1.

WRITABLE

no / yes

UPDATED (no side)

no / yes

class = executable

class = text

UPDATED (yes side)

no / yes

class = text

SIZE

Large / small

class = executable

class = text
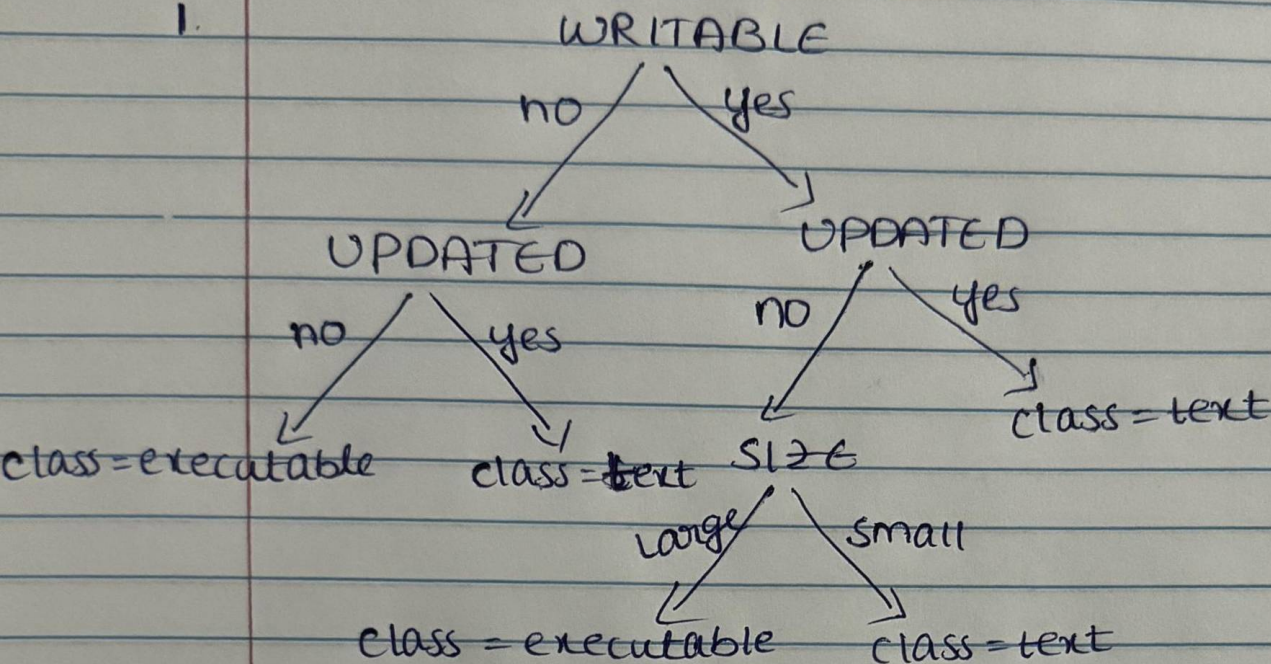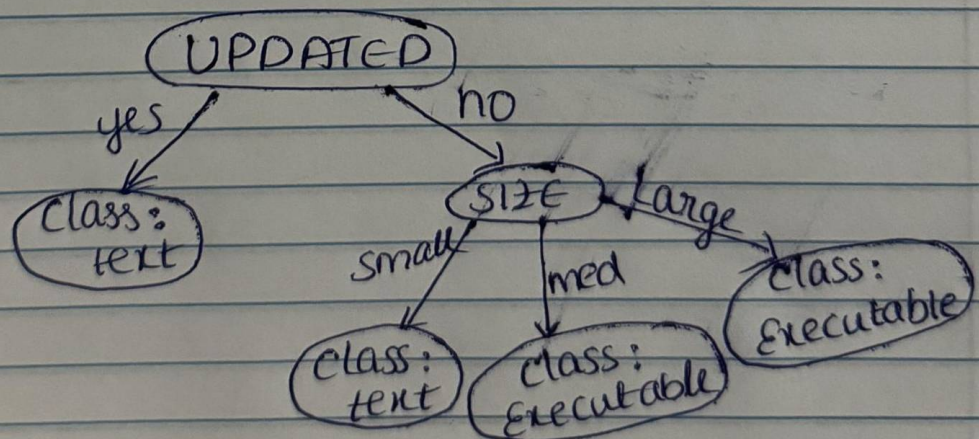
2. Entropy = $H(c) = 1$
Gain for writable = 0.0817
Gain for updated = 0.4591
Gain for Size = 0.2075
Choosing the root node ⟹ UPDATED has the highest information gain, it would be chosen as the root node in the ID3 decision tree.

UPDATED

yes / no

Class: text

SIZE — Large

small / med

class: text

class: executable

class: executable

3. Tree 'B' – Based on ID_3

Tree 'A' – Decision tree without ID_3

	WRITABLE	UPDATED	SIZE	CLASS = TREE 'A'	CLASS = TREE 'B'
1	yes	yes	large	TEXT	TEXT
2	NO	NO	Small	NOT APPLICABLE	TEXT