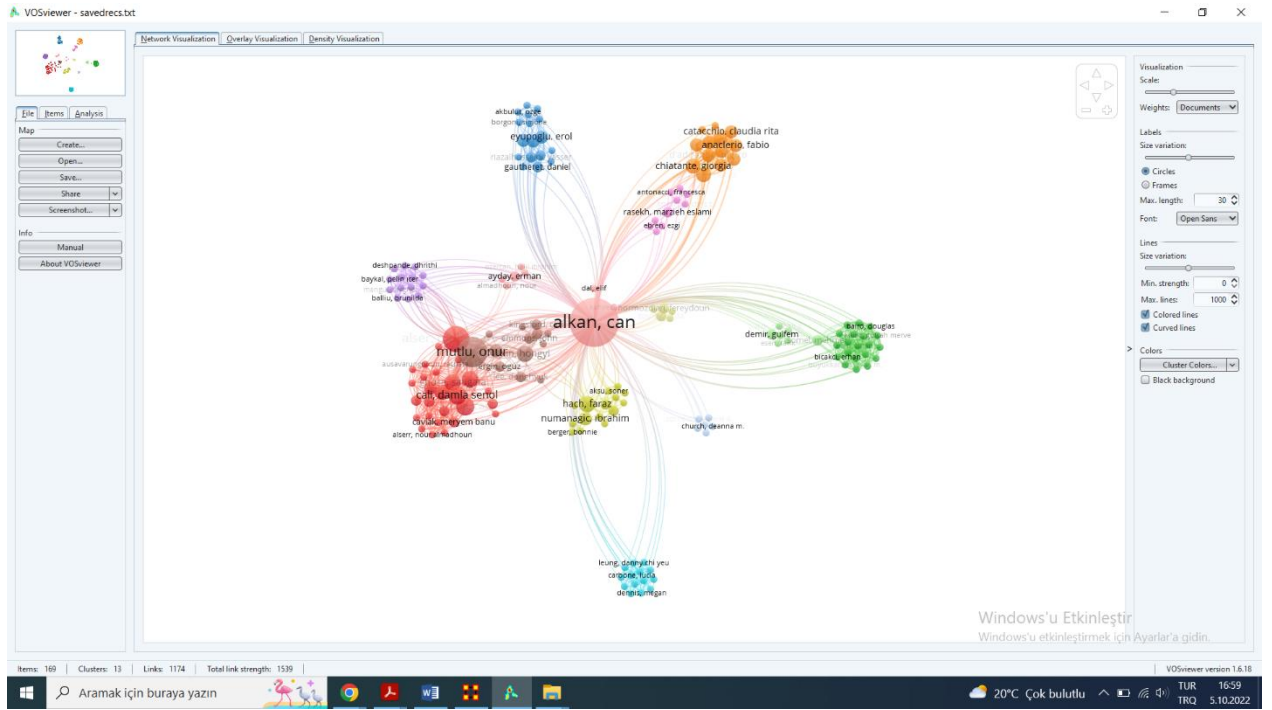


Figure 9: Network Visualization of the Author: Can ALKAN

However, as Ms. Kaş mentioned in her in-class example, it is highly likely that there might be mistakes, such as the duplication or misspelling of the names of the authors. In order to overcome this, I created the same network with the thesaurus file as she has shown.

To do this, I followed the same steps such as selecting *Create a map based on bibliographic data* option, but this time selecting *thesaurus_authors.txt* as follows:

Following, I clicked *Save* button, and generated the necessary map and network files. In the .ZIP file that I have submitted, they are in the folder named *Map and Network Files for Assignment1*, and their names are *mapfile1.txt* and *networkfile1.txt*, respectively. Other data can also be found in the .ZIP file under the VOS Viewer folder. In general, this is how my map and network files look like:

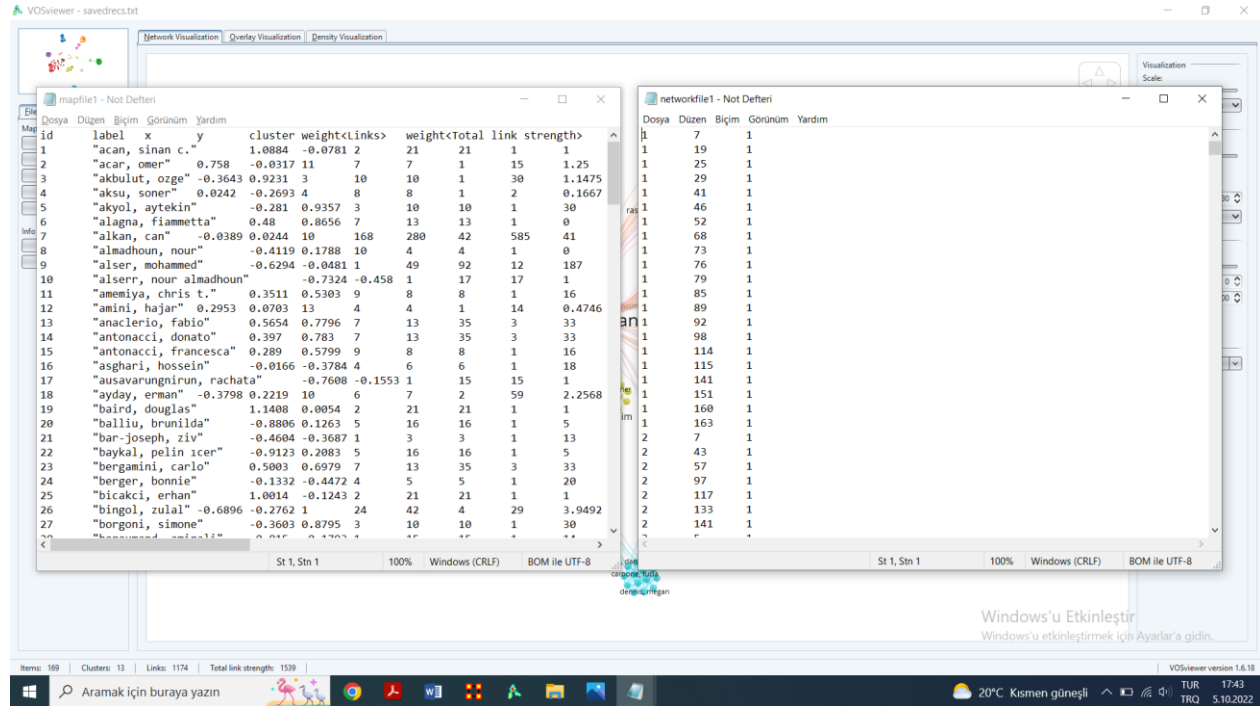


Figure 12: A Look Through the Map and Network Files

Thus, all *a, b* and *c* parts of the Question 1 of Exercise 2 have been completed.

2) In order to import the network data generated by VOS Viewer in step 1 into ORA, I have followed the steps below:

- I opened *Data Import Wizard* from *File* menu.
- Since I have downloaded the data as a text delimited file, I have chosen *Import Excel or Text Delimited Files*, then selected *Table of Network Links*, named the new meta-network as *myAssignment1*.
- I have chosen the network file that I have created in VOS Viewer, whose name is *networkfile1.txt*
- I have selected the columns as *Node IDs*, and the last one as *general*.
- Later, I have defined the networks and attributes based on the columns. The final import data screen looks like as follows:

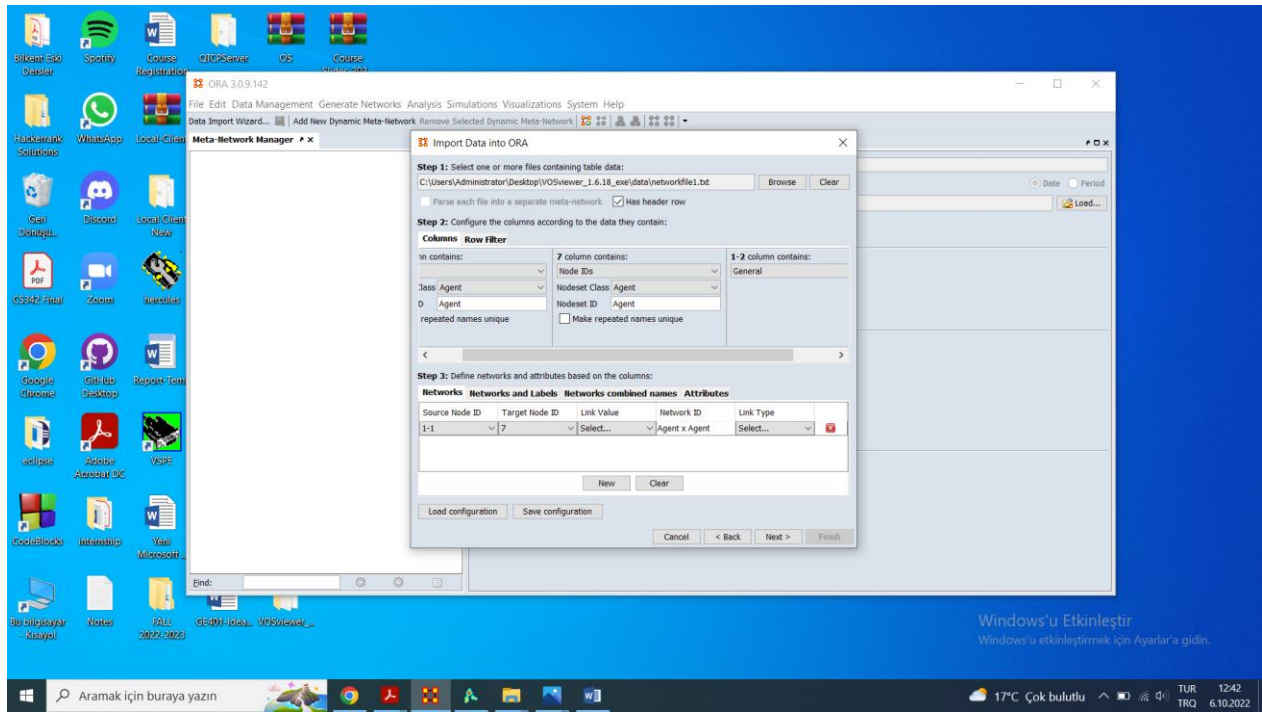


Figure 13: Import Data Screen

- Indeed, ORA shows the correct number of nodes, which is 169.

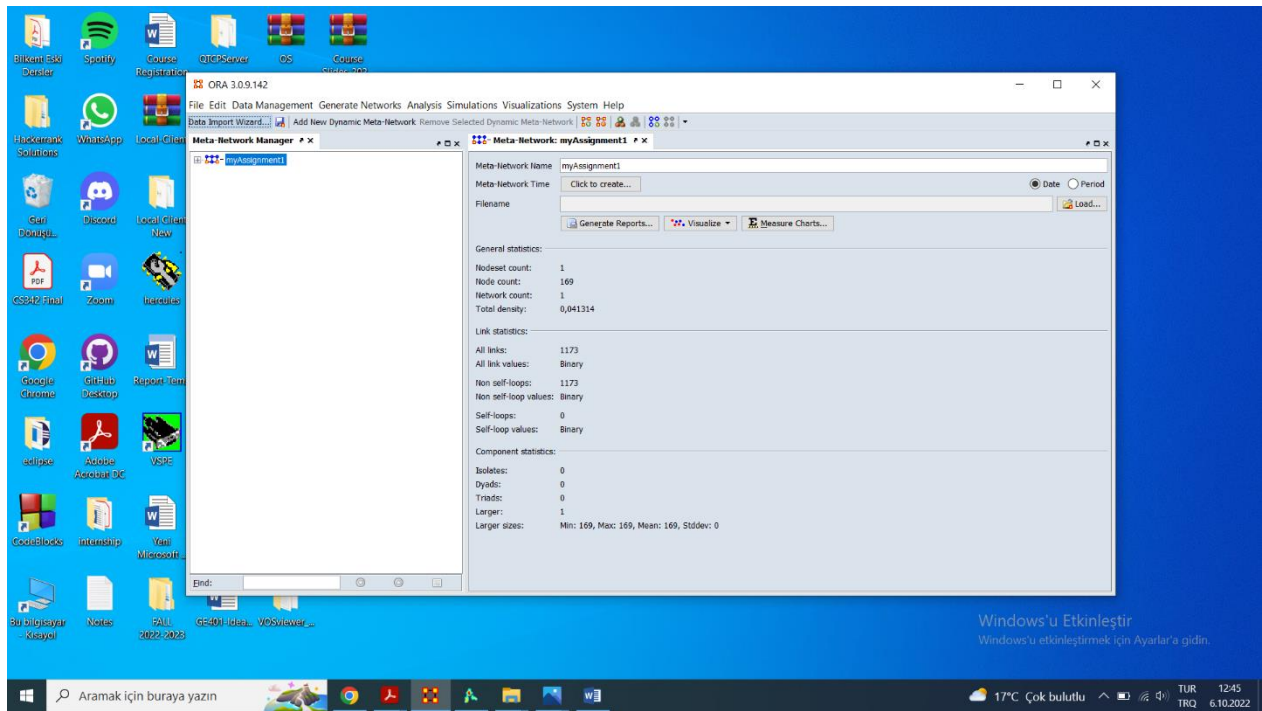


Figure 14: A Look into My Meta-Network

- In this way, I was also able to observe the network though the editor tab:

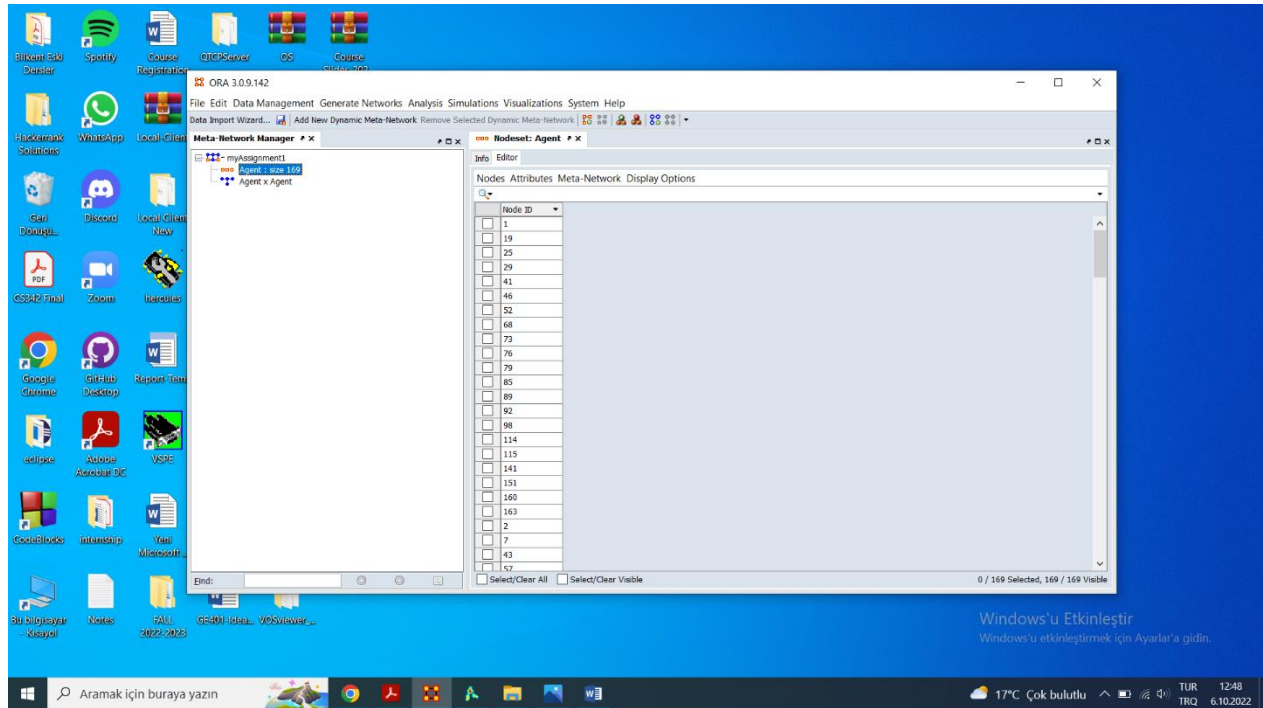


Figure 15: Editor View

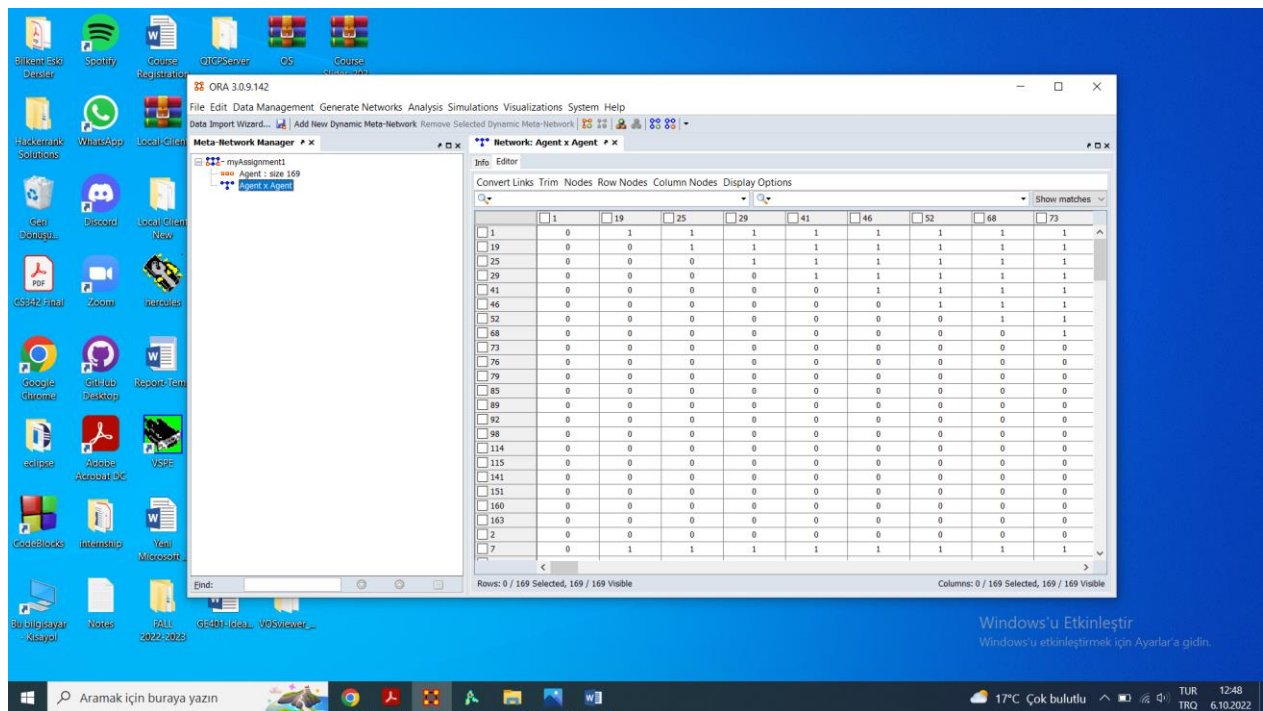
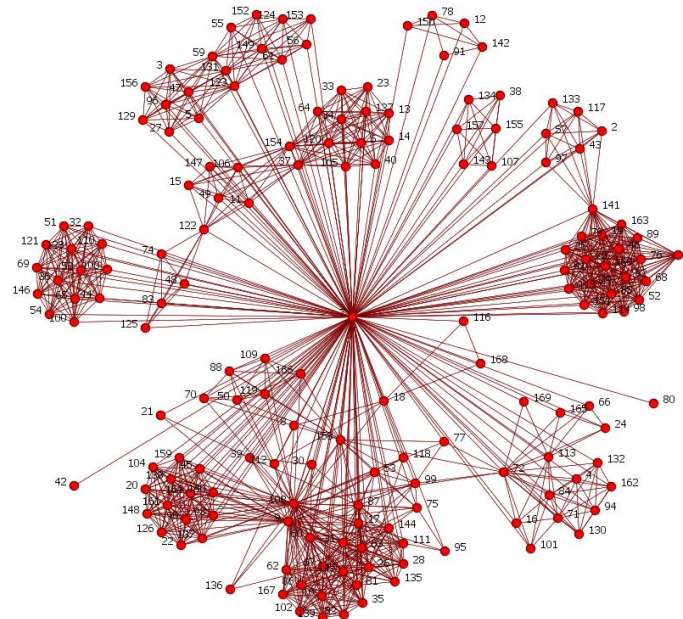


Figure 16: Editor View (Agent x Agent)

- Since the network is about authors, I also selected *Symmetric (Undirected Links)* option, and also *No Self-Loops*.
- Finally, I have created a 2-D visualization. The exported image can be seen below:

myAssignment1



powered by ORA

Figure 17: Visualization of the Network in ORA

Finally, I have included my converted data in my .ZIP file as an XML file.

About the structure of network, I can comment that this is an ego network, which consists of a focal node in the middle (Can Alkan), and the nodes to whom ego is directly connected to, and the links. We can also see vertices (coauthors) which are looking like separate clusters, but also connected to each other directly or indirectly. There are in total 13 clusters in the network. Moreover, we can observe that the links are bidirectional as well. Therefore, by observing the structure of this network, we can have an idea about the description of relationships among actors and the relational ties between them, which is the basis of the social and scientific network concept, having benefits in several work fields.

About what is expected and not, being able to see the network with different types of visualizations – such as based on density or overlay – and numerous features of the tools for the networks was unexpected for me. In this way, I realized that network is in itself a big and important field. Moreover,

having different layouts for the nodes in ORA such as spring embedded, run circle etc. for different purposes was also surprising for me to see.

About identifying the most important nodes in the network, I can assert that it is about *centrality*. It basically refers to the nodes having the most ties, by counting the edges. Although we have not seen this concept yet in detail, as Ms. Kaş stated, it gives clues about the importance of a node. Keeping this in mind, I would say two most important nodes of my network are the ones with the highest total link strength. Therefore, these nodes are the ego node (node ID = 7, Can Alkan) with 280 total link strength, and Onur Mutlu (node ID = 108) with 115 total link strength. Moreover, these nodes can also be observed by the method that Ms. Kaş mentioned. By using ORA, if spring embedded layout is chosen, it will place the nodes with more links closer to the center of the network, pushing people out as they become less and less important.

Hence, all *a, b, c* and *d* parts of Question 2 of Exercise 2 have also been completed.