Q1) For each T1 internal node, add a new external node to T2 with the value of the T1 internal node. Swap the value of this new node with its parent (making it an internal node). Reheap up (compare and swap new node with its parent until new node is root or new node's parent value is greater than new node's value).

Q2)

Chaining

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
23		2	16		17-34-51	94		44		11	88-20	12		13	39	

17(in list[5]) and 88(in list[11]) represent the heads linked lists

Linear probing, decreasing

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
23	51	2	16	34	17	94		44	20	11	88	12		13	39	

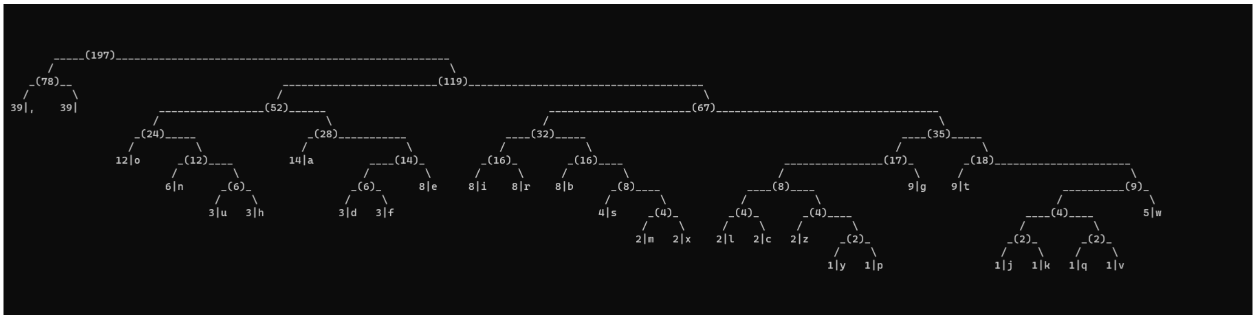
Double hashing

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
23		24	51		17	94	34	44		11	88	12	20	13	39	

Q3)

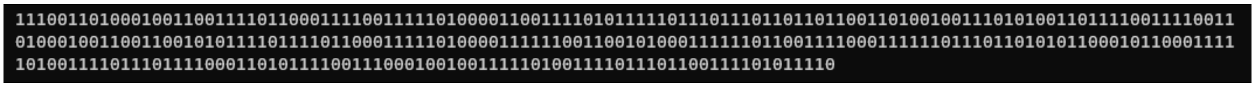
YOU, ME, WE, SHE, HE, SOW, COW, DOG, PIG, RIG, GOLD, SEA, RUG, HAT, CAT, ROW, MOB, LOG, BOX, TAB, BAR, EAR, TAR, JAR, DIG, FAN, BIG, TEA, NOW, FOX, BOG, BAT, BIT, KIT, SIT, ZEN, RAN, FAN, QUIZ, VAN

The huffman tree:



```
       _____(197)_______________________________________________________
      /                                                                 \
   _(78)__                                  _________________________(119)________________________________________
  /       \                                /                                                                     \
39|,    39|             _________________(52)______                                     _______________________(67)_____________________________________
                       /                            \                                  /                                                               \
                    _(24)_____                  _(28)__________                  ____(32)_____                                                   ____(35)_____
                   /          \                /                 \              /             \                                                 /             \
                 12|o      _(12)____         14|a         ____(14)_          _(16)_        _(16)____                          ________________(17)_        _(18)_______________________
                          /         \                    /          \       /      \      /         \                        /                      \     /                            \
                         6|n      _(6)_                 _(6)_     8|e      8|i    8|r    8|b      _(8)____              ____(8)____               9|g    9|t               __________(9)_
                                  /     \              /     \                                   /        \            /           \                                      /               \
                                3|u   3|h            3|d   3|f                                 4|s      _(4)_        _(4)_       _(4)____                            ____(4)____         5|w
                                                                                                       /     \      /     \     /        \                          /            \
                                                                                                      2|m   2|x    2|l   2|c   2|z     _(2)_                      _(2)_       _(2)_
                                                                                                                                      /     \                    /     \     /     \
                                                                                                                                     1|y   1|p                  1|j   1|k   1|q   1|v
```

Sentence using dictionary:



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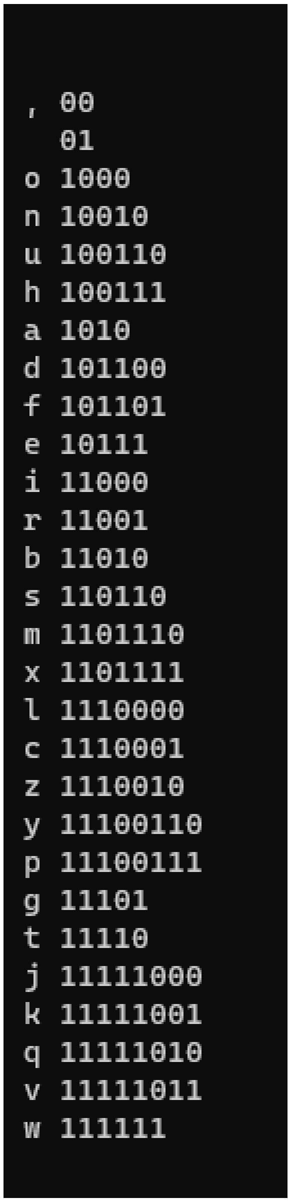
11100110100010011001111011000111100111110100001100111101011111011101110110110110011010010011101010011011110011110011
01000100110011001010111101111011000111110100001111110011001010001111110110011110001111110111011010101100010110001111
1010011110111011110001101011110011100010010011111101001111011101100111110101111 0
```

Huffman dictionary:



```
, 00
  01
o 1000
n 10010
u 100110
h 100111
a 1010
d 101100
f 101101
e 10111
i 11000
r 11001
b 11010
s 110110
m 1101110
x 1101111
l 1110000
c 1110001
z 1110010
y 11100110
p 11100111
g 11101
t 11110
j 11111000
k 11111001
q 11111010
v 11111011
w 111111
```