Assignment 1

CS203B

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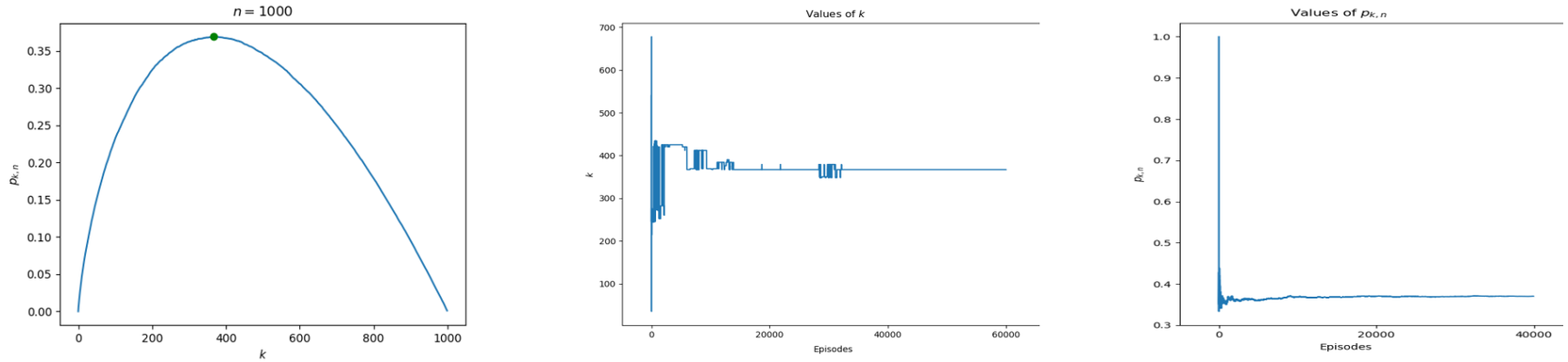

(a) (b) (c)

Figure 1: (a) Graph for k versus probability $p_{k,n}$ for $n = 1000$ after 100000 iterations; (b) Graph for number of episodes versus value of k; (c) Graph for number of episodes versus value of max $p_{k,n}$

1 The Report

The optimal value of k was found out for the values of n from the set $\{100, 200, 300, ..., 1000\}$ such that $p_{k,n}$ was maximum.

The corresponding values of k for the values of n are as shown in the followeing graph. The code can be found on Github.[1]

n	100	200	300	400	500	600	700	800	900	1000
k	38	73	115	151	187	222	248	288	334	367
$p_{k,n}$	0.36886	0.36856	0.37029	0.36908	0.36915	0.36666	0.36752	0.36809	0.36911	0.36928

2 Case Study: Running the code for $n = 1000$

The code was run for $n = 1000$. We ran 100000 iterations of the code to find a smoother curve for k versus $p_{k,n}$ and a more convergent value of k.
k was found to converge at $k = 367$ with a probability $p_{k,n} = 0.36928$.
Graphs have been plotted on the top of the page.

[1] Link to code: `https://github.com/sayaksc/CS203B/tree/master/a1_CS203B/`