Exercise 5

Task 1

Sort the array [241, 530, 41, 272, 937, 407] using Radix Sort (slide 92) in base 10.

Task 2

Given n points $(x_1, y_1), \ldots, (x_n, y_n)$ in the plane \mathbb{R}^2 , find a line g parallel to the y-axis in time $\mathcal{O}(n)$ such that the sum of the distances between g and the points is minimal.

Task 3

Show that the median of five numbers can be computed using six comparisons.

Task 4

Does the algorithm Median of the Medians (slide 100) still run in linear time if one uses blocks of length three, or blocks of length seven, or blocks of length nine instead?