Algorithms Lab 2

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Problem 2

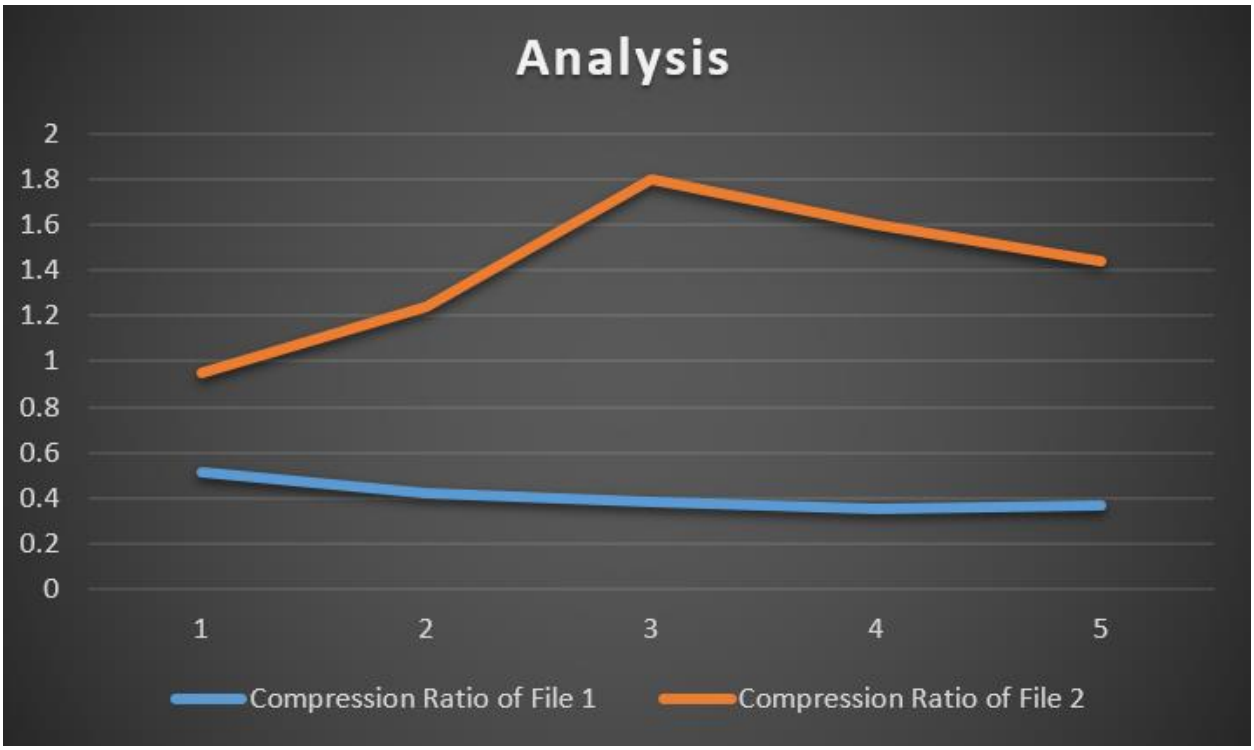
Huffman’s Algorithm

Analysis Requirements:

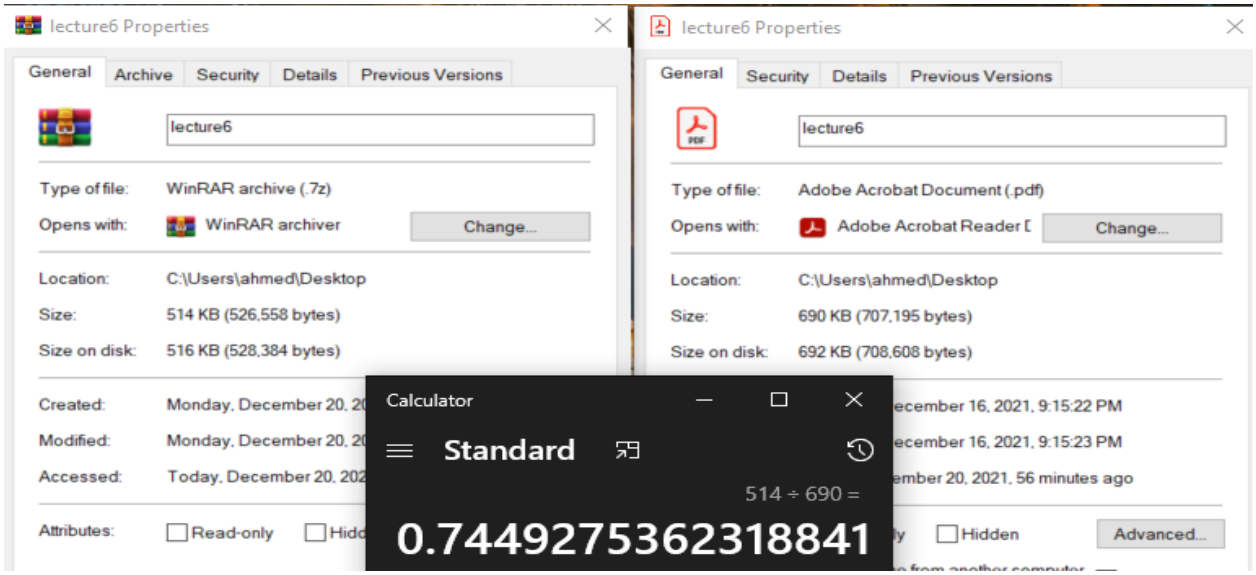
```
C:\Users\ahmed\Desktop>java -jar huffman_18010147.jar c C:\Users\ahmed\Desktop\lecture6.pdf 1
Compression is Done Successfully!
Compression Time (ms) = 742 ms
Compression Time (s)  = 0.74 s
Compression Time (m)  = 0.01 m
Compression Ratio = 0.95

C:\Users\ahmed\Desktop>java -jar huffman_18010147.jar c C:\Users\ahmed\Desktop\lecture6.pdf 2
Compression is Done Successfully!
Compression Time (ms) = 1134 ms
Compression Time (s)  = 1.13 s
Compression Time (m)  = 0.02 m
Compression Ratio = 1.24

C:\Users\ahmed\Desktop>java -jar huffman_18010147.jar c C:\Users\ahmed\Desktop\lecture6.pdf 3
Compression is Done Successfully!
Compression Time (ms) = 1190 ms
Compression Time (s)  = 1.19 s
Compression Time (m)  = 0.02 m
Compression Ratio = 1.88

C:\Users\ahmed\Desktop>java -jar huffman_18010147.jar c C:\Users\ahmed\Desktop\lecture6.pdf 4
Compression is Done Successfully!
Compression Time (ms) = 949 ms
Compression Time (s)  = 0.95 s
Compression Time (m)  = 0.02 m
Compression Ratio = 1.60

C:\Users\ahmed\Desktop>java -jar huffman_18010147.jar c C:\Users\ahmed\Desktop\lecture6.pdf 5
Compression is Done Successfully!
Compression Time (ms) = 767 ms
Compression Time (s)  = 0.77 s
Compression Time (m)  = 0.01 m
Compression Ratio = 1.44
```

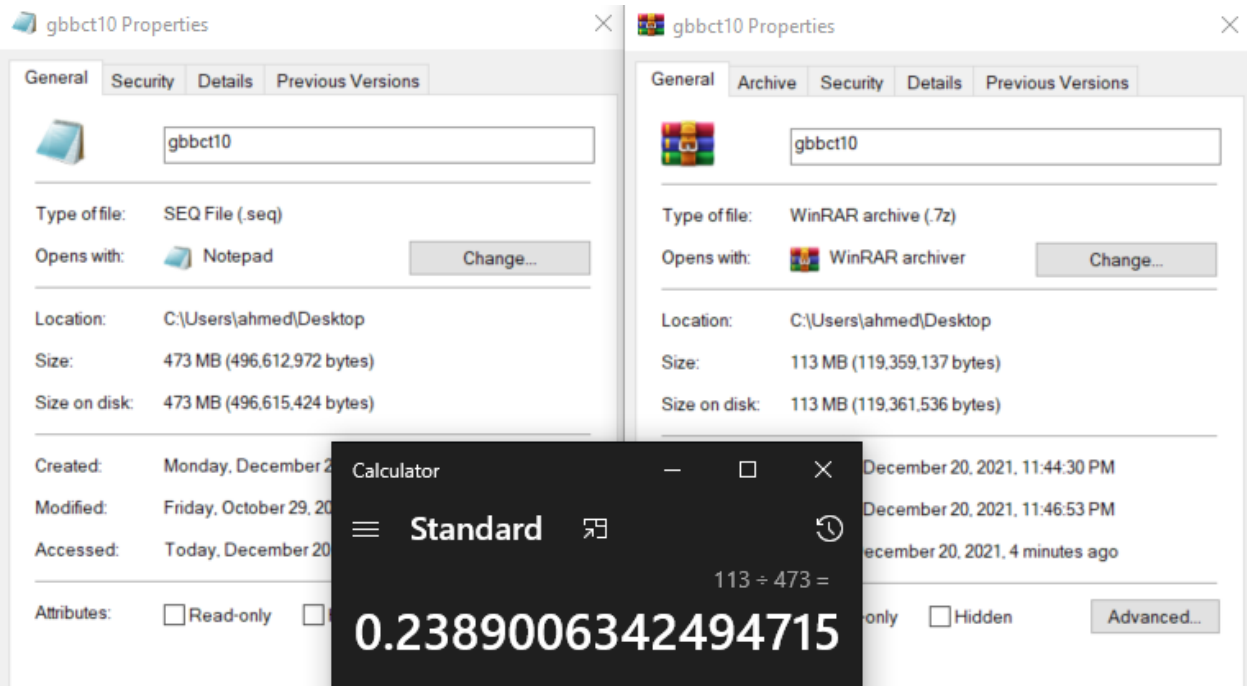
```
C:\Users\ahmed\Desktop>java -jar huffman_18010147.jar c C:\Users\ahmed\Desktop\gbbct10.seq 1
Compression is Done Successfully!
Compression Time (ms) = 315058 ms
Compression Time (s)  = 315.06 s
Compression Time (m)  = 5.25 m
Compression Ratio = 0.51

C:\Users\ahmed\Desktop>java -jar huffman_18010147.jar c C:\Users\ahmed\Desktop\gbbct10.seq 2
Compression is Done Successfully!
Compression Time (ms) = 312254 ms
Compression Time (s)  = 312.25 s
Compression Time (m)  = 5.20 m
Compression Ratio = 0.42

C:\Users\ahmed\Desktop>java -jar huffman_18010147.jar c C:\Users\ahmed\Desktop\gbbct10.seq 3
Compression is Done Successfully!
Compression Time (ms) = 364117 ms
Compression Time (s)  = 364.12 s
Compression Time (m)  = 6.07 m
Compression Ratio = 0.38

C:\Users\ahmed\Desktop>java -jar huffman_18010147.jar c C:\Users\ahmed\Desktop\gbbct10.seq 4
Compression is Done Successfully!
Compression Time (ms) = 279902 ms
Compression Time (s)  = 279.90 s
Compression Time (m)  = 4.67 m
Compression Ratio = 0.35

C:\Users\ahmed\Desktop>java -jar huffman_18010147.jar c C:\Users\ahmed\Desktop\gbbct10.seq 5
Compression is Done Successfully!
Compression Time (ms) = 375118 ms
Compression Time (s)  = 375.12 s
Compression Time (m)  = 6.25 m
Compression Ratio = 0.37
```

n	1	2	3	4	5
Compression Ratio of File 1	0.51	0.42	0.38	0.35	0.37
Compression Ratio of File 2	0.95	1.24	1.8	1.6	1.44



Compression with 7zip:





It's observed that there is no big difference between our algorithm and the algorithm used by 7zip program.

It's also observed that the more the file size get bigger, its compression ratio becomes larger.