

Question 2 (2 marks) Huffman Codes 16.3

Build a Huffman code for the probability distribution $0.17, 0.23, 0.32, 0.09, 0.15, 0.04$.

Solution: Suppose we have six events A ~ F with probabilities listed in order, from the highest to the lowest as show below

(i) A B C D E F
0.32 0.23 0.17 0.15 0.09 0.04

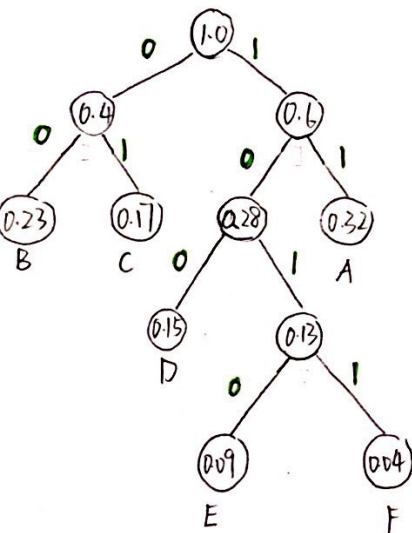
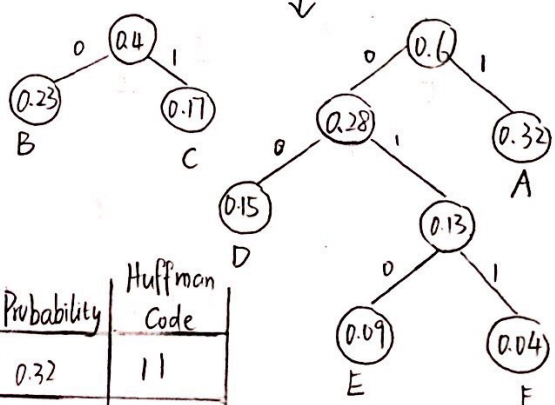
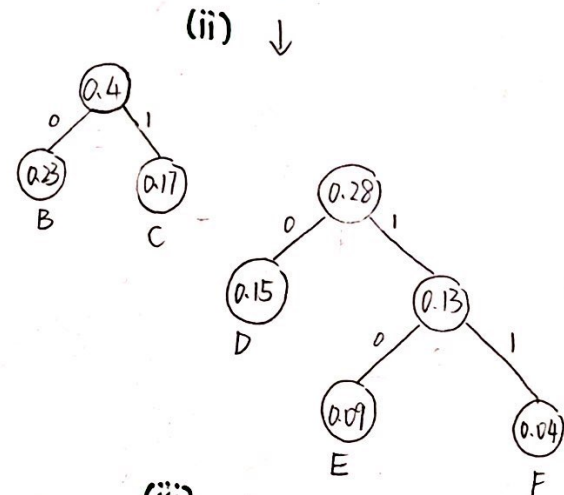
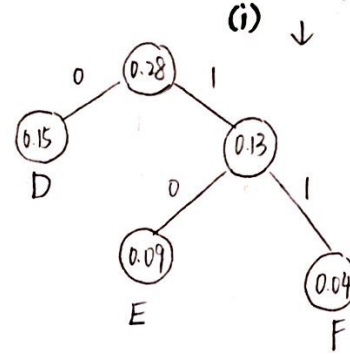
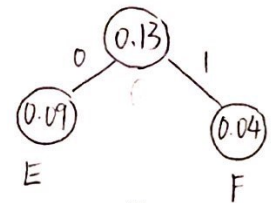
(ii) A B C D
0.32 0.23 0.17 0.15 0.13

(iii) A B C
0.32 0.23 0.17 0.28

(iv) A
0.32 0.4 0.28
↓ sorted

A
0.4 0.32 0.28

(v) sorted
0.4 0.6 0.6 0.4



Event	Probability	Huffman Code
A	0.32	11
B	0.23	00
C	0.17	01
D	0.15	100
E	0.09	1010
F	0.04	11011

We read off from diagram (v) and here is the Huffman code for the given probability distribution. ⇒