Lab 2: Conditionals

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: Writing functions with loops

1. Write a function with parameter N, that throws N dice and returns the sum.
2. Write a function with parameters N and K, that, using the previous function, throws N dice and returns True when the sum is equal to K.
3. Write a function with parameters N, R, and K, using the previous function, that throws N dice R times and returns what proportion of results the sum of the N dice is exactly K.

Part B: Writing simulations

1. Write a simulation that calculates the number of infections after 100 time periods, when you start with 1 infected person, with each time step, for each infected person, a 15% chance of being cured, and a 25% chance of infecting one new person.
2. Write a function that takes parameters N_start, N_times, P_infection and P_cure, representing the number of infected persons at the start, the number of time steps, the chance of infecting another person in each time step, and the chance of being cured in each time step, and that returns the number of infected persons at the end of the simulation.
3. Run the above simulation 20 times, with each time N_start=2, N_times=100, P_infection=0.25, P_cure=0.10. Experiment with different values to see results.