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**Huffman’s Code**

[Lecture6.pdf](https://drive.google.com/file/d/1VVI7_MbDRrCxel4MQVKclCOE1E3hcHtR/view?usp=sharing)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Normal File | Using 1 byte | Using 2 bytes | Using 3 Bytes | Using 4 Bytes | Using 5 Bytes | Using 7\_zip |
| Size of file (Bytes) | 707,195 | 673,155 | 941,145 | 1,499,591 | 1,267,061 | 1,123,183 | 526,558 |
| Ratio between Compressed and Normal File | 100% | 95% | 133% | 212% | 179% | 159% | 74% |

[gbbct10.seq](https://ftp.ncbi.nih.gov/genbank/gbbct10.seq.gz)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Normal File | Using 1 byte | Using 2 bytes | Using 3 Bytes | Using 4 Bytes | Using 5 Bytes | Using 7\_zip |
| Size of file (Bytes) | 496,612,960 | 251,609,618 | 208,396,627 | 186,768,664 | 175,374,962 | 189,988,303 | 119,360,813 |
| Ratio between Compressed and Normal File | 100% | 50% | 41% | 37% | 35% | 38% | 24% |

**Comment:**

* The frequencies of bytes in the first file are almost the same so the compressing ratio is very high and even when we increased number of bytes the size of compresses file increased.
* In the second file we can use Huffman code because there are some bytes that repeated a lot in the file and it is obvious that the bytes repeated in group of four so the best compressing ratio was in using 4 bytes and when we increase the number of bytes the size started to increase again.