Lab - 7
Huffman Encoding

COE18B045

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Program Description

The server has to be running before the client is run. The client asks for the filename to be fetched from the server and sends the filename to the server. The server then checks whether the given file exists. If it doesn't exist, it sends a message to the client and terminates. The client also terminates on seeing the message. If the file is found, the server creates a new file in which huffman encoded data is stored. The naming convention is samefilename.huff (for example, if the file to be sent is sample.txt, server creates a file in the name sample.huff). Now this encoded file is sent back to the client. The client receives this file and stores it into sample_recieved.huff. Now, huffman encoding and transfer of the encoded message has been completed. Now the client decodes the encoded file and puts it into sample_recieved.txt.

Now we can see from the empty output of the diff command that both the files **a.txt and a_recieved.txt are the same**.

We can also see that for the **fixed length** huffman encoding, the **original file size was 301 Kb** and t**he huffman encoded file size is 189 Kb.** The file size has decreased in the process of compression.

And for the **variable length** huffman encoding, the **original file size was 301 Kb** and t**he huffman encoded file size is 157 Kb.** The file size has decreased in the process of compression.

Output screenshots

Fixed length

```
santi@edith:~/CN/huffman/fixed_length$ ls
a.txt  client.py  huffman.py  server.py
santi@edith:~/CN/huffman/fixed_length$ python3 server.py
santi@edith:~/CN/huffman/fixed_length$ ls
a.huff            a_recieved.txt  client.py    __pycache__
a_recieved.huff   a.txt           huffman.py   server.py
santi@edith:~/CN/huffman/fixed_length$ diff a.txt a_recieved.txt
santi@edith:~/CN/huffman/fixed_length$ ls -lh a.txt a.huff
-rw-rw-r-- 1 santi santi 189K Oct  4 02:21 a.huff
-rw-rw-r-- 1 santi santi 301K Oct  4 02:19 a.txt
santi@edith:~/CN/huffman/fixed_length$ 
```

```
santi@edith:~/CN/huffman/fixed_length$ python3 client.py
enter file name: a.txt
santi@edith:~/CN/huffman/fixed_length$ 
```

Variable length

```
santi@edith:~/CN/huffman/variable_length$ ls
a.txt  client.py  huffman.py  server.py
santi@edith:~/CN/huffman/variable_length$ python3 server.py
santi@edith:~/CN/huffman/variable_length$ ls
a.huff           a_recieved.txt  client.py    __pycache__
a_recieved.huff  a.txt           huffman.py  server.py
santi@edith:~/CN/huffman/variable_length$ diff a.txt a_recieved.txt
santi@edith:~/CN/huffman/variable_length$ ls -lh a.txt a.huff
-rw-rw-r-- 1 santi santi 157K Oct  4 05:51 a.huff
-rw-rw-r-- 1 santi santi 301K Oct  4 05:50 a.txt
santi@edith:~/CN/huffman/variable_length$ █
```

```
santi@edith:~/CN/huffman/variable_length$ python3 client.py
enter file name: a.txt
santi@edith:~/CN/huffman/variable_length$ ⃞
```