COMP 550
Algorithms and Analysis
Spring 2020
Homework 5
Due Tuesday, March 3, 2020

1. Illustrate the operation of counting sort on the array $A = (3, 5, 7, 2, 4,$ $3, 5, 8, 1)$. Show the contents of the array C after the completion of steps 3 and 4, and again after the completion of steps 5 and 6. Show the contents of arrays B and C after each iteration of steps 7, 8, and 9.

2. Let X be a random variable that is equal to the number of times a 5 is rolled in three rolls of a fair 5-sided die with the integers 1 through 5 on the sides. What is $E[X^2]$? What is $E^2[X]$, that is, $(E[X])^2$? Justify your answers briefly.

For this homework you may work in groups of up to four people and groups are encouraged to turn in only one paper with everyone's names in the group on it. This will make the work of the grader easier. However, people in different groups may not collaborate.

Those who want to be part of a group and can't find others may meet in the front after class and form groups, if you desire to. You may also send email to the TA and he will assign people to groups.