AIN SHAMS UNIVERSITY
FACULTY OF ENGINEERING

Computer Engineering and Software Systems Program
(Senior 1 Level), Computer and Systems Engineering

Assignment, Spring 2023/2024 **Course Code: CSE 486**

Bioinformatics

Question (1):

Alignment with affine gap penalties problem: Construct a highest- scoring global alignment between two strings (with affine gap penalties). The inputs are Two strings *v* and *w*, a scoring matrix *Score*. The output is highest-scoring global alignment between these strings, as defined by the scoring matrix Score and by the gap opening and extension penalties. Implement it using three matrices.

Question (2):

Implement a function (and any helper functions) that takes two DNA sequences and shows the graphical representation of all required steps to get their global alignment using the 2. Needleman-Wunch Algorithm.