1. Dynamic Programming (DP)

- A problem-solving method that breaks complex problems into simpler subproblems

2. Greedy Algorithm

- An algorithm that makes locally optimal choice at each step

3. Key Differences

Aspect	**Dynamic Programming**	**Greedy Algorithm**
Approach	Bottom-up or Top-down	Top-down only
Solution	Always optimal	May not be optimal
Speed	Slower	Faster
Memory	More memory (table)	Less memory
Complexity	Higher	Lower

4. Maximum Subarray Sum Problem

GA:

2,7,6 = 15

DP:

(2+5) memoisation + 13 = 20

5. Huffman Coding Analysis

=== Compression Analysis for: 'zbbu buu zzbbeeebezb' ===

Text length: 20 characters

Unique characters: 5

Original size: 160 bits

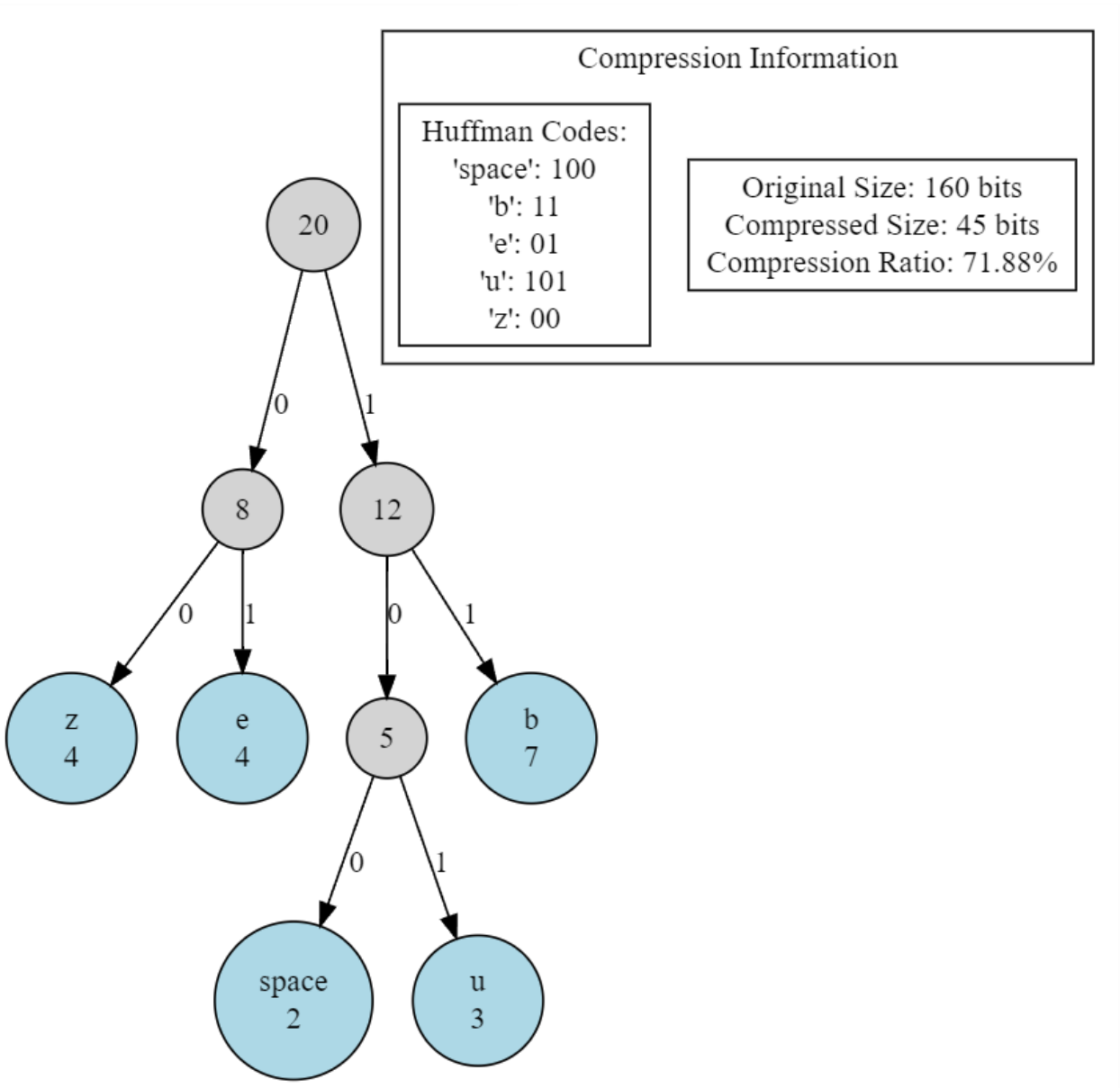
Compressed size: 45 bits

Compression ratio: 71.88%

Compression ratio: 0.28125

Character Analysis:

Char	Occurrences	Huffman Code	Bits
b	7	11	14
z	4	00	8
e	4	01	8
u	3	101	9
space	2	100	6


Compression Information
Huffman Codes:
'space': 100
'b': 11
'e': 01
'u': 101
'z': 00
Original Size: 160 bits
Compressed Size: 45 bits
Compression Ratio: 71.88%
20
0
1
8
12
0
1
0
1
z
4
e
4
5
b
7
0
1
space
2
u
3