# Lab 3: Lists

For the following exercises, please note:

- You should write a number of tests for each function you write. Ideally, write the tests before you write the function.
- Only use while-loops (or recursion), not for-loops.
- Where you can use functions you wrote in earlier exercises, you should always do so.

## Part A: Practicing with lists

1. Write a function that takes a list as input and returns a list in reverse order, using a while loop.

2. Take the infectious disease simulation from the previous homework and write a function that runs the simulation R times, returning a list with all the results.

3. Use the library matplotlib to produce a histogram of the simulation results, explained at this histogram guide.

## Part B: Utilities for the main simulation

The following questions are based on paragraph 2.8 in the Chen and Lan (2021) paper.

1. Write a function that takes a parameter N and returns a list of N agents who each have a random opinion ($x$). The returned value is just the value of $x$, so the list is a list of floating point values. $x$ should be a uniform random number for each agent between -1 and 1.

2. Update the function from the previous question, but now it should return a list of dictionaries, with each dictionary containing a value for $x$ as well as a value for $\varepsilon$ ("epsilon"). $x$ should be defined as above, while $\varepsilon$ should be a uniform random number between 0 and 2.

3. Write a function that takes as input a list of agents as in the previous question and that adds a value $\tau$ ("tau"), which should be a uniform random number between $\varepsilon$ and 2. So note that the boundaries for the random number differs for each agent, and depends on $\varepsilon$!