CS 747 Assignment 1 Report

Avinash Reddy,183070010
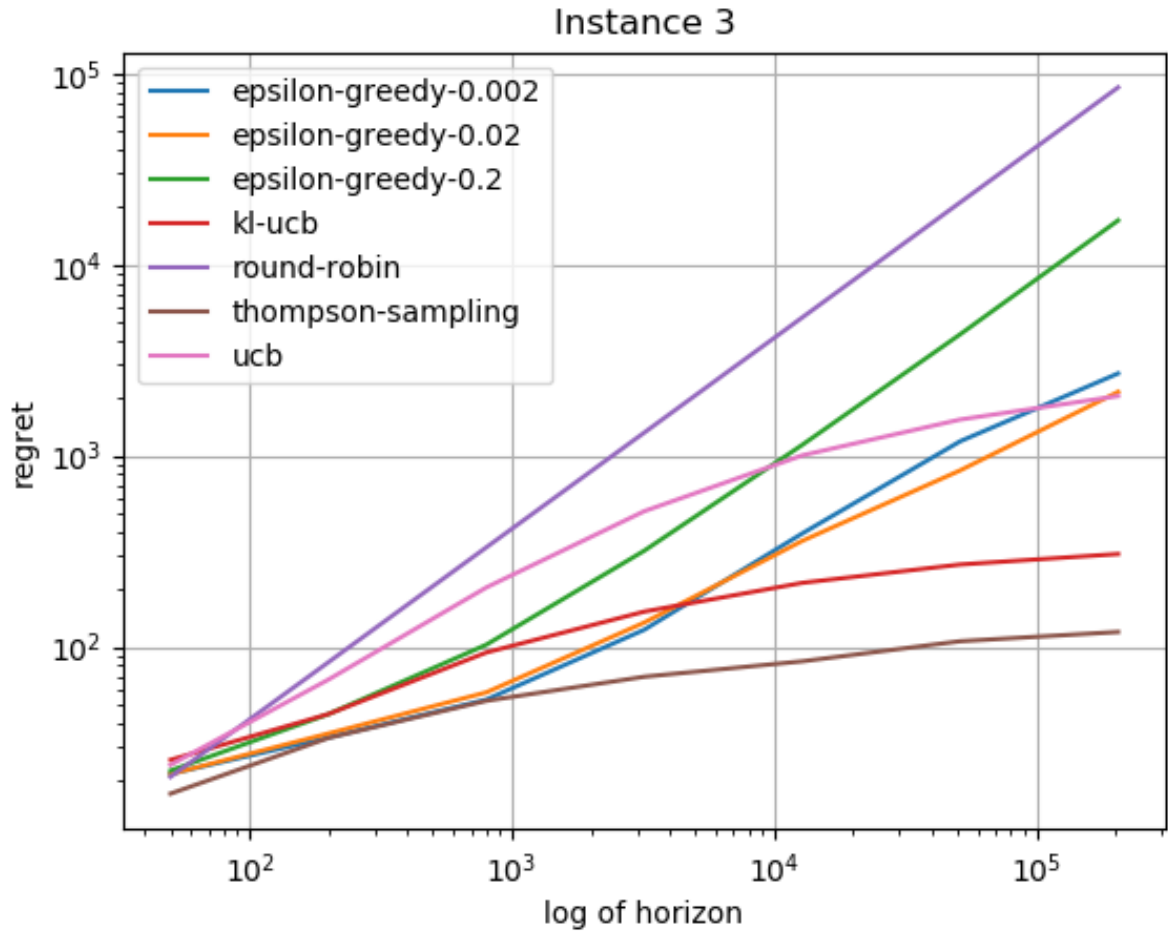
September 3, 2019
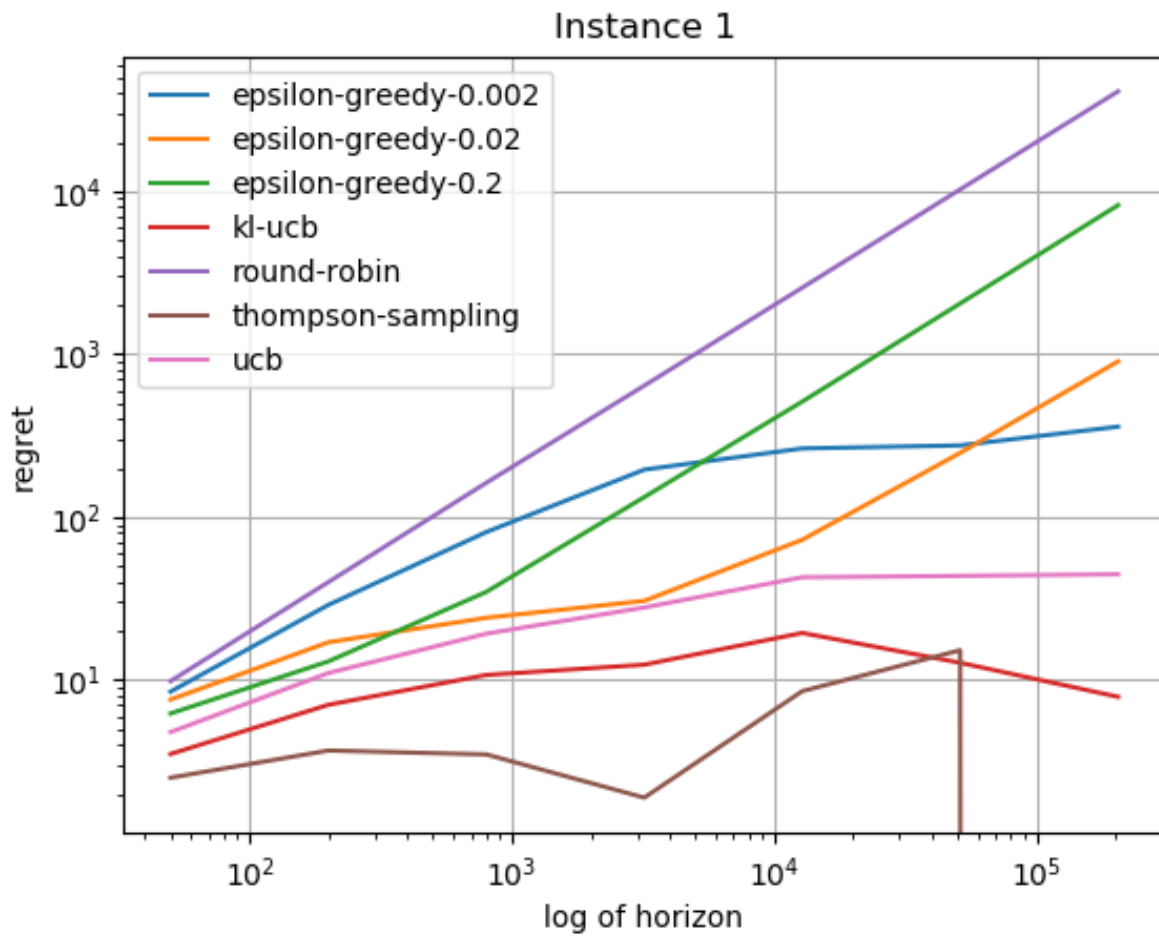
Instance 1

instances	horizon	algorithm	epsilon	seed	reg
../instances/i-1.txt	50	epsilon-greedy	0.002	24.5	8.5
../instances/i-1.txt	50	epsilon-greedy	0.02	24.5	7.6
../instances/i-1.txt	50	epsilon-greedy	0.2	24.5	6.24
../instances/i-1.txt	50	kl-ucb	0.02	24.5	3.52
../instances/i-1.txt	50	round-robin	0.02	24.5	9.86
../instances/i-1.txt	50	thompson-sampling	0.02	24.5	2.52
../instances/i-1.txt	50	ucb	0.02	24.5	4.8
../instances/i-1.txt	200	epsilon-greedy	0.002	24.5	28.96
../instances/i-1.txt	200	epsilon-greedy	0.02	24.5	17.08
../instances/i-1.txt	200	epsilon-greedy	0.2	24.5	13.04
../instances/i-1.txt	200	kl-ucb	0.02	24.5	7.06
../instances/i-1.txt	200	round-robin	0.02	24.5	39.98
../instances/i-1.txt	200	thompson-sampling	0.02	24.5	3.7
../instances/i-1.txt	200	ucb	0.02	24.5	11.06
../instances/i-1.txt	800	epsilon-greedy	0.002	24.5	81.06
../instances/i-1.txt	800	epsilon-greedy	0.02	24.5	24.14
../instances/i-1.txt	800	epsilon-greedy	0.2	24.5	34.8
../instances/i-1.txt	800	kl-ucb	0.02	24.5	10.76
../instances/i-1.txt	800	round-robin	0.02	24.5	162.6
../instances/i-1.txt	800	thompson-sampling	0.02	24.5	3.5
../instances/i-1.txt	800	ucb	0.02	24.5	19.28
../instances/i-1.txt	3200	epsilon-greedy	0.002	24.5	195.74
../instances/i-1.txt	3200	epsilon-greedy	0.02	24.5	30.66
../instances/i-1.txt	3200	epsilon-greedy	0.2	24.5	132.84
../instances/i-1.txt	3200	kl-ucb	0.02	24.5	12.44
../instances/i-1.txt	3200	round-robin	0.02	24.5	641.5
../instances/i-1.txt	3200	thompson-sampling	0.02	24.5	1.9
../instances/i-1.txt	3200	ucb	0.02	24.5	27.92
../instances/i-1.txt	12800	epsilon-greedy	0.002	24.5	264.04
../instances/i-1.txt	12800	epsilon-greedy	0.02	24.5	72.64
../instances/i-1.txt	12800	epsilon-greedy	0.2	24.5	511.82
../instances/i-1.txt	12800	kl-ucb	0.02	24.5	19.48
../instances/i-1.txt	12800	round-robin	0.02	24.5	2559.82
../instances/i-1.txt	12800	thompson-sampling	0.02	24.5	8.56
../instances/i-1.txt	12800	ucb	0.02	24.5	42.78
../instances/i-1.txt	51200	epsilon-greedy	0.002	24.5	275.64
../instances/i-1.txt	51200	epsilon-greedy	0.02	24.5	248.06
../instances/i-1.txt	51200	epsilon-greedy	0.2	24.5	2047.58
../instances/i-1.txt	51200	kl-ucb	0.02	24.5	12.78
../instances/i-1.txt	51200	round-robin	0.02	24.5	10257.74
../instances/i-1.txt	51200	thompson-sampling	0.02	24.5	15.26
../instances/i-1.txt	51200	ucb	0.02	24.5	43.62
../instances/i-1.txt	204800	epsilon-greedy	0.002	24.5	359.24
../instances/i-1.txt	204800	epsilon-greedy	0.02	24.5	903.4
../instances/i-1.txt	204800	epsilon-greedy	0.2	24.5	8211.08
../instances/i-1.txt	204800	kl-ucb	0.02	24.5	7.9
../instances/i-1.txt	204800	round-robin	0.02	24.5	40983.3
../instances/i-1.txt	204800	thompson-sampling	0.02	24.5	-35.28
../instances/i-1.txt	204800	ucb	0.02	24.5	44.64
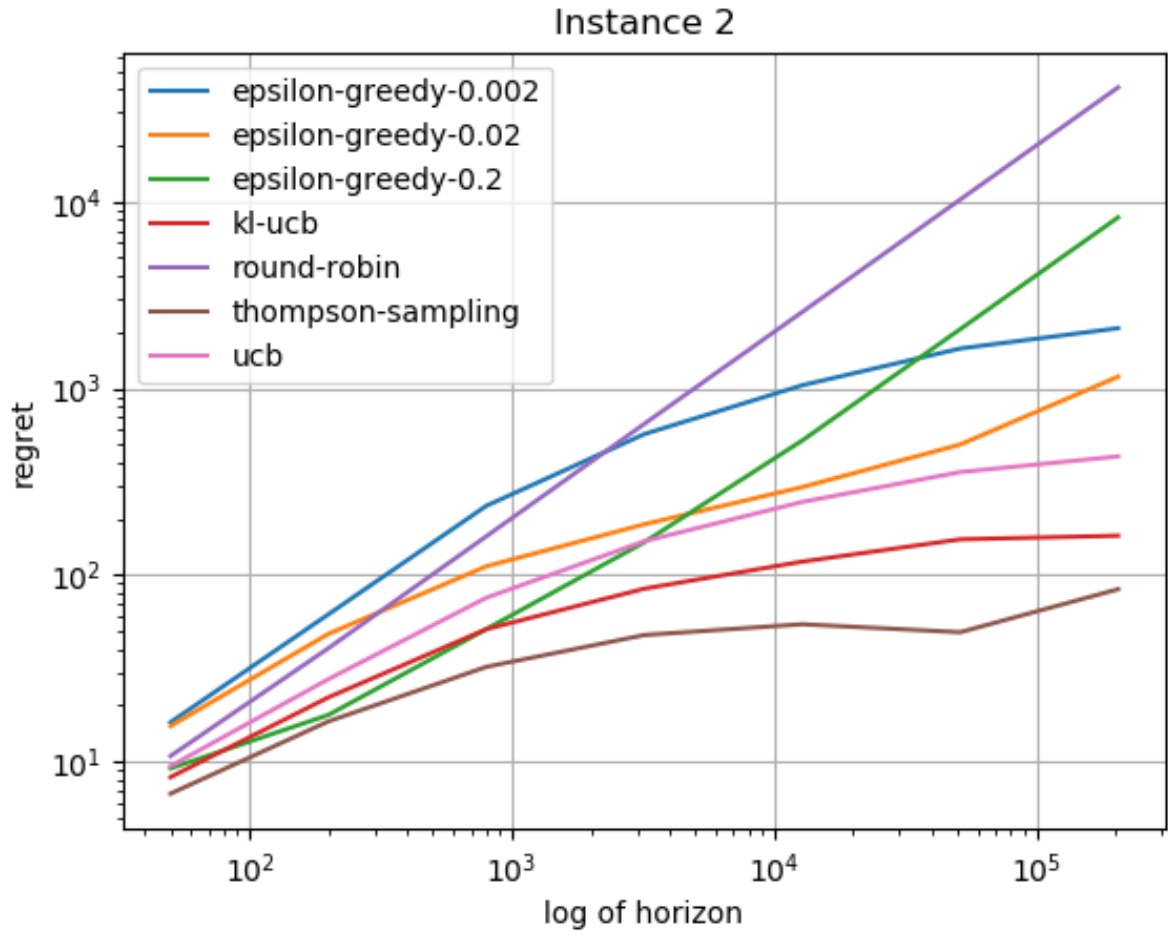
Instance 2

instances	horizon	algorithm	epsilon	seed	reg
../instances/i-2.txt	50	epsilon-greedy	0.002	24.5	16.22
../instances/i-2.txt	50	epsilon-greedy	0.02	24.5	15.48
../instances/i-2.txt	50	epsilon-greedy	0.2	24.5	9.18
../instances/i-2.txt	50	kl-ucb	0.02	24.5	8.24
../instances/i-2.txt	50	round-robin	0.02	24.5	10.7
../instances/i-2.txt	50	thompson-sampling	0.02	24.5	6.72
../instances/i-2.txt	50	ucb	0.02	24.5	9.44
../instances/i-2.txt	200	epsilon-greedy	0.002	24.5	61.48
../instances/i-2.txt	200	epsilon-greedy	0.02	24.5	48.28
../instances/i-2.txt	200	epsilon-greedy	0.2	24.5	17.76
../instances/i-2.txt	200	kl-ucb	0.02	24.5	22.06
../instances/i-2.txt	200	round-robin	0.02	24.5	40.46
../instances/i-2.txt	200	thompson-sampling	0.02	24.5	16.4
../instances/i-2.txt	200	ucb	0.02	24.5	27.62
../instances/i-2.txt	800	epsilon-greedy	0.002	24.5	234.44
../instances/i-2.txt	800	epsilon-greedy	0.02	24.5	111.16
../instances/i-2.txt	800	epsilon-greedy	0.2	24.5	51.2
../instances/i-2.txt	800	kl-ucb	0.02	24.5	51.16
../instances/i-2.txt	800	round-robin	0.02	24.5	160.98
../instances/i-2.txt	800	thompson-sampling	0.02	24.5	32.14
../instances/i-2.txt	800	ucb	0.02	24.5	75.44
../instances/i-2.txt	3200	epsilon-greedy	0.002	24.5	567.96
../instances/i-2.txt	3200	epsilon-greedy	0.02	24.5	186.72
../instances/i-2.txt	3200	epsilon-greedy	0.2	24.5	149.54
../instances/i-2.txt	3200	kl-ucb	0.02	24.5	84.32
../instances/i-2.txt	3200	round-robin	0.02	24.5	644.28
../instances/i-2.txt	3200	thompson-sampling	0.02	24.5	47.6
../instances/i-2.txt	3200	ucb	0.02	24.5	151.38
../instances/i-2.txt	12800	epsilon-greedy	0.002	24.5	1037.44
../instances/i-2.txt	12800	epsilon-greedy	0.02	24.5	295.34
../instances/i-2.txt	12800	epsilon-greedy	0.2	24.5	524.76
../instances/i-2.txt	12800	kl-ucb	0.02	24.5	117.76
../instances/i-2.txt	12800	round-robin	0.02	24.5	2562.48
../instances/i-2.txt	12800	thompson-sampling	0.02	24.5	54.38
../instances/i-2.txt	12800	ucb	0.02	24.5	246.02
../instances/i-2.txt	51200	epsilon-greedy	0.002	24.5	1633.04
../instances/i-2.txt	51200	epsilon-greedy	0.02	24.5	499.4
../instances/i-2.txt	51200	epsilon-greedy	0.2	24.5	2072.5
../instances/i-2.txt	51200	kl-ucb	0.02	24.5	155
../instances/i-2.txt	51200	round-robin	0.02	24.5	10261.96
../instances/i-2.txt	51200	thompson-sampling	0.02	24.5	49.28
../instances/i-2.txt	51200	ucb	0.02	24.5	355.52
../instances/i-2.txt	204800	epsilon-greedy	0.002	24.5	2097.86
../instances/i-2.txt	204800	epsilon-greedy	0.02	24.5	1153.24
../instances/i-2.txt	204800	epsilon-greedy	0.2	24.5	8233.74
../instances/i-2.txt	204800	kl-ucb	0.02	24.5	162.16
../instances/i-2.txt	204800	round-robin	0.02	24.5	40957.36
../instances/i-2.txt	204800	thompson-sampling	0.02	24.5	83.76
../instances/i-2.txt	204800	ucb	0.02	24.5	431.2

Instance 3

instances	horizon	algorithm	epsilon	seed	reg
../instances/i-3.txt	50	epsilon-greedy	0.002	24.5	21.62
../instances/i-3.txt	50	epsilon-greedy	0.02	24.5	21.56
../instances/i-3.txt	50	epsilon-greedy	0.2	24.5	22.5
../instances/i-3.txt	50	kl-ucb	0.02	24.5	25.6
../instances/i-3.txt	50	round-robin	0.02	24.5	20.88
../instances/i-3.txt	50	thompson-sampling	0.02	24.5	17.04
../instances/i-3.txt	50	ucb	0.02	24.5	24.1
../instances/i-3.txt	200	epsilon-greedy	0.002	24.5	33.52
../instances/i-3.txt	200	epsilon-greedy	0.02	24.5	35.2
../instances/i-3.txt	200	epsilon-greedy	0.2	24.5	44.42
../instances/i-3.txt	200	kl-ucb	0.02	24.5	44.48
../instances/i-3.txt	200	round-robin	0.02	24.5	83.08
../instances/i-3.txt	200	thompson-sampling	0.02	24.5	33.34
../instances/i-3.txt	200	ucb	0.02	24.5	67.38
../instances/i-3.txt	800	epsilon-greedy	0.002	24.5	52.94
../instances/i-3.txt	800	epsilon-greedy	0.02	24.5	57.76
../instances/i-3.txt	800	epsilon-greedy	0.2	24.5	102.62
../instances/i-3.txt	800	kl-ucb	0.02	24.5	93.4
../instances/i-3.txt	800	round-robin	0.02	24.5	331.6
../instances/i-3.txt	800	thompson-sampling	0.02	24.5	52.18
../instances/i-3.txt	800	ucb	0.02	24.5	204.48
../instances/i-3.txt	3200	epsilon-greedy	0.002	24.5	122.9
../instances/i-3.txt	3200	epsilon-greedy	0.02	24.5	133.94
../instances/i-3.txt	3200	epsilon-greedy	0.2	24.5	318.4
../instances/i-3.txt	3200	kl-ucb	0.02	24.5	152.84
../instances/i-3.txt	3200	round-robin	0.02	24.5	1321.6
../instances/i-3.txt	3200	thompson-sampling	0.02	24.5	69.74
../instances/i-3.txt	3200	ucb	0.02	24.5	512.54
../instances/i-3.txt	12800	epsilon-greedy	0.002	24.5	391.76
../instances/i-3.txt	12800	epsilon-greedy	0.02	24.5	358.32
../instances/i-3.txt	12800	epsilon-greedy	0.2	24.5	1139.02
../instances/i-3.txt	12800	kl-ucb	0.02	24.5	216.08
../instances/i-3.txt	12800	round-robin	0.02	24.5	5288.22
../instances/i-3.txt	12800	thompson-sampling	0.02	24.5	83.98
../instances/i-3.txt	12800	ucb	0.02	24.5	1004.12
../instances/i-3.txt	51200	epsilon-greedy	0.002	24.5	1189.62
../instances/i-3.txt	51200	epsilon-greedy	0.02	24.5	837.74
../instances/i-3.txt	51200	epsilon-greedy	0.2	24.5	4317.2
../instances/i-3.txt	51200	kl-ucb	0.02	24.5	269.56
../instances/i-3.txt	51200	round-robin	0.02	24.5	21159.32
../instances/i-3.txt	51200	thompson-sampling	0.02	24.5	106.96
../instances/i-3.txt	51200	ucb	0.02	24.5	1546.02
../instances/i-3.txt	204800	epsilon-greedy	0.002	24.5	2694.6
../instances/i-3.txt	204800	epsilon-greedy	0.02	24.5	2157.46
../instances/i-3.txt	204800	epsilon-greedy	0.2	24.5	17034.56
../instances/i-3.txt	204800	kl-ucb	0.02	24.5	306
../instances/i-3.txt	204800	round-robin	0.02	24.5	84592.96
../instances/i-3.txt	204800	thompson-sampling	0.02	24.5	119.6
../instances/i-3.txt	204800	ucb	0.02	24.5	2052.78

In all algorithms ties are broken by choosing first element.

Thompson sampling works better than any algorithms.