23.11.2019

BLM1011 Introduction to Computer Science
Assignment - II

Due 01/12/2019 – 23:59

Instructor: Assist. Prof. M. Amaç GÜVENSAN

Question: Design an algorithm which compresses a given matrix with N rows and M columns using the Run Length Encoding compression method and then decompresses the obtained array again into a new matrix. Your algorithm should also find the compression ratio. You should draw the flowchart and write its program in C.

Run Length Encoding :

Run-length encoding (RLE) is a very simple form of data compression in which a stream of data is given as the input (i.e. "AAABBCCCC") and the output is a sequence of counts of consecutive data values in a row (i.e. "3A2B4C"). This type of data compression is lossless, meaning that when decompressed, all of the original data will be recovered when decoded. Its simplicity in both the encoding (compression) and decoding (decompression) is one of the most attractive features of the algorithm.

EXAMPLE:

Compression Output

1	1	1	0
0	1	1	2
2	2	2	2
2	1	3	3
0	0	3	3

3	1	3	0	2	1	8	2	1	1	3	3	2	0	2	3	1	1

A new matrix after Decompression

1	1	1	0	0

Compression Ratio : 1 - 18/25 = 0.28