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?

Answer:

a = 000 Total num 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

Answer:

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.

Answer:

Input Phrase: BABAABAAA

Basic ASCII: A = 65 B = 66

Dictionary:

Code String Output

256 BA 66

257 AB 65

258 BAA 256

259 ABA 257

260 AA 65

260