Mustafa Yigit Isik
113080465

ISE 316 HW4

(1)

135.46.56.0 /22 — interface 0
" " 60.0/22 — interface 1
192.53.40.0/23 — router 1
default — router 2

a) 135.46.63.10 → 1000 0111 0010 1110 0011 1111 0000 1010

22 → 10 zeroes → "00...0"

135.46.60.0 — interface 1

b) 135.46.57.14 ⇒ 1000 0111 0010 1110 0011 1001 0000 1110

22 → 10 zeroes ⇒ "0...0"

135.46.56.0 — interface 0

c) 135.46.52.2 ⇒ 1000 0111 0010 1110 0011 0100 0000 0010

10 zeroes ⇒ 135.46.52.0 — default — Router 2

d) 192.53.40.7 ⇒ 1100 0000 0011 0101 0010 1000 0000 0111

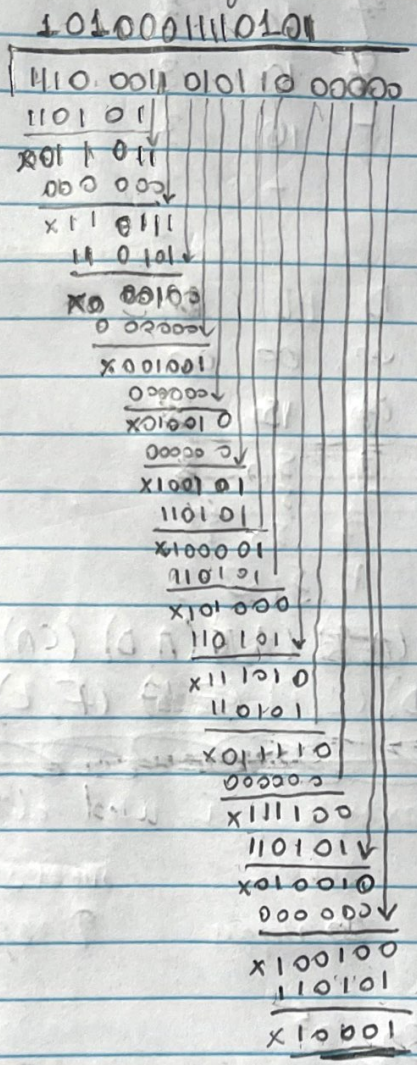
10 zeroes ⇒ 192.53.40.0 — Router 1

e) 192.53.56.7 ⇒ 1100 0000 0011 0101 0011 1000 0000 0111

192.53.56.0 — default — router 2

(2) $G(x) = x^5 + x^4 + x^2 + 1 \rightarrow 110101$

received message: 1110 0011 010110 ⇒ add 5 zeros padding



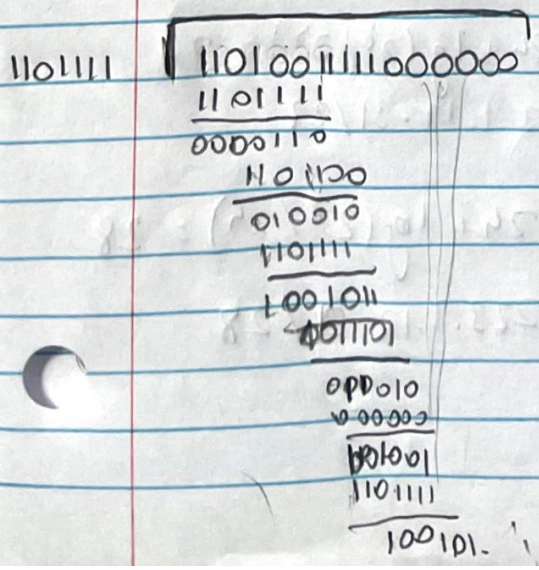
Since remainder is 10001 error detected, correction should be

111000110101 10001

(3) $C'(x) = 1101001111$

$m(x) = 11000101110$

$0001011 0001 \;/\; G(x) = 110\,1111$



Remainder is 10101

not correct even though it should have been

Dijkstra

B-A-C-D-E-F OR
B-F-E-D-C-A

④

A	B	C	D	E	F
3	-	8	∞	10	3
-		5	7	10	3
		-	7	10	3
			-	10	3
				-	3
					-

Bellman-Ford

initial	A ∞	B 0	C ∞	D ∞	E ∞	F ∞
1	3	0	5	7	15	3
2	3	0	5	7	5	3
3	3	0	5	7	5	7
4	3	0	5	7	5	3
5	3	0	5	7	5	3

(B,A) (B,C) (B,E) (B,F) ~~(A,B)~~ (A,C) (A,D) (C,A) ~~(C,B)~~ (C,D)
(D,A) (D,C) (D,E) ~~(D,B)~~ (E,D) (E,F) ~~(E,B)~~ (F,E)

⑤ 223.1.17.0/24 for example, I used class notes.

3 subnets subnet 1 subnet 2 subnet 3
50 interfaces 20 interfaces 9 interfaces

Sort based on interface #

subnet 1 50 → 64 2^6 prefix is $24 + \lg(2^8/2^6) = 26$
223.1.17.0/26 ... 223.1.17.63/26

subnet 2 20 → 32 2^5 pref is $24 + \lg(2^8/2^5) = 27$
223.1.17.0/27 ... 223.1.17.31/27

subnet 3 9 → 16 2^4 prefix is $24 + \lg(2^8/2^4) = 28$
223.1.17.0/28 ... 223.1.17.31/28

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A: congestion (triple ACK)

B: goes back down to slow start

C: hit threshold goes into congestion avoidance

D: packet loss, goes back to half

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1500-byte datagram → {W, 4}

Subnet A 600 bytes MTU
Subnet B 400 bytes MTU
} ID: 144

min(A, B) ⇒ 300 bytes → $\frac{1500}{300}$ = 5 fragments

1st fragment: IP header and 280 bytes
2nd, 3rd, 4th: " " 280 bytes
5th fragment: " " and 380 bytes.

ID: 144 MF Flag: set to 1 for all except last

Fragment offset Field: set to offset of first byte in the fragment relative to first in original, divided by 8

Total length field: set to length of fragment (including IP)

Protocol - Src IP - Dest IP: same as original

0, 185, 370, ... 1110