CS 173 Discussion 14: Probability

Date: December 5/6, 2019.

Problem 1. *Let's Make a Deal* is a game played with *four* doors. A prize is hidden behind one of the four doors. Then the contestant picks a door. Next, the host opens an unpicked door that has no prize behind it. The contestant is allowed to stick with their original door or to switch to one of the two unopened, unpicked doors. The contestant wins if their final choice is the door hiding the prize.

Let us make the following assumptions about the setup.

1. The prize is equally likely to be behind each door.

2. The contestant is equally likely to pick each door initially, regardless of the prize's location.

3. The host is equally likely to reveal each door that does not conceal the prize and was not selected by the player.

Clearly identify the probability space by defining the sample space, and the probability of each outcome in the sample space. Use the identified probability space to compute the probability of winning if (a) the contestant does not change their original choice; (b) the contestant changes their door by picking one of the remaining doors with equal probability.