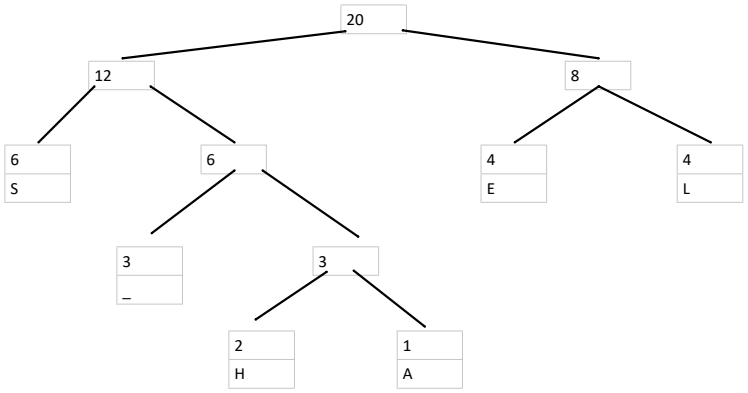
Test

06 April 2021 10:01 AM

1. Huffman:
   S - 6 - 00
   E - 4 - 10
   L - 4 - 11
   _ - 3 - 010
   H - 2 - 0110
   A - 1 - 0111

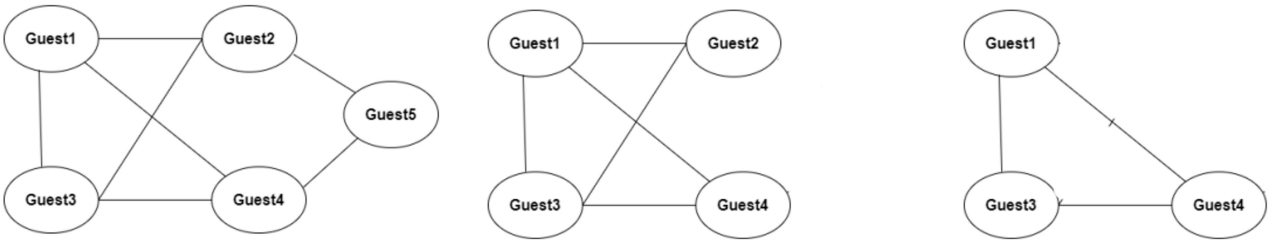


2. It does depend on the frequency of occurrence of characters, because that's how you build the Huffman tree, from the frequencies, thus changing the code length.

3. The ascii code for A then 256, 257, 258…. (depending on number of A's) the a custom dictionary entry for the number of A's at the end and an ascii code for A at the end

s	c	out	dictionary
A	A	A	256 - AA
A	A		
AA	A	AA	257 - AAA
A	A		
AA	A		
AAA	A	AAA	258 - AAAA
…	….	….	….

4. *a successful party is impossible." (1p)*



- Guest 5 is removed: edges < k (2 < 3)
- Leaves guest 2 and 4 with 2 edges
- Guest 2 is removed: edges < k (2 < 3)
- Only 3 people left => party impossible

5. True or False
   A. In the celebrity problem, the most trivial case is to have two persons in the group
   B. In the design of algorithms by induction, the inductive step is always based on a reduction from problem size n to problems of size n-1

   A. False - the most trivial case is to have only one person, being the celebrity
   B. False-ish - not necessarily n-1, just reduce a problem of size n to a problem of size < n