Task 1.

"Home is where the heart is"

' '	5
'e'	5
'h'	4
'i'	2
's'	2
'r'	2
't'	2
'o'	1
'm'	1
'w'	1
'a'	1

Row 1:

(' ') (e) (h) (i) (s) (r) (t) (o) (m) (w) (d)
  5   5   4   2   2   2   2   1   1   1   1

Row 2:

(' ') (e) (h)   (4)   (4)   (2)   (2)
  5   5   4   / \   / \   / \   / \
                         (i)(s) (r)(t) (o)(m) (w)(a)

Row 3:

(' ') (e) (h)   (8)   (4)
  5   5   4   /   \   /   \
                             (4)   (4)   (2)   (2)
                            / \   / \   / \   / \
                         (i)(s) (r)(t)   (o)(m) (w)(a)

Row 4:

    (10)   (8)   (8)
   /   \   /   \   /   \
(' ') (e)   (4)   (4)   (h)   (4)
                   / \   / \   /   \
                (i)(s) (r)(t)   (2)   (2)
                                                    / \   / \
                                                 (o)(m)(w)(a)

Row 5:

                              (16)
                          /   \
    (10)   (8)   (8)
   /   \   /   \   /   \
(' ') (e)   (4)   (4)   (h)   (4)
                 / \   / \   /   \
              (i)(s)(r)(t)   (2)   (2)
                                       / \   / \
                                    (o)(m)(w)(a)
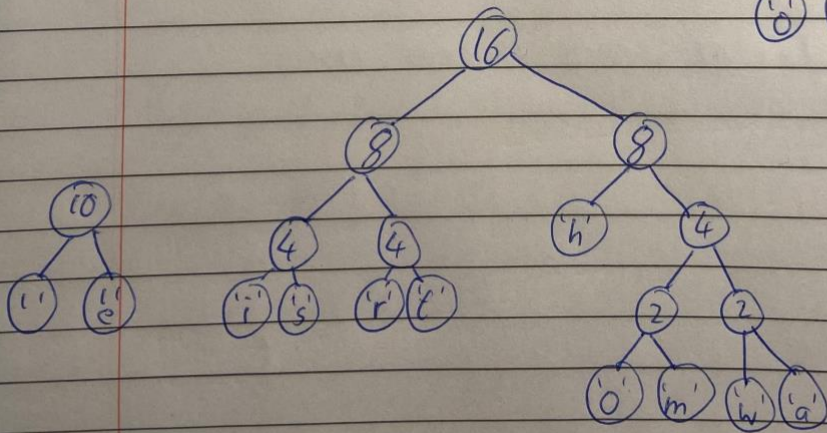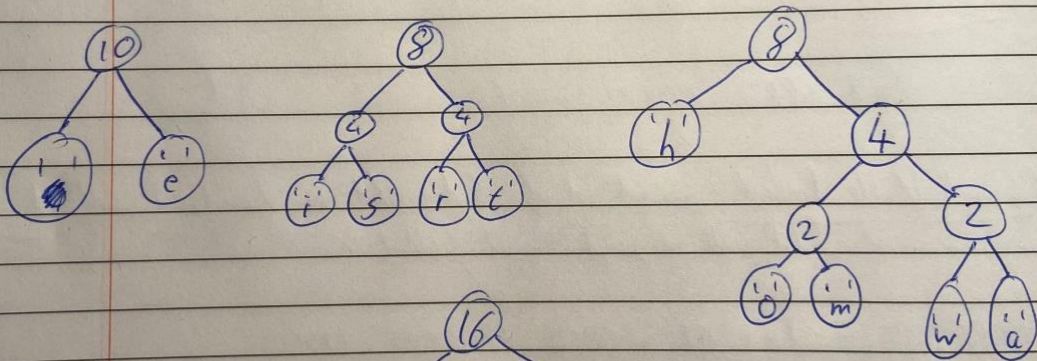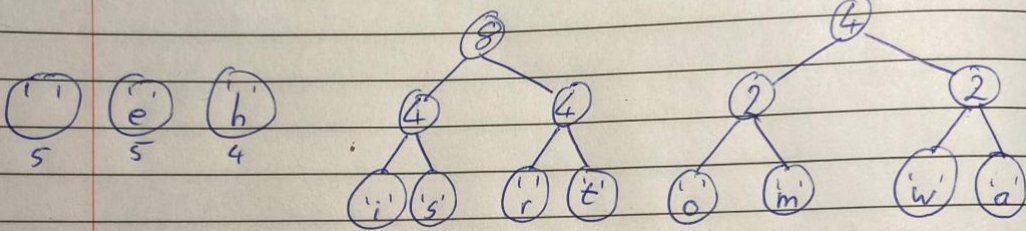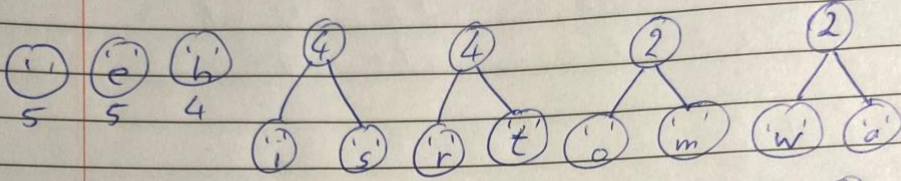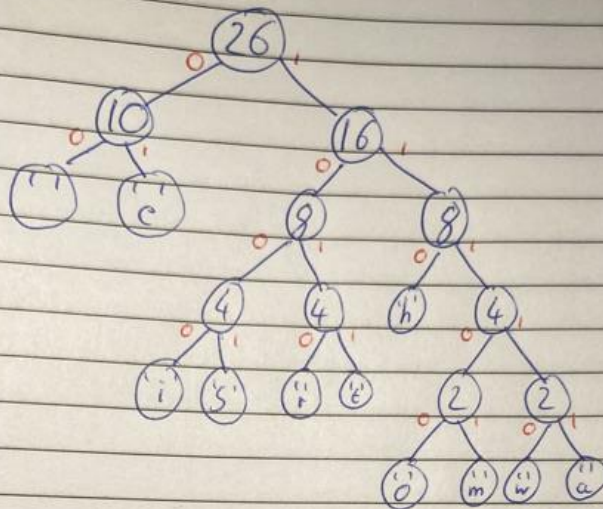
char	binary
' '	00
'e'	01
'h'	110
'i'	1000
's'	1001
'r'	1010
't'	1011
'o'	11100
'm'	11101
'w'	11110
'a'	11111

110 11100 11101 01 00 1000 1001 00 11110 110 01 1010 01 00 1011 1100 00
'h' 'o' 'm' 'e' ' ' 'i' 's' ' ' 'w' 'h' 'e' 'r' 'e' ' ' 't' 'h' 'e' ' '

110 01 11111 1010 1011 00 1000 1001
'h' 'e' 'a' 'r' 't' ' ' 'i' 's'   => 84 bits