

ID: A20447935

Network Layer

Name: Alan Palajil

Assignment #4

- i) Consider IP address X: 193.101.50.14/26

11000001.01100101.00110010.00101100 - X in Binary

11111111.11111111.11111111.11000000 - CIDR Subnet

11000001.01100101.00110010.00000000 - what they should Match

a) 193.101.50.10

11000001.01100101.00110010.00001010

11111111.11111111.11111111.11000000

11000001.01100101.00110010.00000000 - Match

193.100.50.11

11000001.01100100.00110010.00001011

11111111.11111111.11111111.11000000

11000001.01100100.00110010.00000000 - Doesn't Match

193.101.50.65

11000001.01100101.00110010.01000001

11111111.11111111.11111111.11000000

11000001.01100101.00110010.01000000 - Doesn't Match

IP Address	On the same network as X
193.101.50.10	Yes
193.100.50.11	No
193.101.50.65	No

- b) 11111111.11111111.11111111.11000000

Using the formula:  $2^6 - 2 = 64$

∴ The max number of hosts on this subnet is 62.

- 2) It will be 3 packets as if we were to do our length  $5000/128 = 2500$  which is larger than our MTU of 2308. So we need to break it up into 3 different fragmentations. We choose 2304 as our 1<sup>st</sup> two lengths as they are the largest multiple of 8 below our MTU.

...	Length	ID	FragFlag	Offset	...
	2304	X	1	0	

2<sup>nd</sup>

...	Length 2304	ID x	Fragflag 1	Offset 288	...
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3<sup>rd</sup>

...	Length 392	ID x	Fragflag 0	Offset 576	...
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3)  $57.6.96.0 = 00111001.00000110.01100000.00000000$

$57.6.104.0 = 00111001.00000110.01101000.00000000$

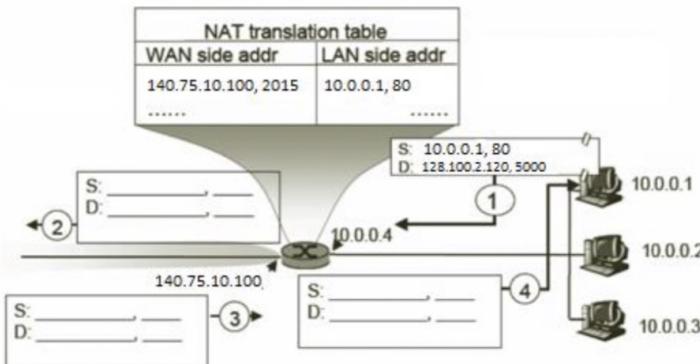
$57.6.112.0 = 00111001.00000110.01110000.00000000$

$57.6.120.0 = 00111001.00000110.01111000.00000000$

Aggregated to  $57.6.96.0/19 =$

$00111001.00000110.01100000.00000000$

4)



Packet 2: S: 140.75.10.100, 2015

D: 128.100.2.120, 5000

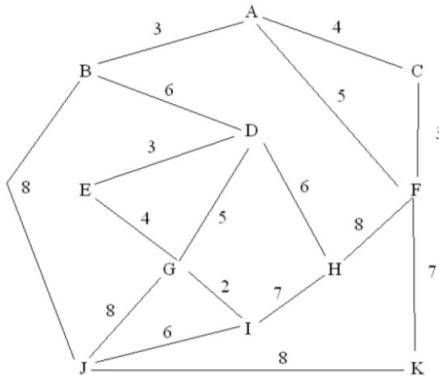
Packet 3: S: 128.100.2.120, 5000

D: 140.75.10.100, 2015

Packet 4: S: 128.100.2.120, 5000

D: 10.0.0.1, 80

5)



Shortest Path:

16 < I-G-D-B-A >

	A	B	C	D	E	F	G	H	I	J	K
A	(0, A)	(3, A)	(4, C)	(4, -)	(4, -)	(5, A)	(5, -)	(5, -)	(5, -)	(5, -)	(5, -)
AB		(3, A)	(4, C)	(4, -)	(4, -)	(5, A)	(5, -)	(5, -)	(5, -)	(5, B)	(5, -)
ABC			(4, C)	(4, B)	(4, -)	(5, A)	(5, -)	(5, -)	(5, -)	(5, B)	(5, -)
BCF				(4, B)	(4, -)	(5, A)	(5, -)	(5, -)	(5, -)	(5, B)	(5, F)
ABCDF					(5, B)	(5, A)	(5, -)	(5, -)	(5, -)	(5, B)	(5, F)
ABCFDJ						(6, D)	(6, -)	(6, -)	(6, -)	(6, B)	(6, F)
ABCFDJE							(6, D)	(6, -)	(6, -)	(6, B)	(6, F)
ABCFDJEK								(6, D)	(6, -)	(6, B)	(6, F)
ABCFDJEKH								(6, D)	(6, -)	(6, B)	(6, F)
ABCFDJEKG									(6, D)	(6, G)	
ABCFDJEKGJ										(6, G)	

Sink Tree :

