COMP2322 Computer Networking Homework Four

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Question 1 The associated range of destination host addresses and the number of addresses in the range is as follows:

prefix	range of addresses	number of addresses
00	00000000 - 00111111	64
010	01000000 - 01011111	32
011	01100000 - 01111111	32
10	10000000 - 10111111	64
11	11000000 - 11111111	64

Therefore, for each of the four interfaces, we have the following:

interface	range of addresses	number of addresses
0	00000000 - 00111111	64
1	01000000 - 01011111	32
2	01100000 - 10111111	96
3	11000000 - 11111111	64

Question 2 Since there are 40 bytes of header in each datagram, the number of data bytes in each packet is $1000 - 40 = 960$ bytes. Therefore, the number of datagrams required is $\left\lceil \frac{5 \times 10^6}{960} \right\rceil = 5029$.

Question 3 For each iteration, the distance from the nodes to the node a is shown below:

iteration	node b	node c	node d	node e	node f	node g	node h
1	1	2	∞	∞	∞	∞	∞
2	1	2	7	6	9	∞	∞
3	1	2	7	6	9	10	11
4	1	2	7	6	9	10	11

Shortest path from node a to all network nodes: b: ab, c: ac, d: acd, e: ace, f: abf, g: abfg, h: abfh.