Homework 3 - Local Search

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Table 1: Simulation results. You will submit a Pdf of this page.

	N=20		
	Percentage of success in 100 runs	Elapsed time to complete experiment (secs)	Solutions found in how many restarts on average
Basic Hill Climbing	2	21.12	-
Random Restart with k=10	12	191.65	62.93
Random Restart with k=100	90	806.91	43.29
Stochastic Hill Climbing	0	0.103	-
Simulated Annealing if implemented ($T = 10000$ and $\alpha = 0.95$)	5	7.03	-
c) Colab link for your solution	Colab Link		
d) Enter your short summary The experiments compared different local search techniques for N=20 using various configurations. Basic Hill Climbing showed poor performance with a 2% success rate, while Random Restart Hill Climbing improved success rates significantly, achieving 90% with k=100 restarts. Stochastic Hill Climbing failed to find solutions, with a 0% success rate, likely due to insufficient exploration of the search space or poor handling of local optima. Simulated Annealing, with T=1000 and $\alpha = 0.95$, achieved a moderate success rate of 5%. Random Restart Hill Climbing with k=100 proved the most effective approach, balancing efficiency and reliability. https://colab.research.google.com/drive/1_nBebjTiP2s0RtCX0IbYXha4D1CE4i0B?usp=sharing			