**Instructions**

1. Compress the following docid, frequency list [(92, 9), (102, 8), (112, 7), (150, 12), (2000, 128), (5284, 127)] using the following compression schemes:
2. VarInt
3. Simple-9
4. Bit-aligned

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[(92, 9), (102, 8), (112, 7), (150, 12), (2000, 128), (5284, 127)]

**d-gabs:**

[(92, 9), (10, 8), (10, 7), (38, 12), (1872, 128), (3284, 127)]

92 9 10 8 10 7 38 12 1872 128 3284 127  
  
**a. VarInt:**

11011100 10001001 10001010 10001000 10001010 10000111 10100110 10001100 00001110 11010000 00000001 10000000 00011001 11010100 11111111

**b. Simple-9:**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 92 | 9 | 10 | 8 | 10 | 7 | 38 | 12 | 1872 | 128 | 3284 | 127 |
| 7 | 4 | 4 | 4 | 4 | 3 | 6 | 4 | 11 | 8 | 12 | 7 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4 | 7 | 7 | 7 | 7 |
| 0101 | 1011100 | 0001001 | 0001010 | 0001000 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 4 | 7 | 7 | 7 | 7 |
| 0101 | 0001010 | 0000111 | 0100110 | 0001100 |

|  |  |  |
| --- | --- | --- |
| 4 | 14 | 14 |
| 0111 | 00011101010000 | 00000010000000 |

|  |  |  |
| --- | --- | --- |
| 4 | 14 | 14 |
| 0111 | 00110011010100 | 00000001111111 |

**c. Bit-aligned**

92:  92-64 = 28

1111110011100

9: 9-8=1

1110001

10: 10-8=2

1110010

8: 8-8=0

1110000

10: 10-8=2

1110010

7: 7-4=2

11010

38: 38-32=6

11111000110

12: 12-8=4

1110100

1872: 1872-1024=848

111111111101101010000

128: 128-128=0

111111100000000

3284: 3284-2048=1236

11111111111010011010100

127: 127-64=63

1111110111111

1111110011100 1110001 1110010 1110000 1110010 11010 11111000110 1110100 111111111101101010000 111111100000000 11111111111010011010100 1111110111111

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