**Course Name: O Level (2ⁿᵈ Sem)**             **Subject: ICT**
**Topic: Utilities**                                       **Date: 07-04-20**

## Chapter 2 [Utilities] begins now.

**Compression:** Compression refers to the act of reducing weight of data by using some algorithm. In the fields like- data processing, networking and communication, database storage etc, compression is one of the most preferred task.

As an example of usage of compression, WhatsApp compresses the message before sending it so that it doesn't make much burden on the underlying physical network.

In popular culture, compression is performed in the following two ways:

1. Lossless compression
2. Lossy compression.

**Lossless compression:** As the name interprets itself, this compression technique doesn't loss any part of the data to reduce its weight. No any permanent loss is made to the data. This is important for the reverse process as when we extract the original data from the compressed form, we get the exact original data.
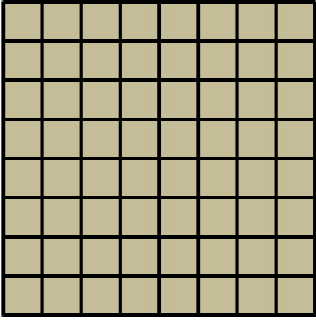
This compression technique is used extensively for text compression especially because a little loss to the text data can change the whole meaning of the text. Lossless compression uses some mathematical encoding techniques to compress the text data without affecting the meaning of it hence called lossless.

Since lossless compression is a mathematical process hence we are not discussing it here. Moreover Huffman Encoding is one of the popular algorithms.
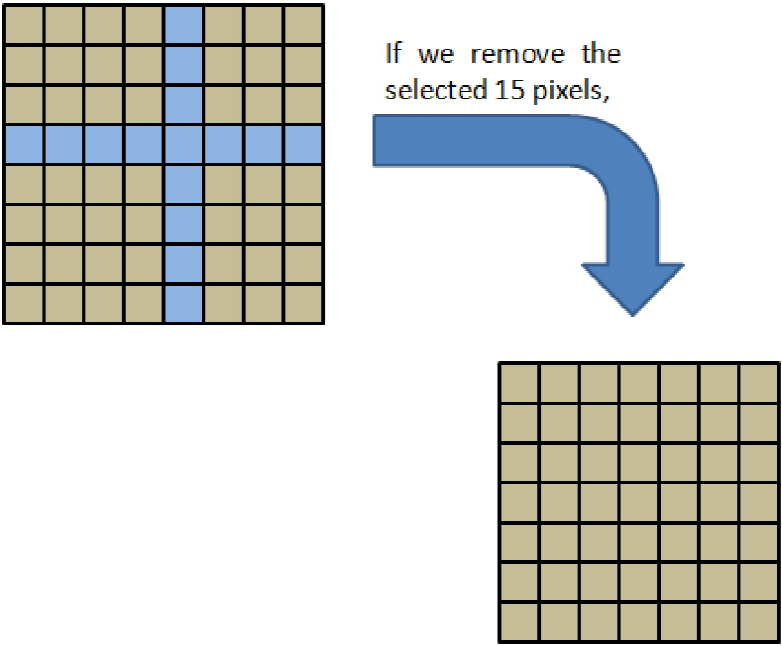
**Lossy compression:** This compression technique is based on the hypothesis of making some loss to the data for reducing its weight. In this technique, permanent losses are made to the data in order to compress it. However, the reverse process is not that effective as in lossless compression. When we try to extract the original data from the compressed form, we don't get the exact original data.

This compression technique is used widely for multimedia compression. Graphics and audio are the most targeted data types that need lossy compression.

## Demo of lossy compression:



In this image total pixels are, (8 X 8) = 64 pixels

If every pixel is of 1 byte,
Total weight of the image will be, (64 X 1) = 64 bytes



If we remove the selected 15 pixels,

Total pixels are, (7 X 7) = 49 pixels
Total weight of the image will be, (49 X 1) = 49 bytes

## Assignments:

1. What is compression? What are its usage domains?
2. Difference between lossless and lossy compression techniques.