Quiz 5 - Algorithms

Date: 11.6.2020

Due Date: 13.6.2020

Questions:

1. Suppose that you have a character set involving 6 characters such as a,b,c x,y,z and you transmit messages via Huffman encoding. Given that the frequencies of the characters is given below. Assuming that each character takes 2 bytes, what will the number of bits you save during this transmission? Show the way you calculate it in your solution. (34p)

character	count
a	7
b	11
c	14
x	18
y	20
z	42

2. Given that you have a string value of “rmmnnnnttttt”. According to this information
   a) Compute the number of bits you require to transmit a message via Huffman encoding
   b) Draw the Huffman tree according to your encoding
   c) Calculate the number of average bits per character

   Note that the character of “ will not be included since it is not the part of string. (33 points in total)

3. Given that your character inputs could be either m or n. According to this definition, specify a regular expression such that mn would be substring and draw it’s finite state automata NFA. (33p)