­**HUFFMAN CODING**

**Member 1: Syed Abdul Rehman (K21-3156)**  
**Member 2: -------------------------------------------  
Member 3: -------------------------------------------**

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**Goal:**

This project will help in compressing bit stings and minimizing the data’s total code length by assigning codes of variable lengths to each of its data chunks based on its frequencies in the data and will also play an important role in compressing the audio and images files as well, which will be used by digital communication and image processing.

**Description:**

Huffman coding will use the concepts studied in Data Structure’s course. It will provide an efficient, unambiguous code by analyzing the frequencies that certain symbol appears in a text format. It will look at data stream which will make file to be compressed. In digital communication, it will design good variable-length codes given the probabilities of the symbols. It will provide code that’s uniquely decodable and prefix free.

**Actors/System User(s):**

1. In conventional compression formats like GZIP, BZIP2, PKZIP, etc.
2. Text and Fax Transmissions.

**List of Features:**

1. Checks frequency of each character.
2. Generates the code for each character.
3. Data encoded then decoded.

**Tools & Techniques:**

The language used will be C++ and for IDE Dev C++ will primarily be used. Binary tree will be extensively used, the symbols will be the leaves labels. Priority queue will be used to build the Huffman tree and heap data structure to implement it.

**Schedule:**

Will be submitting one week before the final exam of the fall 2022 semester.

* Accept

**Course Teacher:** Muhammad Ali Fatmi **Signature:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_