BIRZEIT UNIVERSITY

Electrical and Computer Engineering Department

ENCS434 Artificial Intelligence, First Semester, 2021-2022

Programming Project 1 Instructor: Aziz Qaroush

Due: December 3, 2021

Graduation Projects Distribution

This assignment is for groups of 2 students each (at most). If you want to do it alone you must get the permission of the instructor.

1. Goal

This programming project can be viewed as an application of searching search algorithm in real world problems.

2. Specifications:

Developing a Graduation projects distribution is not an easy task. It has many variables: Students, Supervisors, Topics and selection order. The aim of this project is to distribute the topics based on the student's selection as much as possible. One of the common approaches to solve this problem is using CSP or Genetic algorithms.

Therefore, the aim of this project is to use Genetic algorithm to optimize the distribution of the graduation projects topics based on the student's selection order. The input for this project is as follows:

- File (Student's selection) contains the student's selection. The file contains the students' names, and selection order where the first choice is the most preferable. The number indicates the project number (see the second file)
- File (أفكار مشاريع التخرج) contains projects topics, where the first column indicates project number used in the first file.

The generated optimized solutions must consider the following:

1. Each student must be assigned a topic
2. The topic can be assigned to one group only
3. The assignment must be closer as much as possible to the order of selection.

3. Bonus Elements:

- Your program needs to have a reasonable interface. Extra credit may be given to better interface designs.
- More factors.
- Have something new and it will be rewarded if convincing!

5. Submissions: Please submit the following:

1. **Report**:

- Describe in details your formalization of the problem.
- Write **up to** 5 pages to describe how you designed and implemented your program and list any assumptions you made for your project.
- Describe how to compile and run your program only when special directions are needed and unavoidable.
- In case you completed some extra credit items, you should describe how to enable and test them. Please, do not repeat in the report the text provided in this description.

2. **Source Code:** Include all the source code you developed or extended from the program. These need to be submitted only electronically (no hardcopies of the code). The running program needs also to be submitted electronically.

3. **Demo:** You will be asked to demo your work to your instructor. For that you need to be able to work with your program, introduce minor modifications and defend your choices.

Honor Policy: All are required to adhere to the University honor policy and violations will be dealt with according to university regulations.

Good Luck