

DISCUSSION FOR SEVENTH TUTORIAL

DATE: JANUARY AND

We first introduced the following problem which is related to the ‘real’ problem for the tutorial for this week. I pulled this statement of the problem from the internet:

Four honest and hard-working computer engineers are sipping coffee at Starbucks. They wish to compute their average salary. However, nobody is willing to reveal an iota of information about his/her own salary to anybody else. How do they do it?

With this idea we computed the average age of the people in the class. I’m not convinced this is particularly reliable on a large scale given that you have to pass information to people without making a mistake.

The real question that I would like you to consider for this question is the following:

Ten people are sitting around a table and they each pick a random integer (possibly negative). Each person tells the person to the left and to the right their secret number and then everyone announces the sum of the two numbers that they received. When those numbers are announced, the first person reveals his sum as 2, the next 4, the third 6, all the way up to 20. What was the secret number of the sixth person (the person who announced the number 12)?

Ideally, what we want here is not just to know the number of the sixth person, but a good way of finding that number so that we don’t have to solve a linear system of 10 equations and 10 unknowns (one way of solving it). What can you do to solve this question faster?