

# Practical Exercise 1

TA in charge -Oded Salton

All the data and assumptions in this exercise are for educational purposes only. Please follow official guidelines and scientific advice regarding COVID-19.

Due date:26/04/20

## Part C (20 points ) – Competitive Part:

### Guide instructions :

There are 2 python files :

1. Main\_competitive.py includes the signature of the function you need to implement.
2. hw1\_part2.py contains the functions you need to implement in the competitive part
3. Hw1\_part2\_basic.py - contains basic implementation of competitive part

In addition you'll use the links dataset from hw1 part A and part B

After solving Part A and B the government hired you to find the perfect isolation plan by erasing 1000 connections from the network (edges)

stage1 – `sw.competitive_part(links_data, 1000)`: the following function receive the network data and the number of connections that you can erase.

The function would return the edges that you removed in a list of list format, where each variable in the main list represents an edge that was removed. You may assume the function will always be called with the default parameter value (1000 edges to remove).

\* in case that you erased more than 1000 we will grade according to the first 1000

stage 2 - `sw.write_file_competition(G)`: the function already implemented – it converts the list of list from stage one to csv file. Grading:

We will sample randomly initial different infection sets of sizes (5,10,50,100,200). For each set we will run the contagion process for 6 iterations iterations with threshold of (0.3,0.4,0.5). We will use the same community as we used in HW1 part 1.

You get the code with a basic implementation of `competitive_part()` that removes the 1000 heaviest edges.

This implementation sets the baseline performance and is worth 15% of the maximal grade (3 out of 20).

\* in case that you erased more than 1000 we will grade according to the first 1000

