Spring 2023: CSCI 4588/5588 Prog. Assignment #1

DUE: Wednesday, Feb/08/2023 (**Softcopy** @10 AM via Moodle)

Instruction

All work must be your own (besides the instructor-provided codes and hints to be used). You are not to work in teams on this assignment.

Format: Your solution must be typed. Submit as a single compressed file (via Moodle) **containing all the related files, including the following report**. Name it as PA1_<Your_name_id>.

Your report should contain the well-commented code and some snapshots of the outputs.

The top/cover page of the report should have the title, "Spring 2023: CSCI 4588/5588 Programming Assignment #1". Then your, "Name:_____ and ID:_____

Part 1 [Marks 50]

#1. Write a *Hill-Climbing* algorithm to find the maximum value of a function *f*, where *f* = |13 • one (*v*) -170|. Here, *v* is the input binary variable of 40 bits. The *one* counts the number of '1's in v. Set MAX =100, thus *reset* the algorithm 100 times for the global maximum and print the found maximum-value for each *reset* separated by a comma in the Output.txt file.

Part 2 [Marks 50]

#2. Write a *Simulated-Annealing* algorithm to find the maximum value of a function *f*, where *f* = |14 • one (*v*) -190|. Here, *v* is the input binary variable of 50 bits. The one counts the number of '1's in v. Set MAX =200, thus *reset* the algorithm 200 times for the global maximum and print the found maximum-value for each *reset* separated by a comma in the Output.txt file.

To Do:

- Submit the program code so that it can be run to check and verify the result, preferably visually.
- Describe how to run your code in the *run_readme.txt* file.
- Output.txt will contain the output of your program.
- Please, avoid asking to install the (programming) package to run your program instead of providing executable(s).
- Well-commented programming code will score high.

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