Operating Systems
HW Sheet # 2

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Problem 2.1:

a) Find the source code in file “coins.c”. A Makefile is also included.

First, let’s evaluate what happens as we increase the number of people:

Number of People (P)	Number of Flips (N)	Time for first strategy (ms)	Time for second strategy (ms)	Time for third strategy (ms)
50	1000	0.022	0.149	1.018
150	1000	0.054	0.719	3.083
500	1000	0.180	2.548	10.820
999	1000	0.246	2.550	22.513
1300	1000	0.269	3.356	29.567

Now, let’s evaluate what happens as we increase the number of flips:

Number of People (P)	Number of Flips (N)	Time for first strategy (ms)	Time for second strategy (ms)	Time for third strategy (ms)
100	50	0.015	0.016	0.222
100	99	0.016	0.014	0.238
100	300	0.023	0.127	0.622
100	700	0.031	0.369	1.411
100	1000	0.036	0.366	1.833
100	1999	0.056	0.607	4.076

As we can observe from the data, the time values increase as we increase the number of people or the number of flips. Increasing the value of p has a more significant effect on the time values as compared to when we increase the value of n.

Additionally, we can also observe that the first strategy takes the least amount of time. This is followed by the second strategy and then lastly, the third one. This is because the third strategy has a larger number of locks and unlocks since we use them for each coin separately.

The first strategy, the one with the global lock has the least number of locks and unlocks, which is why the process takes the least amount of time. The second strategy has more locks/unlocks than the first one but less locks/unlocks than the third one. This is visible from the time values as well.

However, when using very small values for n (flips), the time values for all three cases were quite close to each other. In fact, in some tries, the second strategy took the shortest time but the difference was only around 0.001 second or so.