

Homework 4

The first column identifies the method, the second column shows the measured chance to win the game, while the third column shows the measured average execution time. Submit the times you measured. What do you observe?

Results of ./prisoner :

Method random_global:	0/100 wins/games = 0 % total time = 419.959000 ms average time = 4.199590
Method random_drawer:	0/100 wins/games = 0 % total time = 426.330000 ms average time = 4.263300
Method smart_global:	26/100 wins/games = 26 % total time = 433.767000 ms average time = 4.337670
Method smart_drawer:	29/100 wins/games = 29 % total time = 427.262000 ms average time = 4.272620

Results of ./prisoner -n 1000 -s 1000000 :

Method random_global:	0/1000 wins/games = 0 % total time = 4267.980000 ms average time = 4.267980
Method random_drawer:	0/1000 wins/games = 0 % total time = 4213.080000 ms average time = 4.213080
Method smart_global:	297/1000 wins/games = 29 % total time = 4233.553000 ms average time = 4.233553
Method smart_drawer:	344/1000 wins/games = 34 % total time = 4229.770000 ms average time = 4.229770

Analysis:

1. The random_global and random_drawer result in 0% wins, because the probability of each prisoner finding his number is very low (0.5^{100}). There is an improvement in time with individual mutex but the success rate is still ~0.00%.
2. The smart_global and smart_drawer perform accurately, with 26% and 29% wins. For 1000 runs, the outcomes are 29% and 34%. There is also a slight improvement in the time taken to run program and in the accuracy of the programs with smart_drawer being both more accurate and faster.