HW 2 Key:

Q4.

Let S[i,j] be the shortest string which is a super-sequence of B1[1 ... i] and B2[1 ... j].

S[0,0] = 0, S[i,0] = i, and S[0,j] = j.
Recurrence Formula:

S[i,j] = Min {
  S[i-1,j-1] + 1 ; if B1[i] = B2[j]
  S[i-1,j] + 1
  S[i,j-1] + 1
}

Runtime: O(nm), where length of B1 = n and length of B2 = m.

Q5.

Similar to Q4, consider 3 sequences at a time.
Runtime: O(nml), where length of B1 = n, length of B2 = m, and length of B3 = l.

For K sequences, generalize the above formula for K sequences, Runtime: O(n^K)

Q6.

Let P[i,j] be the minimum number of inserts for string S (Si...Sj) to become a palindrome.

Initialize:

P[i,i] = 0 for i=0 to n
P[0,i] = i

Recurrence Formula:

P[i,j] = Min {
  P[i+1,j-1] + 1, if S[i] = S[j]
  P[i,j-1] + 1
  P[i+1,j] +1
}

Runtime: O(n^2)