# Assignment 3

**CPS 616**
**Winter 2021**
**Friday March 5**
**Deadline: Friday, March 12, 6pm**

*The assignment must be submitted by the deadline. For each hour the assignment is late, 4.16% of the overall mark will be deducted. For instance, if the assignment is submitted 2 hours late, the maximum achievable mark will be (100-2(4.16)) = 91.68%.*

*You are free to discuss the assignment with your classmates, but you are responsible for understanding the solution and you must write down the answers in your own words. You must provide the names of the individuals you collaborated with at the top of your submitted assignment.*

1. Consider a 2D array of integers, so that elements in each row are sorted. The elements of each column are sorted as well. Both rows and columns are sorted in increasing order. Propose a divide and concur approach to find whether a specific value is in the array. Analysis the time complexity of your approach. (10 marks)

2. Suppose there exist n ropes. They have different length. The goal is to connect them so that they become one piece. The cost of connecting rope 1 and rope 2 equals to the sum of the length of rope 1 and rope 2, plus 1. Bring a greedy algorithm which connect all n ropes with the minimum cost. (5 marks)