1 Exercise 1

You start with a string of character, and want to inverse it. You are not allowed any dynamic memory (therefore, std::string is not allowed).

Example Hello world! would become, after your algorithm, !dlrow olleH.

2 Exercise 2

The input is a number N greater than two, less than 40. Print on the screen a spiral of increasing numbers where the first line goes from 1 to N. The code should be as small as possible (in terms of instructions, please keep it clean).

Example For N=4, you should print the following:

1	2	3	4
12	13	14	5
11	16	15	6
10	9	8	7

3 Exercise 3

Generate a set of N random points in space (3D space), which we call the point cloud S. Given a random point P in space, find its closest point in the point cloud S. This procedure should be as fast as possible. If you are confident, investigate hash tables, kd-trees, octrees, BVH etc... (Space partitioning, object partitioning).