

Started on	Thursday, 10 December 2020, 12:57 PM
State	Finished
Completed on	Thursday, 10 December 2020, 1:53 PM
Time taken	56 mins 6 secs
Grade	24.15 out of 100.00

Question 1 Correct Mark 5.00 out of 5.00

Suppose the information content of a packet is the bit pattern 0001 0110 0111 0101 and an ODD parity scheme is being used. What would the value of the field containing the parity bits for the case of two-dimensional parity scheme?

Please fill in your answer in the following matrix!



Question 2 Incorrect Mark 0.00 out of 15.00

A data **D** that consists of bit-stream **1100010100** is sent out using **CRC** error detection with generator **G** = **1010**. Determine the value of **R** that is sent out together with the data **D**!

Answer: 100 ★

https://asecuritysite.com/comms/crc_div ambil remainder

The correct answer is: 110

Question 3 Incorrect Mark 0.00 out of 30.00 N = 4 (number of nodes) N-1 = 3

Suppose four nodes -- A, B, C, D -- are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot with probability *p*. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.

- What is the probability of node C succeeds for the first time in slot 3? (NOTE: do not use space and use dot (".") sign to express multiplication)

 p+2.p.p+p.p.p
- What is the probability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication)

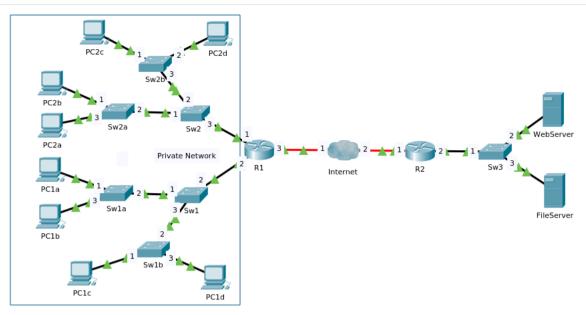
 -4.p.p.p.p+12.p.p.p-12.p.p+4.p
- Find value p^* that maximizes the efficiency? (HINT: use first derivative from the equation) 0.125 \times p = 1/N

The probability of node C succeeds for the first time in slot 3: probability of C fails in the first 2 slots and succeeds in the 3^{rd} slot. The probability of C succeed in a slot (p_c) : $p(1-p)^3$, thus the probability of C fails to transmit in a slot: $1-p_c = 1 - p(1-p)^3$. Now, the probability of C succeeds for the first time in slot $3 \cdot p_c (1-p_c)^2 = p(1-p)^3 (1-p(1-p)^3)^2$

The probability of the first success in slot 4: the probability of any node fails in the first 3 slots and succeeds in the 4^{th} slot. The probability of any node succeed in a slot (p_{any}) : $4p(1-p)^3$, thus the probability of any node fails to transmit in a slot: $1-p_{any}=1-4p(1-p)^3$. Now, the probability of any node succeeds for the first time in slot 4: $p_{any}(1-p_{any})^3=\frac{4p(1-p)^3(1-4p(1-p)^3)^3}{1-4p(1-p)^3(1-4p(1-p)^3)^3}$ N=4 (dikali N)

Efficiency of 4 nodes system: 4p(1-p)³

The first derivative: $4(1-p)^3 - 4p(3)(1-p)^2 = 4(1-p)^3(1-p-3p) -->$ to get optimum solution it should be equals to 0 --> 1 - 4p = 0 --> p = 1/4 = 0.25



Consider the network above. Please **NOTE** that the network inside blue rectangle is a **private network** (i.e. private IP addresses are used by its hosts) and **R1** is a **NAT enabled** router. Suppose that, initially the **ARP table** in all hosts and routers are **empty**, and all **Switch tables** are **empty** too. Then, the following transmissions happen in chronological order:

- 1. PC2c sends a ping command to PC2a
- 2. PC2b sends a ping command to PC1b
- 3. PC1c accesses a file from FileServer

After the last packet transmission, please fill in the ARP tables in each host and router, as well as the Switch tables, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '-'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an ARP or a Switch table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

	PC1a		PC1b		PC	1c	PC1	ld	PC:	2a	P	PC2b I		PC2c	l	PC2d	
IP	МА	C II	P 1	ЛАС	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	
-	-	R1	-2 R	1-2	R1-2	R1-2	-	-	Pc2c	Pc2c	R1-1	R1-1	Pc2a	Pc2a	-	-	
✓	√	×	×		X	X	√	√	×	×	×	×	×	×	✓	√	
Web	Server	FileS	erver		R1-1	R	1-2		R1-3			R		R2-1			R2-2
IP	MAC	IP	MAC	IP	MAC	IP	MAC		IP	М	AC	IP		MAC		IP	MAC
-	-	R2-2	R2-2	PC	2b PC2	2 b -	-	Files	erver	Filesen	ver	Fileserve	r	Fileserver	Fi	ileserver	Fileserver
✓	~	×	×	×	×	×	×	×		×		×	,	×	─	,	✓
								Int	ernet-1	Intern	net-1	Intern	net-2	Internet	-2		
						×	×						_				

Switch tables

R1-2

PC1b

PC1c

PC1b PC1b PC1c PC1c

S	Sw1	S	w1a	S	Sw1b		w2	S	w2a	Sı	w2b	Sw3	
MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port
PC2b	2	R1-2	- 2	R1-2	- 2	PC2c	- 2	PC2c	- 2	PC2c	1	R2-2×	- 1
×	√	×	×	×	×	×	X	×	×	✓	√	112-2	×
R1-2	2 1	PC1b	-3	PC1c	- 1	PC2a	- 1	PC2a	- 3	PC2a	3	Fileserver	3
×	×	×	×	×	×	×	X	×	×	✓	√	✓	✓
PC1b	3					PC2b	- 1	PC2b	1				
×	✓					×	×	×	×				
						R1-1	-3	-R1-1	2				
						×	×	×	×				

When PC1c accesses a file from FileServer, an FTP request message is sent from PC1c to FileServer, and an FTP response in the opposite direction.

Please complete the information about source and destination of IP Address and MAC Address, during this communication process at various locations:

Location Source MAC Destination MAC Source IP Destination IP	Location	Source MAC	Destination MAC	Source IP	Destination IP
--	----------	------------	-----------------	-----------	----------------

PC1c> R1	PC1c ✓	R1-2	PC1c ✓	Internet-1	FileServer
R1> Internet	R1-3	Internet-1	R1-3	Internet-1	FileServer
R2> FileServer	R2-2	Fileserver	R2-2 X R1-3	Fileserver	
FileServer> R2	Fileserver	R2-2	Fileserver	R2-2 X R1-3	
Internet> R1	Internet-1	R1-3	Internet-1	R1-3 ✓	FileServer
R1> PC1c	R1-2	PC1c ✓	Internet-1	PC1c ✓	FileServer

#MAC address harusnya sama kayak locationnya paling ditambahin lewat port mana biar lebih spesifik

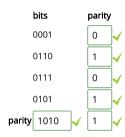


Started on	Thursday, 10 December 2020, 12:50 PM
State	Finished
Completed on	Thursday, 10 December 2020, 1:51 PM
Time taken	1 hour
Grade	21.49 out of 100.00

Question 1 Correct Mark 5.00 out of 5.00

Suppose the information content of a packet is the bit pattern 0001 0110 0111 0101 and an ODD parity scheme is being used. What would the value of the field containing the parity bits for the case of two-dimensional parity scheme?

Please fill in your answer in the following matrix!



Question 2 Incorrect Mark 0.00 out of 15.00

A data D that consists of bit-stream 1110010101 is sent out using CRC error detection with generator G = 1010. Determine the value of R that is sent out together with the data **D**!

Answer: 0110

The correct answer is: 000

Question 3 Incorrect Mark 0.00 out of 30.00

Suppose eigth nodes -- A, B, C, D, E, F, G, and H -- are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot with probability p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.

- What is the probability of node C succeeds for the first time in slot 6? (NOTE: do not use space and use dot (".") sign to express multiplication) p.(1-p)^5
- What is the probability of the first success in slot 7? (NOTE: do not use space and use dot (".") sign to express multiplication)
- Find value p^* that maximizes the efficiency? (HINT: use first derivative from the equation) 8.x.(x + 1)^7

The probability of node C succeeds for the first time in slot 6: probability of C fails in the first 5 slots and succeeds in the 6th slot. The probability of C succeed in a slot (p_c) : $p(1-p)^7$, thus the probability of C fails to transmit in a slot: $1-p_c = 1 - p(1-p)^7$. Now, the probability of C succeeds for the first time in slot 6: $p_c(1-p_c)^5 = p(1-p)^7(1-p(1-p)^{7})^5$

The probability of the first success in slot 7: the probability of any node fails in the first 6 slots and succeeds in the 7th slot. The probability of any node succeed in a slot (p_{anv}) : $8p(1-p)^7$, thus the probability of any node fails to transmit in a slot: $1-p_{anv} = 1-8p(1-p)^7$. Now, the probability of any node succeeds for the first time in slot 7: $p_{any}(1-p_{any})^6 = 8p(1-p)^7(1-8p(1-p)^7)^6$

Efficiency of 8 nodes system: 8p(1-p)

The first derivative: $8(1-p)^7 - 8p(7)(1-p)^6 = 8(1-p)^6 (1-p - 7p) --> to get optimum solution it should be equals to 0 --> 1-8p = 0 --> p = 1/8 = 0.125$

Consider the network above. Please **NOTE** that the network inside blue rectangle is a **private network** (i.e. private IP addresses are used by its hosts) and **R1** is a **NAT enabled** router. Suppose that, initially the **ARP table** in all hosts and routers are **empty**, and all **Switch tables** are **empty** too. Then, the following transmissions happen in chronological order:

- 1. PC2b sends a ping command to PC2d
- 2. PC2a sends a ping command to PC1b
- 3. PC1d accesses a web page from WebServer

After the last packet transmission, please fill in the ARP tables in each host and router, as well as the Switch tables, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '-'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an ARP or a Switch table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables R1-2 R1-2	R1-2 R1-2	R1-1 R1-1	-	-
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PC.	1a	İ	PC1b		PC	C1c		PC1d	PC	2a	Р	C2b		PC2c	PC	PC2d		
IP	MAC	IP	N	ЛАС	IP	MAC	i IP	МА	C IP	MAC	IP	MAC	IP	MAC	IP	MAC		
-	-	-	-		-	-	-	-	Pc2b	Pc2b	Pc2d	Pc2d	Pc2b	Pc2b	Pc2b	Pc2b		
✓	√ >	<	×		/	√	×	×	×	×	×	X	×	×	√	√		
Web:	Server	FileS	erver	1	R1-1		R1	-2		R1-3			R2-	1		R2-2		
IP	MAC	IP	MAC	IP	N	ИАС	IP	MAC	IP	N	/AC	IP		MAC	IP	N	/AC	
				Pc2b		k	pc1b	pc1b										
×	×	×	×	×	×	,	×	×	×	×		×		×	×	×		
R2-2	R2-2	-	-	pc2a	a po	c2a	pc1d	pc1d ×	Internet-	1 Inte	rnet-1	Intern	et-2	Internet-2	2 Webs	server V	Vebserv	

Switch tables

S	w1 Sw1a		w1a	Sw1b		Sw2		s	w2a	S	w2b	Sw3	
MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port
Pc2a	2	Pc2a	2	Pc2a	2	Pc2b 🗸	1	Pc2b	1	Pc2b	3	Pc1d 🗙	3
×	√	×	√	×	×	PCZD	√	√	√	√	√	PCIU	×
Pc1b	1	Pc1b	3	Pc1d	3	Pc2d 🗸	2	Pc2d	2	Pc2d	2	Webserver	2
√	√	√	√	×	×	PCZU	√	√	√	√	✓	✓	√
Pc1d	3					Webserver	2	Pc1b	3				
√	\	1				×	×	×	√	1			
						Sebserver	2	-	-				
						×	×		√	1			

When PC1d accesses a web page from WebServer, an HTTP request message is sent from PC1d to WebServer, and an HTTP response in the opposite direction. Please complete the information about **source** and **destination** of **IP Address** and **MAC Address**, during this communication process at various locations:



Location	Source I	ИAC	Destinat	Destination MAC			Р	Destination IP		
PC1d> R1	pc1d	×		R1-2	×		Pc1d	×	Webse	erver
R1> Internet	R1-3 ×		Internet-1 ×		R1-3 ×		Webserver			
R2> WebServer	R2-2 X		Webserver		R1-3	×	Webse	erver×		
WebServer> R2	Webs	erve	×	R2-2	×		Webse	erver×	R1-3	×
Internet> R1	Internet-1		×	R1-3	×		Webserver		R1-3	×
R1> PC1d	R1-2 ×			pc1d ×			Webs	erbe <mark></mark> ≭	Pc1d	×



	Thursday, 10 December 2020, 1:00 PM Finished
	Thursday, 10 December 2020, 1:59 PM
· · · · · · · · · · · · · · · · · · ·	58 mins 26 secs
	66.70 out of 100.00
Grade	66.70 Out of 100.00
Question 1	Correct Mark 5.00 out of 5.00
Suppose the infor	mation content of a packet is the bit pattern 0001 0110 0111 0101 and an ODD parity scheme is being used. What would the value of the
field containing th	e parity bits for the case of two-dimensional parity scheme?
Please fill in your	answer in the following matrix!
bits	parity
0001	0 🗸
0110	1 ~
0111	0 ~
0101	1
parity 1010	
paney 1010 V	
Question 2	Correct Mark 15.00 out of 15.00
	nsists of bit-stream 1101111101 is sent out using CRC error detection with generator G = 1010. Determine the value of R that
is sent out toget	her with the data D !
Answer: 110	

Question 3 Partially correct Mark 10.00 out of 30.00

Suppose four nodes -- A, B, C, D -- are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot with probability *p*. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.

- What is the probability of node C succeeds for the first time in slot 3? (NOTE: do not use space and use dot (".") sign to express multiplication)

 p.(p-1)*2
- What is the probability of the first success in slot 4? (**NOTE:** do not use space and use dot (".") sign to express multiplication)

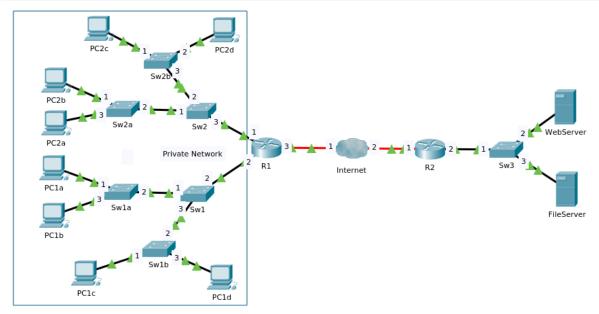
 p.(p-1)*3
- Find value *p**that maximizes the efficiency? (**HINT:** use first derivative from the equation) 0.25

The probability of node C succeeds for the first time in slot 3: probability of C fails in the first 2 slots and succeeds in the 3^{rd} slot. The probability of C succeed in a slot (p_C) : $p(1-p)^3$, thus the probability of C fails to transmit in a slot: $1-p_C = 1 - p(1-p)^3$. Now, the probability of C succeeds for the first time in slot 3: $p_C(1-p_C)^2 = p(1-p)^3(1-p(1-p)^3)^2$

The probability of the first success in slot 4: the probability of any node fails in the first 3 slots and succeeds in the 4^{th} slot. The probability of any node succeed in a slot (p_{any}) : $4p(1-p)^3$, thus the probability of any node fails to transmit in a slot: $1-p_{any} = 1-4p(1-p)^3$. Now, the probability of any node succeeds for the first time in slot 4: $p_{any}(1-p_{any})^3 = 4p(1-p)^3(1-4p(1-p)^3)^3$

Efficiency of 4 nodes system: 4p(1-p)³

The first derivative: $4(1-p)^3 - 4p(3)(1-p)^2 = 4(1-p)^3(1-p-3p)$ --> to get optimum solution it should be equals to 0 --> 1-4p = 0 --> **p = 1/4 = 0.25**



Consider the network above. Please **NOTE** that the network inside blue rectangle is a **private network** (i.e. private IP addresses are used by its hosts) and R1 is a **NAT enabled** router. Suppose that, initially the **ARP table** in all hosts and routers are **empty**, and all **Switch tables** are **empty** too. Then, the following transmissions happen in chronological order:

- 1. PC2c sends a ping command to PC2a
- 2. PC2b sends a ping command to PC1b
- 3. PC1c accesses a file from FileServer

After the last packet transmission, please fill in the ARP tables in each host and router, as well as the Switch tables, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '-'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an **ARP** or a **Switch** table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

F	C1a		PC1b		P	C1c	P	C1d	PC	2a	PC	2b	Р	PC2c		PC2d	
IP	МА	C IF	•	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC	
-	-	Sw1	a S	w1a	Sw1b	Sw1b	-	-	PC2c	PC2c	Sw2a	Sw2a	PC2a	PC2a	-	-	
✓	√	×	×		×	×	√	✓	✓	✓	×	×	√	~	√	√	
Webs	Server	FileS	erver		R1-1		R1-2		R1-3 R2-1			R2-2					
IP	MAC	IP	MAC	IF	M.A	.C IP	N	ИAC	IP		MAC		IP	MAC		IP	MAC
-	-	Sw3	Sw3	PC2	c PC2	c PC1b	PC	C1b	Internet-1	Inte	ernet-1	Intern	et-2	Internet-2	2	FileServer	FileServer
✓	√	×	×	×	×	√	√		1	√		√		√		/	√
						PC1c	PC	C1c									
						✓	√										

Switch tables

Sı	w1	Sı	w1a	Sı	w1b	Sı	w2	S	w2a	Sı	w2b	Sw3	
MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port
PC2b	2	PC2b	2	PC1c	1	PC2c	2	PC2c	2	PC2c	1	R2-2 🗸	1
×	✓	×	√	×	×	✓	√	√	✓	✓	√	NZ-Z	✓
PC1b	1	PC1b	3	R1	2	PC2a	1	PC2a	3	PC2a	3	FileServer	3
√	✓	✓	√	×	×	✓	√	√	✓	✓	√	✓	✓
PC1c	3					PC2b	1	PC2b	1				
✓	✓					✓	√	√	√				
						PC1b	3	PC1b	2				
						×	√	×	√				

When PC1c accesses a file from FileServer, an FTP request message is sent from PC1c to FileServer, and an FTP response in the opposite direction. Please complete the information about source and destination of IP Address and MAC Address, during this communication process at various locations:

Location	Source M	AC	Destinat	ion MAC		Source IP)		Destinat	ion IP	
PC1c> R1	PC1c	\	R1-1	 		PC1c	 		FileSer	ver] 🗸
R1> Internet	R1-3	\	Interne	et ;	×	R1-3	\		FileSer	ver	
R2> FileServer	R2-2	\	FileSer	ver	√	R2-2	 		FileSer	ver] 🗸
FileServer> R2	FileServ	ver 🗸	R2-2	√		FileServ	/er	√	R2-2	×	
Internet> R1	Interne	t 🗶	R1-3	~		Interne	t	×	R1-3	\	
R1> PC1c	R1-2	√	PC1c	√		R1-2	,	×	PC1c	√	



Home > My courses > [Reg] Jaringan Komputer (A,B,C) Gasal 2020-2021 > 6. Link Layer and LAN > Quiz: Link Layer

Started on	Thursday, 10 December 2020, 1:10 PM
State	Finished
Completed on	Thursday, 10 December 2020, 2:09 PM
Time taken	59 mins 12 secs
Grade	37.04 out of 100.00

Question 1 Partially correct Mark 4.17 out of 5.00

Suppose the information content of a packet is the bit pattern 0001 0110 0111 0101 and an ODD parity scheme is being used. What would the value of the field containing the parity bits for the case of two-dimensional parity scheme?

Please fill in your answer in the following matrix!



Question 2 Incorrect Mark 0.00 out of 15.00

A data **D** that consists of bit-stream **1100010100** is sent out using **CRC** error detection with generator **G** = **1010**. Determine the value of **R** that is sent out together with the data **D**!

Answer: 100

The correct answer is: 110



Question 3 Partially correct Mark 10.00 out of 30.00

Suppose five nodes -- A, B, C, D and E -- are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot with probability *p*. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.

- What is the probability of node C succeeds for the first time in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication)

 (1-(p.(1-p).
- What is the probability of the first success in slot 5? (NOTE: do not use space and use dot (".") sign to express multiplication)

 (1-(5.p.(1-p).(1-
- Find value p^* that maximizes the efficiency? (HINT: use first derivative from the equation) 0,128

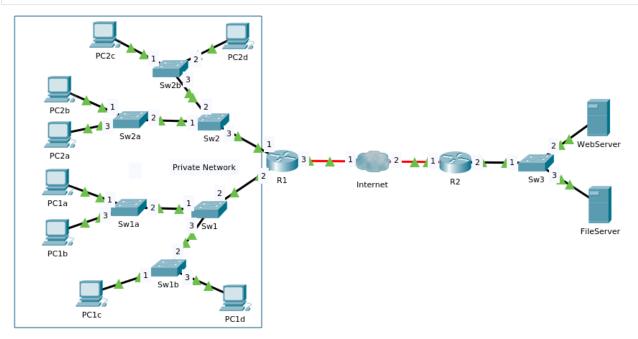
The probability of node C succeeds for the first time in slot 4: probability of C fails in the first 3 slots and succeeds in the 4^{th} slot. The probability of C succeed in a slot (p_c) : $p(1-p)^4$, thus the probability of C fails to transmit in a slot: $1-p_c = 1 - p(1-p)^4$. Now, the probability of C succeeds for the first time in slot 4: $p_c(1-p_c)^3 = p(1-p)^4(1-p(1-p)^4)^3$

The probability of the first success in slot 5: the probability of any node fails in the first 4 slots and succeeds in the 5^{th} slot. The probability of any node succeed in a slot (p_{any}) : $5p(1-p)^4$, thus the probability of any node fails to transmit in a slot: $1-p_{any} = 1-5p(1-p)^4$. Now, the probability of any node succeeds for the first time in slot 5: $p_{any}(1-p_{any})^4 = 5p(1-p)^4(1-5p(1-p)^4)^4$

Efficiency of 5 nodes system: 5p(1-p)⁴

The first derivative: $5(1-p)^4 - 5p(4)(1-p)^3 = 5(1-p)^3(1-p-4p) -> to get optimum solution it should be equals to <math>0 -> 1-5p = 0 -> p = 1/5 = 0.2$

Question 4 Partially correct Mark 22.87 out of 50.00 #Sama Adil



Consider the network above. Please **NOTE** that the network inside blue rectangle is a **private network** (i.e. private IP addresses are used by its hosts) and **R1** is a **NAT enabled** router. Suppose that, initially the **ARP table** in all hosts and routers are **empty**, and all **Switch tables** are **empty** too. Then, the following transmissions happen in chronological order:

- 1. PC1b sends a ping command to PC1d
- 2. PC1c sends a ping command to PC2d
- 3. PC2b accesses a file from FileServer

After the last packet transmission, please fill in the ARP tables in each host and router, as well as the Switch tables, by completing the tables below:

NOTE:

- Router is written with the interface number separated by '-'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
- Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an ARP or a Switch table, fill the table based on the chronological order.
- In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

P	C1a		PC1b		PC	1c		P	C1d		PC	:2a	PC	2b	PC	:2c	Р	C2d		
IP	MAC	IP.	MA	C I	P	МА	.c	IP	N	ИAC	IP	MAC	IP	MAC	IP	MAC	IP	MAC		
-	-	PC1d	PC1	d Sw	1b	Sw1	b	PC1b	PC	1b	-	-	R2	R2	-	-	Sw2a	Sw2a		
✓	✓	✓	√	×		×		1	~		✓	✓	×	×	✓	✓	×	×		
WebS	erver	FileS	erver	F	R1-1			R1-2				R1-3			R	2-1			R2	2-2
IP	MAC	IP	MAC	IP	M	1AC	IP	·	1AC		IP		MAC		IP	ı	MAC	IP		MAC
-	-	R1	R1	Sw2	Sw	12	Sw1	1 Sv	v1	R2		R2		R1		R1		FileServer	r	FileServer
√	✓	×	×	×	×		×	×		×		×		×		×		√		√
				PC2b	PC	2b														
				√	√															

Switch tables

S	w1	S	w1a	S	w1b	S	w2	:	Sw2a	Sı	w2b	Sw3	
MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port
R1	2	Sw1	2	Sw1	2	R1	3	Sw2	2	Sw2	3	R2 X	1
×	×	×	×	×	√	×	√	×	✓	×	√	NZ ^	✓
Sw1a	1	PC1b	3	PC1d	3	Sw2a	1	PC2b	1	PC2d	2	FileServer	3
×	×	×	×	~	✓	×	×	✓	✓	✓	✓	✓	~

Sw1b	3		PC1c	1	Sw2b	2			
×	√		✓	√	×	×			
-	-		-	-					
×	×		×	×					

When PC2b accesses a file from FileServer, an FTP request message is sent from PC2b to FileServer, and an FTP response in the opposite direction. Please complete the information about **source** and **destination** of **IP Address** and **MAC Address**, during this communication process at various locations:

Location	Source N	ИАС	Destinat	ion MAC		Source IP	•	Destinati	on IP
PC2b> R1	PC2b	\	Sw2	 ×		PC2b	\	FileSer	ver 🗸
R1> Internet	Sw2	<u> </u> ×	Intern	et	×	PC2b	 	FileSer	ver 🗸
R2> FileServer	Sw3	×	FileSe	rver	√	PC2b	 	FileSer	ver 🗸
FileServer> R2	FileSer	rver 🗸	Sw2	 ×		FileServ	ver 🗸	PC2b	X
Internet> R1	Intern	et 🗶	Sw1	 		FileServ	ver 🗸	PC2b	
R1> PC2b	Sw2	×	Sw2a	×		FileServ	ver 🗸	PC2b	√



	Finished
Completed on	
	Thursday, 10 December 2020, 1:51 PM
Time taken	1 hour
Grade	40.53 out of 100.00
Question 1	Correct Mark 5.00 out of 5.00
Question i	COTTECT WAR 3.00 OUT 01 3.00
	ormation content of a packet is the bit pattern 0100 1100 1001 1110 and an EVEN parity scheme is being used. What would the value of the field containing the parity bits for the
case of two-dime	ensional parity scheme?
Please fill in your	r answer in the following matrix!
bits	parity
	party
0100	1 V
1100	0
4004	
1001	
1110	1 🗸
parity 1111	
parity	
Question 2	Incorrect Mark 0.00 out of 15.00
Question 2	Interfect Walk 0.00 dator 15.00
A -l-+- D -l+	11044141411 :
	onsists of bit-stream 1101111101 is sent out using CRC error detection with generator G = 1010. Determine the value of R that is sent out together with the data
A data D that co D!	onsists of bit-stream 1101111101 is sent out using CRC error detection with generator G = 1010. Determine the value of R that is sent out together with the data
D!	onsists of bit-stream 1101111101 is sent out using CRC error detection with generator G = 1010. Determine the value of R that is sent out together with the data
	onsists of bit-stream 1101111101 is sent out using CRC error detection with generator G = 1010. Determine the value of R that is sent out together with the data
D!	onsists of bit-stream 1101111101 is sent out using CRC error detection with generator G = 1010. Determine the value of R that is sent out together with the data
D!	onsists of bit-stream 1101111101 is sent out using CRC error detection with generator G = 1010. Determine the value of R that is sent out together with the data
D!	×
D! Answer: 100	×
D! Answer: 100	×
D! Answer: 100 The correct answ	×
D! Answer: 100 The correct answ	ver is: 110
D! Answer: 100 The correct answ Question 3	ver is: 110 Partially correct Mark 10.00 out of 30.00
D! Answer: 100 The correct answ Question 3 Suppose four no	ver is: 110 Partially correct Mark 10.00 out of 30.00 Indes A, B, C, D are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot
D! Answer: 100 The correct answ Question 3 Suppose four no with probability y	ver is: 110 Partially correct Mark 10.00 out of 30.00 Ides A, B, C, D are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.
D! Answer: 100 The correct answ Question 3 Suppose four no with probability y	ver is: 110 Partially correct Mark 10.00 out of 30.00 Indes A, B, C, D are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot
D! Answer: 100 The correct answ Question 3 Suppose four no with probability y	ver is: 110 Partially correct Mark 10.00 out of 30.00 Ides A, B, C, D are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.
D! Answer: 100 The correct answ Question 3 Suppose four no with probability μ • What is the p p(1-p)^2	ver is: 110 Partially correct Mark 10.00 out of 30.00 Ides A, B, C, D are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on.
D! Answer: 100 The correct answ Question 3 Suppose four no with probability μ • What is the p p(1-p)^2	ver is: 110 Partially correct Mark 10.00 out of 30.00 Indes A, B, C, D are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. probability of node C succeeds for the first time in slot 3? (NOTE: do not use space and use dot (".") sign to express multiplication)
D! Answer: 100 The correct answ Question 3 Suppose four no with probability y What is the p p(1-p)^2 What is the p 4.p(1-p)^3	ver is: 110 Partially correct Mark 10.00 out of 30.00 Ides A, B, C, D are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. probability of node C succeeds for the first time in slot 3? (NOTE: do not use space and use dot (".") sign to express multiplication) probability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication)
D! Answer: 100 The correct answ Question 3 Suppose four no with probability y What is the p p(1-p)^2 What is the p 4.p(1-p)^3	ver is: 110 Partially correct Mark 10.00 out of 30.00 Indes A, B, C, D are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. probability of node C succeeds for the first time in slot 3? (NOTE: do not use space and use dot (".") sign to express multiplication)
D! Answer: 100 The correct answ Question 3 Suppose four no with probability y What is the p p(1-p)^2 What is the p 4.p(1-p)^3	ver is: 110 Partially correct Mark 10.00 out of 30.00 Ides A, B, C, D are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. probability of node C succeeds for the first time in slot 3? (NOTE: do not use space and use dot (".") sign to express multiplication) probability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication)
D! Answer: 100 The correct answ Question 3 Suppose four no with probability μ • What is the p p(1-p)^2 • What is the p 4.p(1-p)^3 • Find value $p^{(1)}$	Partially correct Mark 10.00 out of 30.00 Addes A, B, C, D are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. Approbability of node C succeeds for the first time in slot 3? (NOTE: do not use space and use dot (".") sign to express multiplication) Approbability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) **that maximizes the efficiency? (HINT: use first derivative from the equation) 0,25
D! Answer: 100 The correct answ Question 3 Suppose four no with probability ρ • What is the point of the probability of the	Partially correct Mark 10.00 out of 30.00 Indes — A, B, C, D — are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. Partially of node C succeeds for the first time in slot 3? (NOTE: do not use space and use dot (".") sign to express multiplication) Partially of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) * that maximizes the efficiency? (HINT: use first derivative from the equation) 0,25
D! Answer: 100 The correct answ Question 3 Suppose four no with probability ρ • What is the point of the probability of the	Partially correct Mark 10.00 out of 30.00 Addes A, B, C, D are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. Approbability of node C succeeds for the first time in slot 3? (NOTE: do not use space and use dot (".") sign to express multiplication) Approbability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) **that maximizes the efficiency? (HINT: use first derivative from the equation) 0,25
D! Answer: 100 The correct answ Question 3 Suppose four no with probability of p(1-p)^2 • What is the p(1-p)^3 • Find value p The probability of probability of C f	wer is: 110 Partially correct Mark 10.00 out of 30.00 Index — A, B, C, D — are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. Index of probability of node C succeeds for the first time in slot 3? (NOTE: do not use space and use dot (".") sign to express multiplication) The first succeeds in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) The first succeeds in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) The first succeeds in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) The first succeeds in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) The first succeeds in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) The first succeeds in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) The first succeeds in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) The first succeeds in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) The first succeeds in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) The first succeeds in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) The first succeeds in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication The first succeeds in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication The first succeeds in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication The first succeeds in slot 4? (".") sign to express multiplication The first slot is numbered slot 4? (".") sign to express multiplication The first slot is numbered slot 4? (".") sign to express multiplication The first
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D! Answer: 100 The correct answer: 100 Suppose four no with probability \(\rho \) • What is the point is	Partially correct Mark 10.00 out of 30.00 Ages - A, B, C, D are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. Agrobability of node C succeeds for the first time in slot 3? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) Agrobability of the first success in slot 4? (
D! Answer: 100 The correct answ Question 3 Suppose four no with probability p. (1-p)^2 • What is the p. (1-p)^3 • Find value p. (1-p)^3 The probability of probability of any Efficiency of 4 no	ver is: 110 Partially correct Mark 10.00 out of 30.00 Ides – A, B, C, D – are competing for a channel using Slotted ALOHA. Assume each node has an infinite number of packets to send. Each node attempts to transmit in each slot p. The first slot is numbered slot 1, the second slot is numbered slot 2, and so on. probability of node C succeeds for the first time in slot 3? (NOTE: do not use space and use dot (".") sign to express multiplication) probability of the first success in slot 4? (NOTE: do not use space and use dot (".") sign to express multiplication) * that maximizes the efficiency? (HINT: use first derivative from the equation) 10,25 10 finde C succeeds for the first time in slot 3: probability of C fails in the first 2 slots and succeeds in the 3 rd slot. The probability of C succeed in a slot (p _c): p(1-p) ³ , thus the fails to transmit in a slot: 1-p _C = 1 - p(1-p) ³ . Now, the probability of C succeeds for the first time in slot 3: p _C (1-p _C) ² = p(1-p) ³ (1-p(1-p) ³) ² . For the first success in slot 4: the probability of any node fails in the first 3 slots and succeeds in the 4 th slot. The probability of any node succeed in a slot (p _{am}): 4p(1-p) ³ , thus the

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Consider the network above. Please NOTE that the network inside blue rectangle is a private network (i.e. private IP addresses are used by its hosts) and R1 is a NAT enabled router. Suppose that, initially the ARP table in all hosts and routers are empty, and all Switch tables are empty too. Then, the following transmissions happen in chronological order:

- 1. PC2c sends a ping command to PC2a
- 2. PC2b sends a ping command to PC1b
- 3. PC1c accesses a file from FileServer

After the last packet transmission, please fill in the ARP tables in each host and router, as well as the Switch tables, by completing the tables below:

- Router is written with the interface number separated by '.'. E.g. R1-1, R1-2, R2-2, Internet-2, etc
 Fill in the IP and MAC with the host name or router's interface number, e.g. PC1a, PC2d, R1-3, Internet-1, WebServer, etc
- Write the device name exactly as it is written in the figure.
- If there are more than one record in an ARP or a Switch table, fill the table based on the chronological order.
- $\bullet\,$ In case of no record in table, simply fill the table with '-' (a dash sign).

ARP Tables

	PC1a		PC1	b		PC1c		PC	1d	F	PC2	2a		PC	2b			P	C2c	PC	2d
IP	М	IAC	IP	MAC	IP	M	AC	IP	MAC	IP		MAC		IP	1	ИAC	IP		MAC	IP	MAC
-	-	PC2	2b	PC2b			-		-	PC2c		PC2c		PC1b	PC1	b	PC2a		PC2a	-	-
√	√	×		×	×	×			√	√		✓		×	×		√		√	√	√
Webs	erver	FileS	erver	R1	I-1	R1	-2			R1-3				R	2-1				R	2-2	
IP	MAC	IP	MAC	IP	MAC	IP	MAC		IP	N	MΑ	С		IP		MAC	-		IP	M	AC
-	-	PC1c	PC1c	Sw2	Sw2	Sw1	Sw1	Inte	rnet-1	Interne	et-1	ı	Int	ternet-2	Int	ernet-2		File	Server	FileServ	er
√	√	×	×	×	×	×	×	√		√			>		√			√		√	
						×	×														

Switch tables

9	Sw1		Sw1a	S	w1b	9	Sw2	9	Sw2a		Sw2b	Swa	3
MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port	MAC	Port
R1-2	2	Sw1	2	PC1c	1	Sw2b	2	Sw2	2	PC2c	1	R2-2 🗸	1
/	✓	×	✓	×	×	×	√	×	√	√	√	KZ-Z	✓
Sw1b	3	-	-	-	-	Sw2a	1	Sw2a	1	PC2b	2	-	-
×	×	×	×	×	×	×	√	×	×	×	×	×	×
-	-					-	-	-	-				
×	×					×	×	×	×				
						-	-	-	-				
						×	×	×	×				

When PC1c accesses a file from FileServer, an FTP request message is sent from PC1c to FileServer, and an FTP response in the opposite direction. Please complete the information about source and destination of IP Address and MAC Address, during this communication process at various locations:

Location	Source MAC	Destination MAC	Source IP	Destination IP
Location	Jource WAC	Destination MAC	Jource II	Destination in
PC1c> R1	PC1c ✓	R1-2 ✓	PC1c ✓	FileServer
R1> Internet	R1-3	Internet-1	PC1c 🗶	FileServer ✓
R2> FileServer	R2-2	FileServer ✓	PC1c ×	FileServer
FileServer> R2	FileServer	R2-2 ✓	FileServer	PC1c ×
Internet> R1	Internet-1	R1-3 🗸	FileServer	PC1c ×
R1> PC1c	R1-2 🗸	PC1c ✓	FileServer 🗸	PC1c ✓

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