Huffman

input : YABBADABBADABBADOO

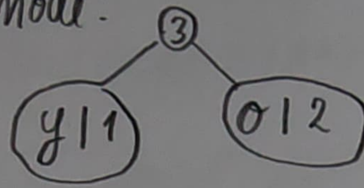
Step 1)

a) Freq. Table :

Y : 1	y : 1
A : 6	o : 2
B : 6	d : 3
D : 3	a : 6
O : 2	b : 6

b) 2 min freq nodes

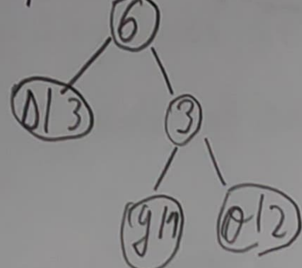
node :



2) a) Freq table

D : 3
node : 3
A : 6
B : 6

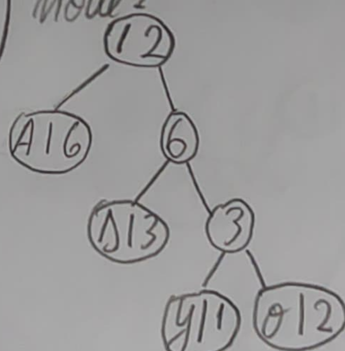
b) node1 :



3) a) Freq table

A : 6
node1 : 6
B : 6

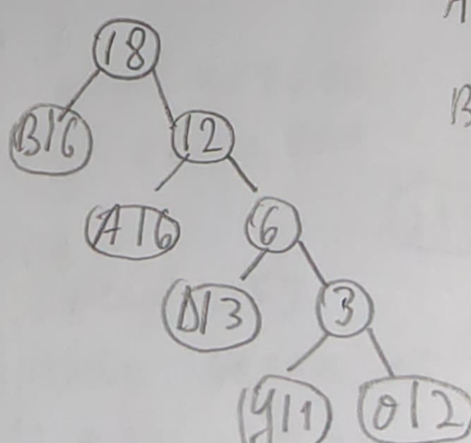
b) node2



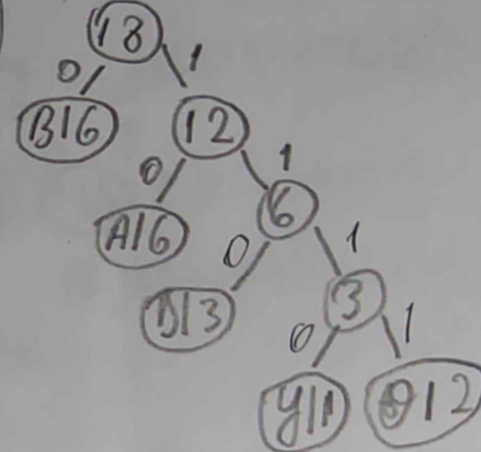
4) a) Freq table

B : 6
node2 : 12

b) node 3



5)



6) Y : 1110
O : 1111
D : 110
A : 10
B : 0

=> 1110, 10. 0, 0, 10. 110. 10. 0.0. 10. 110. 10. 0.0. 10. 110, 1111, 1111

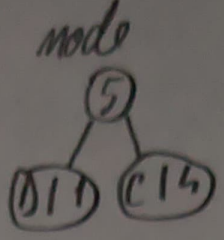
Huffman

input : A B A B A B A B C A B C A B C D A C

1. FI.

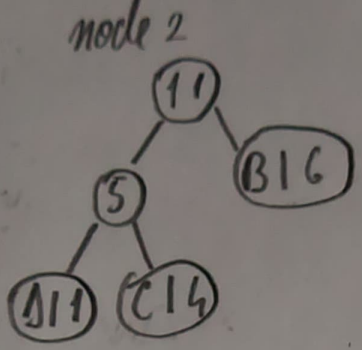
A : 7
B : 6
C : 4
D : 1

D : 1
C : 4
B : 6
A : 7



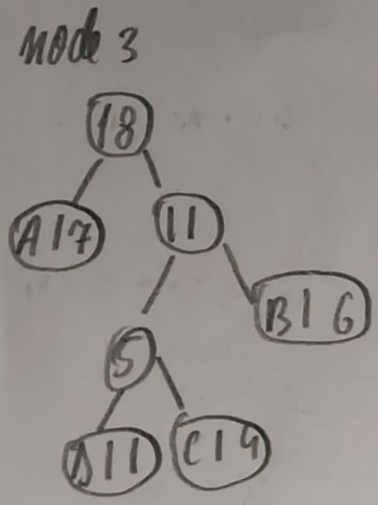
2. FI.

node : 5
B : 6
A : 7

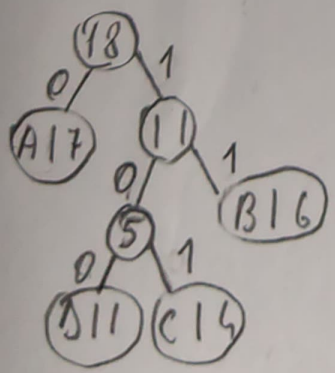


3. F.I.

A : 7
node 2 : 11



4.



5. D : 100
C : 101
B : 11
A : 0

=> 0.11.0.11.0.11.0.11.101.0.11.101.0.11.101.100.0.101

3. LZW

input: YABBA DABBA DABBA DOO

// I'll write Y as y but consider it uppercase

Table

A: 65
B: 66
D: 68
O: 79
Y: 89

YA: 256
AB: 257
BB: 258
BA: 259
AD: 260
DA: 261
ABB: 262
BAD: 263
DAB: 264
BBA: 265
ADO: 266

1. • y ✓
   • yA X → print 89
2. ~~Y~~ABBA DABBA DABBA DOO
   • A ✓
   • AB X → print 65
3. ~~YA~~BBA DABBA DABBA DOO
   • B ✓
   • BB X → print 66
4. ~~YAB~~BA DABBA DABBA DOO
   • B ✓
   • BA X → print 66
5. ~~YABBA~~ DABBA DABBA DOO
   • A ✓
   • AD X → print 65
6. ~~YABBA~~ DABBA DABBA DOO
   • D ✓
   • DA X → print 68
7. ~~YABBA~~ ~~X~~ABBA DABBA DOO
   • A ✓
   • AB ✓
   • ABB X → print 257 (AB)
8. ~~YABBA~~ ~~DABB~~A DABBA DOO
   • B ✓
   • BA ✓
   • BAD X → print 259
9. ~~YABBA~~ ~~DABBA~~ DABBA DOO
   • D ✓
   • DA ✓
   • DABX → print 261
10. ~~YABBA DABBA~~ ~~DABBA~~ DOO
    • B ✓
    • BB ✓
    • BBA X → print 258
11. ~~YABBA DABBA DABBA~~ DOO
    • A ✓
    • AD ✓
    • ADO X → print 260
12. ~~YABBA DABBA DABBA~~ ~~D~~OO
    O ✓
    OO X → print 79
13. ~~YABBA DABBA DABBA DOO~~
    O ✓ → print 79

Output codes

89 65 66 66 65 68
257 259 261
258 260 79 79

LZW

input: YAS*YAGYAS*YASYASYASG

Table

*-42
A-65
G-71
S-83
Y-89

YA-256
AS-257
S*-258
*Y-259
YAG-260
GY-261
YAS-262
S*Y-263
YASY-264
YASYA-265
ASGX-266

1. Y ✓
   YA X → print 89
2. ~~YAS~~*YAGYAS*YASYASYASG
   A ✓
   AS X → print 65
3. ~~YAS~~*YAGYAS*YASYASYASG
   S ✓
   S* X → print 83
4. ~~YAS~~*YAGYAS*YASYASYASG
   * ✓
   *Y X → ~~print~~ 42
5. ~~YAS*~~YAGYAS*YASYASYASG
   Y ✓
   YA ✓
   YAG X → print 256
6. ~~YAS*YAG~~YAS*YASYASYASG
   G ✓
   GY X → print 71
7. ~~YAS*YAG~~YAS*YASYASYASG
   Y ✓
   YA ✓
   YAS X → print 256
8. ~~YAS*YAGYAS~~*YASYASYASG
   S ✓
   S* ✓
   S*Y X → print 258
9. ~~YAS*YAGYAS*~~YASYASYASG
   Y ✓
   YA ✓
   YAS ✓
   YASY X → print 262
10. ~~YAS*YAGYAS*YAS~~YASYASG
    Y ✓
    YA ✓
    YAS ✓
    YASY ✓
    YASYA X → print 264
11. ~~YAS*YAGYAS*YASYASYASG~~
    A ✓
    AS ✓
    ASG X → print 257
12. ~~YAS*YAGYAS*YASYASYASG~~
    G ✓ → print 71

Output

89 65 83 42 256 71
256 258 262 264 257 71