Range of symbol:
lower limit : lower limit +d(prob. of symbol)

JPEG COMPRESSION

Arithmetic Coding:

WENT.

$$e = 0.3, \quad n = 0.3, \quad t = 0.2, \quad w = 0.1 . = 0.1$$

Step 1: Divide the numeric range 0 to 1 into no. of diff. symbol present in the message.
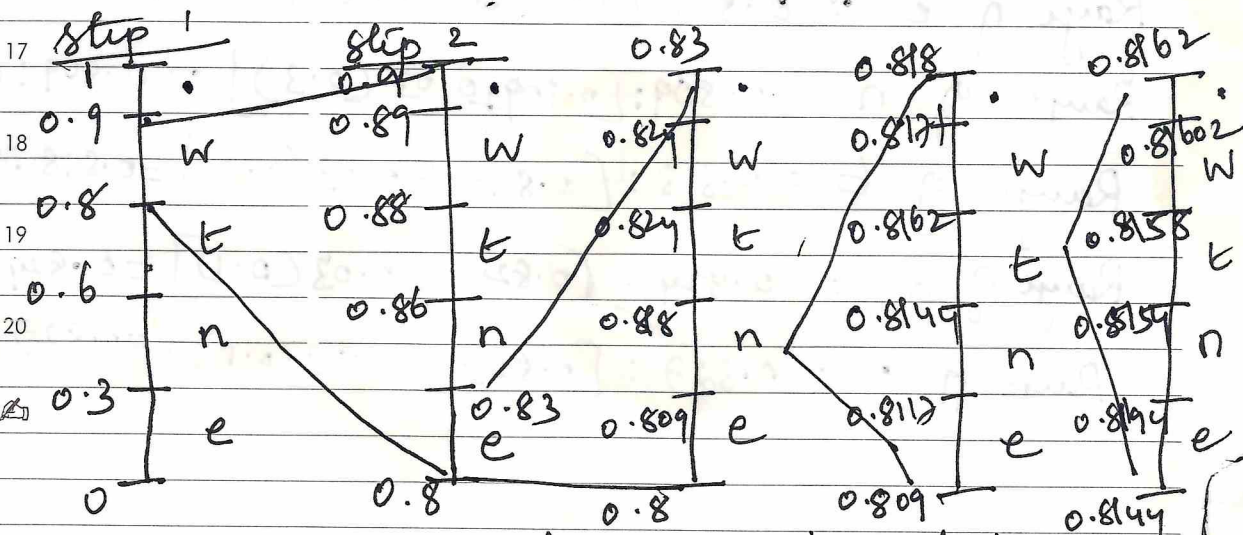
Step 2: Expand the first letter to be coded along with the range. Further sub divide this range into no. of symbols.

Step 3: Repeat the procedure until termination character is encoded.

d = upper bound − lower bounded

Range of symbol = lower limit : lower limit +d .

Range of e $= 0.8 : [0.8 + 0.1(0.3)]$

$= 0.8 : 0.83 .$

Range of n $= 0.83 : [0.83 + 0.1(0.3)]$

$= 0.83 : 0.86 .$

Range of t $= 0.86 : [0.86 + 0.1(0.2)]$

$= 0.86 : 0.88$

Range of w $= 0.88 : [0.88 + 0.1(0.88)]$

$= 0.88 : 0.89 .$

$d =$ upper bound - lower bound

$= 0.83 - 0.8 = 0.03 .$

Range of symbol:

Range of e $= 0.8 : [0.8 + 0.03(0.3)] = 0.8 : 0.809$

Range of n $= 0.809 : [0.809 + 0.03(0.3)] = 0.809 : 0.818$

Range of t $= 0.818 : [0.818 + 0.03(0.2)] = 0.818 : 0.824$

Range of w $= 0.824 : [0.824 + 0.03(0.1)] = 0.824 : 0.827$

Range of • $= 0.827 : [0.827 + 0.03(0.1)] = 0.827 : 0.83$

08 **Arithmetic Code word & Tag:**

09 Hence the arithmetic code word is

10 $0.81602 < \text{Codeword} < 0.8162$
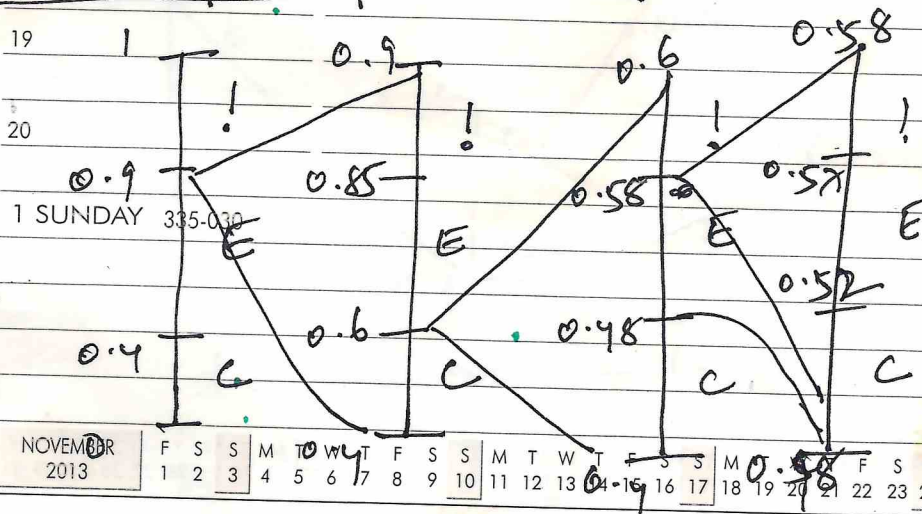
11 **Generation of Tag:**

12 Tag = (upperlimit of Code word + Lower limit of Code word)

$$= \frac{0.8162 + 0.81602}{2} = 0.81611$$

Arithmetic Decoding:

16 Decode the message 0.572 given the Coding model.

Symbol	!	C	E
Prob	0.1	0.4	0.5

α = upper bound - lower bound

$$= 0.9 - 0.4 = \underline{0.5}$$

08

Range of c = 0.4 : $[0.4 + 0.5(0.4)] = 0.6$.

09

$\qquad\qquad 0.4$: $[0.4 + 0.20] = 0.4 : 0.6$

10   Range of E = 0.6 : $[0.6 + 0.5(0.5)]$

$$= 0.6 : 0.85$$

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