**LAB 14**

1. Linux compression commands:

Here is the compression commands demoed in the class. Please find a linux terminal to practice the commands using different files.

Following links are recommended: <https://explainshell.com/> and https://tldr.sh/

7za a tensorflow-master

tar -zcf tensor.tar.gz tensorflow-master

tar -jcf tensor.tar.bz2 tensorflow-master

tar -Zcf tensor.tar.Z tensorflow-master

7za x tensorflow-master.7z

tar -Zxf tensor.tar.Z

tar -jxf tensor.tar.bz2

tar -zxf tensor.tar.gz

1. One method of reducing bandwidth use is to compress the data being transmitted. Let A = {a/20, b/15, c/5, d/15, e/45} be the alphabet and its frequency distribution. Compute the optimal coding for each character. What is the average number of bits/symbol of the codes?

a = 000 Total number of bits = 210

b = 001 Average = 210/5 = 42

c = 010

d = 011

e = 1

1. Please describe the information exchanges and the actions taken for both server and client according to the diagram for delta compression.

Chart

Description automatically generated with medium confidence

1. **Server sends base state for object.**
2. **Server sends changes since base state with ID 1**
3. **Client acknowledges state changes with ID 1**
4. **Client decompresses received state using base state**
5. **Server sends changes since base state with ID 2**
6. **Client acknowledges state changes with ID 2**
7. **Client decompresses received state using state 1**
8. **Server receives ack of state with ID 1**
9. **Server sends changes since state 1 with ID 3**
10. **Client acknowledges state changes with ID 3**
11. **Acknowledgement is lost**
12. **Server sends changes since state 2 with ID 4**
13. **Packet is lost**
14. **Server sends changes since state 2 with ID 5**
15. **Client acknowledges state changes with ID 5**
16. **Client decompresses received state using state 2**
17. **Server receives ack of state with ID 5**
18. **Server sends changes since state 3(ID5) with ID 6**
19. One method of reducing bandwidth use is to compress the data being transmitted. Use the LZW algorithm to compress the string: BABAABAAA. Note that Uppercase A has ASCII value 65 in decimal. Draw diagrams to aid your explanation if appropriate.

Input Phrase: BABAABAAA

Basic ASCII: A = 65 B = 66

|  |  |  |
| --- | --- | --- |
| 256 | BA | 66 |
| 257 | AB | 65 |
| 258 | BAA | 256 |
| 259 | ABA | 257 |
| 260 | AA | 65 |
|  |  | 260 |