

## 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

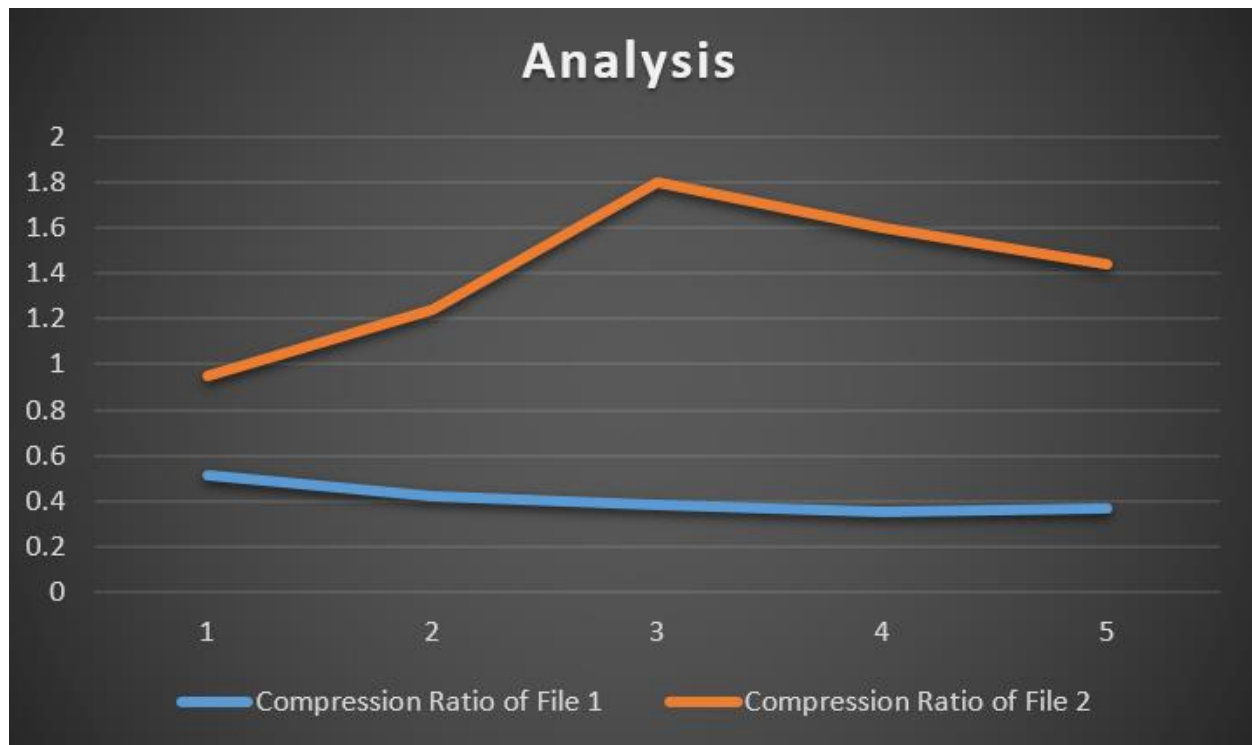
C:\Users\ahmed\Desktop>java -jar huffman_18010147.jar c C:\Users\ahmed\Desktop\gbbct10.seq 2
Compression is Done Successfully!
Compression Time (ms) = 312254 ms
Compression Time (s) = 312.25 s
Compression Time (m) = 5.20 m
Compression Ratio = 0.42

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:

**lecture6 Properties**

General | Archive | Security | Details | Previous Versions

Type of file: WinRAR archive (.7z)

Opens with: WinRAR archiver

Location: C:\Users\ahmed\Desktop

Size: 514 KB (526,558 bytes)

Size on disk: 516 KB (528,384 bytes)

Created: Monday, December 20, 2021, 9:15:23 PM

Modified: Monday, December 20, 2021, 9:15:23 PM

Accessed: Today, December 20, 2021, 56 minutes ago

Attributes: ☐ Read-only ☐ Hidden

**lecture6 Properties**

General | Security | Details | Previous Versions

Type of file: Adobe Acrobat Document (.pdf)

Opens with: Adobe Acrobat Reader

Location: C:\Users\ahmed\Desktop

Size: 690 KB (707,195 bytes)

Size on disk: 692 KB (708,608 bytes)

Created: Monday, December 16, 2021, 9:15:22 PM

Modified: Monday, December 16, 2021, 9:15:23 PM

Accessed: Monday, December 20, 2021, 56 minutes ago

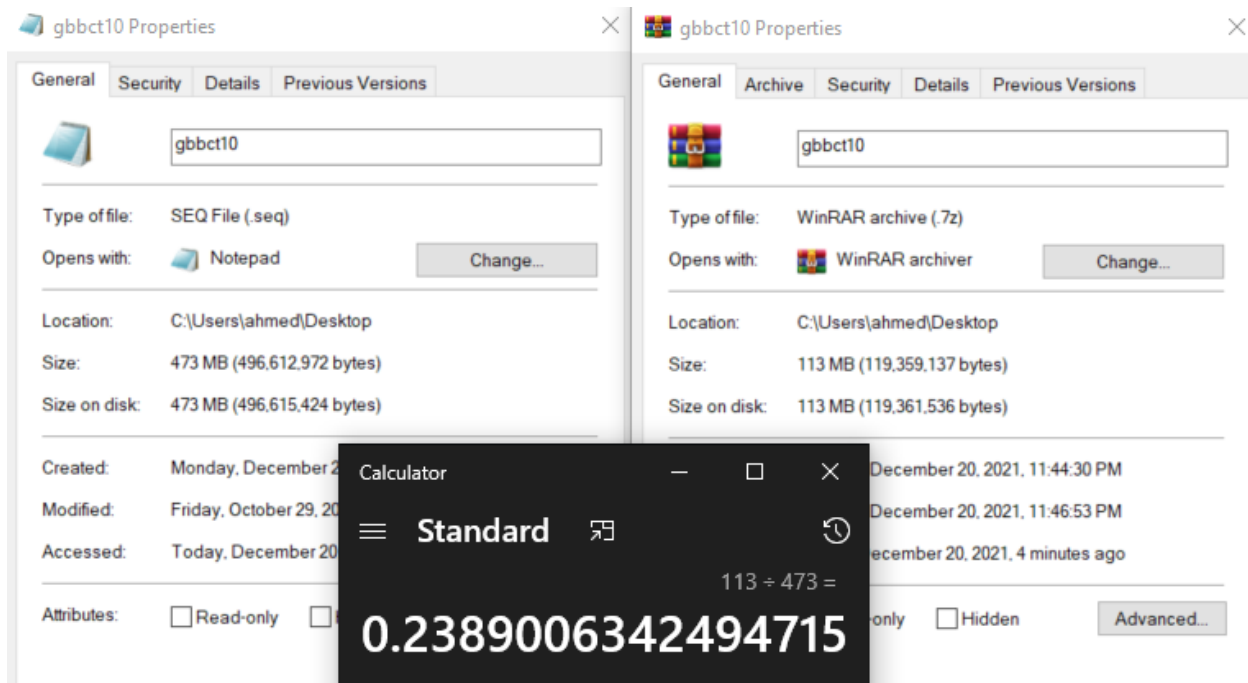
Attributes: ☐ Read-only ☐ Hidden

Calculator

Standard

514 ÷ 690 =

**0.7449275362318841**



**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.**