

4.

a. To solve this problem, we fill in $(m+1)(n+1)$ elements.

b. $V(i, 0) = \sum s(S1(k), _)$

$V(0, j) = 0$

c. Given the filled in matrix, we would find the best approximate match by starting at the bottom right corner of the matrix and finding the move that gave us this final value, then finding the move that gave us that value, and so on until we reach a cell in row 0. In Gusfield, this is called traversing the backpointers. In this traversal, we break ties by choosing a vertical pointer over a diagonal one, and a diagonal one over a horizontal one. Mismatches would be diagonal backpointers that lead to an increased score, and gaps are vertical and horizontal backpointers.

5.

a.

	E	G	A	T	C	G
E	0	0	0	0	0	0
G	0	1	0	0	0	1
A	0	0	2	1	0	0
T	0	0	1	3	2	1
A	0	0	1	2	2	1
C	0	0	0	1	3	2
C	0	0	0	0	2	2

b.

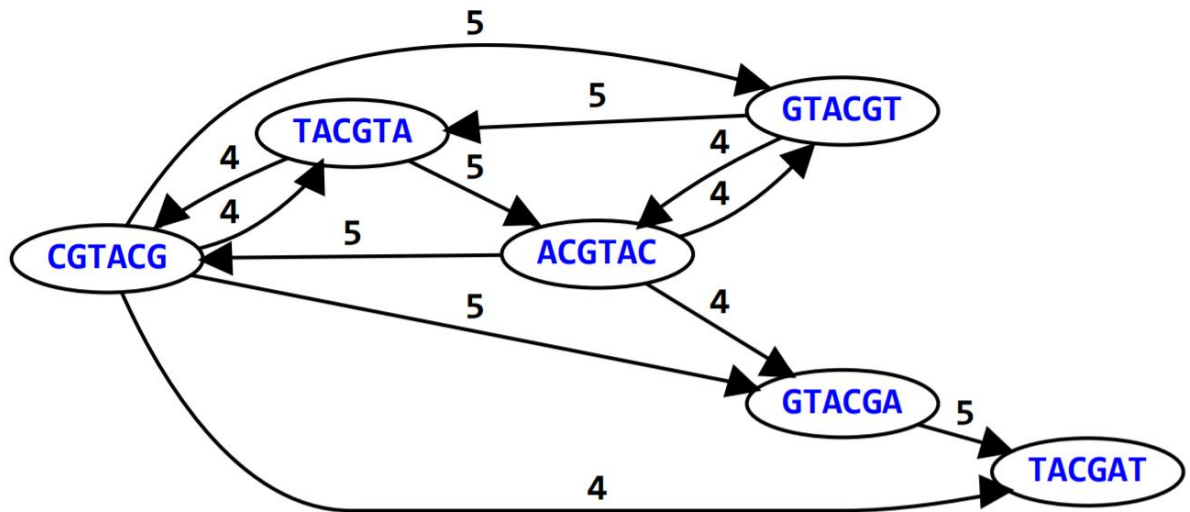
X: GATAC

Y: GAT-C

X: GAT

Y: GAT

6. The Hamiltonian path will not necessarily visit every edge. This example from lecture demonstrates this. (lecture 15, slide 11)



7. The gap penalty is -2. The transition penalty is +3. The transversion penalty is +2.