Computer Networks 2021 Exercises - Unit 1

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NOTE: Each student's work unit is unique. You *must* use the work that has been generated for your FAN. If you do not, then you will fail this work unit.

NOTE: You must record your answers in the answer file EXACTLY as required, and commit and make sure your changes have been pushed to the github server, as they will otherwise not be counted.

NOTE: The topic coordinator will periodically run the automatic marking script, which will cause a file called unit1-results.pdf to be updated in your repository. You should check this file to make sure that your answers have been correctly counted. That file will contain the time and date that the marking script was last run, so that you can work out if it has been run since you last changed your answers. You are free to update your answers as often as you wish, until the deadline for the particular work unit.

1 Specify the OSI Layer to which best matches each statement

For each question, you must record your answer in the unit1-answers.txt file in your git repository. For example, if you believed that the following question best matched the Network Layer, which is layer 3, you would put the digit 3 at the end of the `rj=` *line in the file* `unit1-answers.txt`.

Question#	Description
`rj`	*Responsible for inter-networking*

The entry in `unit1-answers.txt` *would thus look like:*

```
# Question 'rj': Which layer best fits this statement: Responsible for inter-networking
rj=3
```

Templates for each answer are provided in `unit1-answers.txt` for your convenience.

Which network layer best matches the following descriptions?

Question#	Description
`ab`	Responsible for routing packets among networks

Question#	Description
`ac`	Is used to abstract the network for user-oriented programmes

Question#	Description
`ad`	The layer where virtual circuits can be established

Question#	Description
`ae`	Responsible for electromagnetic spectrum allocation

Question#	Description
`af`	Serialises data structures so that they can be sent, received and correctly interpreted at the other end of a network

Question#	Description
`ag`	Allows for the recovery of a lost connection

Question#	Description
`ah`	Responsible for logical link control

Question#	Description
`ai`	Responsible for closing a connection, especially where it involves multiple resources

Question#	Description
`aj`	Responsible for the correct conversion of character encodings in a session

Question#	Description
ak	Corrects the order of received packets, if they are received out of order

Question#	Description
al	Detects and reacts to congestion on network path between distant nodes

Question#	Description
am	Responsible for selecting the best path between nodes

Question#	Description
an	Facilitates connectionless communications between nodes on large networks

Question#	Description
ao	Provides globally addressable identifiers for nodes on large networks

Question#	Description
ap	Responsible for data encryption

Question#	Description
aq	Provides the interface for programmes to access network services

2 Specify the OSI Layer in which correspond to the following network protocols

For each question, you will need to research the protocol, and judge to which OSI network layer it corresponds. *For each question, you must record your answer in the unit1-answers.txt file in your git repository. For example, if you believed that the following question best matched the Physical Layer, which is layer 1, you would put the digit 1 at the end of the* `fq=` *line in the file* `unit1-answers.txt`*.*

Question#	Protocol
fq	*RFC1149*

The entry in `unit1-answers.txt` *would thus look like:*

```
# Question 'fq': To which layer does this protocol correspond? : RFC1149
fq=1
```

Templates for each answer are provided in `unit1-answers.txt` for your convenience.

To which OSI network layer do the following protocols correspond?

Question#	Protocol
ar	Fibre Channel Protocol (FCP)

Question#	Protocol
as	Apple Filing Protocol (AFP)

Question#	Protocol
at	Short Message Peer-to-Peer (SMPP)

Question#	Protocol
au	Simple Service Discovery Protocol

Question#	Protocol
av	L2TP

Question#	Protocol
aw	Econet

Question#	Protocol
ax	Cisco Discovery Protocol (CDP)

Question#	Protocol
ay	iSCSI

Question#	Protocol
az	NetBIOS

Question#	Protocol
ba	Server message block (SMB)

Question#	Protocol
bb	Transmission Control Protocol

Question#	Protocol
bc	Internet Protocol

Question#	Protocol
bd	Link Aggregation Control Protocol (LACP)

Question#	Protocol
be	HTTP

Question#	Protocol
bf	High-Level Data Link Control (HDLC)

Question#	Protocol
bg	FTP

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For each question, you are presented with a fictional network topology and layered network protocol stack(s). You mush answer questions about these networks. *For each question, you must record your answer in the unit1-answers.txt file in your git repository. For example, if you believed that the answer to the following question was 42, you would write 42 at the end of the* xl= *line in the file* unit1-answers.txt.

Question#	How large would the indicated Protocol Data Unit be? (in bytes)
xl	*C.3*

The entry in unit1-answers.txt *would thus look like:*

```
# Question 'xl': How large would the indicated Protocol Data Unit be? (in bytes)
xl=42
```

Templates for each answer are provided in unit1-answers.txt for your convenience.

Answer the following questions about the fictional network topologies shown

Fictional Network Topology 1

Network Stack 1: 'antrautete'

OSI Layer #	Name	PDU Header Size (bytes)
7	gerennheit	61
6	ausgesetzung	6
5	aufgeklettest	11
4	angeklettkeit	90
3	anspracht	63
2	getrautete	38

Network Stack 2: 'eingehst'

OSI Layer #	Name	PDU Header Size (bytes)
7	einraucher	93
6	gekaest	17
5	zertraut	4
4	antritten	30
3	ausgehunds	58
2	zerpflumung	12

Network Stack 3: 'aufgepflumte'

OSI Layer #	Name	PDU Header Size (bytes)
7	ausfahrheit	29
6	vergehheit	62
5	aufgewitzse	80
4	geschmecken	44
3	eintraukeit	6
2	anrennen	23

Network Stack 4: 'aufrauchen'

OSI Layer #	Name	PDU Header Size (bytes)
7	ensitzheit	100
6	gelauft	88
5	zerhundt	83
4	bekrauen	46
3	aussetzen	1
2	angesetzer	48

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
angekrause	3	5552	427
angewarfkeit	5	2590	949
ausgekatzeer	22	1387	795
gelaufheit	79	354	37

Network Diagram
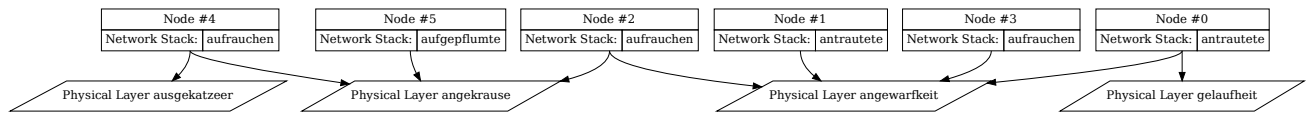
Question#	Question
bh	Could applications on nodes 0 and 4 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
bi	If an application on node 2 sends 223 bytes of data, how large would the PDU be at layer 6? *Provide the exact number of bytes as your answer.*
bj	What is the data rate that is possible between nodes 2 and 4? *Provide the exact number of kilo-bits per second as your answer.*
bk	How many milli-seconds would it take node 2 to send 5187 bytes of data to node 4? *Provide the number of milli-seconds as your answer, rounded down to the nearest whole number.*

Fictional Network Topology 2

Network Stack 1: 'ausgesetzer'

OSI Layer #	Name	PDU Header Size (bytes)
7	einsetzer	46
6	versinns	53
5	zerfahrtete	57
4	behundtete	26
3	ausgegehst	59
2	verwitzse	35

Network Stack 2: 'ausgepflumse'

OSI Layer #	Name	PDU Header Size (bytes)
7	verwitzkeit	62
6	verkraute	4
5	ankaesst	84
4	aufgesetzkeit	12
3	geklettt	40
2	zerfahrtest	47

Network Stack 3: 'gesinntete'

OSI Layer #	Name	PDU Header Size (bytes)
7	einrabarbkeit	97
6	zerhalttete	45
5	aufgewarfs	75
4	aussprachheit	40
3	aufgelauft	17
2	zerrabarbt	43

Network Stack 4: 'betritttest'

OSI Layer #	Name	PDU Header Size (bytes)
7	anfahren	61
6	angepflumheit	20
5	ausgewarfs	58
4	aussinnheit	14
3	verklettte	95
2	angeschmecktest	68

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
aussinnt	27	4651	280
aufpflums	73	3293	991
zerkletttete	26	7833	954
aufgekraust	31	1877	636

Network Diagram
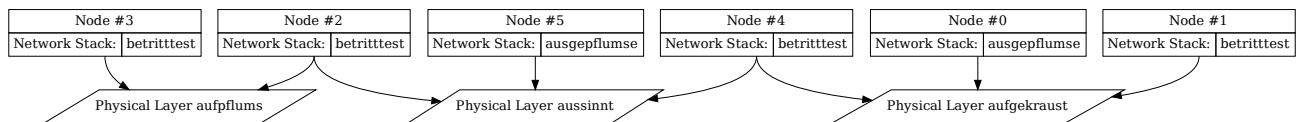
Question#	Question
bl	Could applications on nodes 3 and 0 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
bm	If an application on node 5 sends 591 bytes of data, how large would the PDU be at layer 5? *Provide the exact number of bytes as your answer.*
bn	What is the data rate that is possible between nodes 5 and 0? *Provide the exact number of kilo-bits per second as your answer.*
bo	How many milli-seconds would it take node 5 to send 1124 bytes of data to node 0? *Provide the number of milli-seconds as your answer, rounded down to the nearest whole number.*

Fictional Network Topology 3

Network Stack 1: 'berabarbte'

OSI Layer #	Name	PDU Header Size (bytes)
7	berauchse	60
6	aufsitzt	13
5	gepflumer	87
4	gehundt	17
3	angewarfheit	73
2	angetrittst	48

Network Stack 2: 'getrauer'

OSI Layer #	Name	PDU Header Size (bytes)
7	angekraukeit	36
6	verrauchtete	4
5	ausgehundkeit	33
4	verschmeckung	98
3	besitzte	54
2	ankletten	1

Network Stack 3: 'aufrabarbheit'

OSI Layer #	Name	PDU Header Size (bytes)
7	einstehheit	7
6	angefahrkeit	62
5	angelaufte	55
4	zerrauchs	50
3	einwitztest	99
2	enschmeckung	8

Network Stack 4: 'zertraus'

OSI Layer #	Name	PDU Header Size (bytes)
7	aufrenner	64
6	besprachheit	98
5	zerpflums	29
4	verwitzt	85
3	verhunds	26
2	bekraus	4

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
aufgehundung	49	3634	15
verwitzung	78	116	186
ensitzst	52	6561	898
aushaltkeit	35	382	101

Network Diagram

Node #4	Node #5	Node #1	Node #0	Node #2	Node #3
Network Stack: aufrabarbheit	Network Stack: berabarbte	Network Stack: zertraus	Network Stack: aufrabarbheit	Network Stack: berabarbte	Network Stack: berabarbte

Physical Layer aufgehundung   Physical Layer verwitzung   Physical Layer aushaltkeit
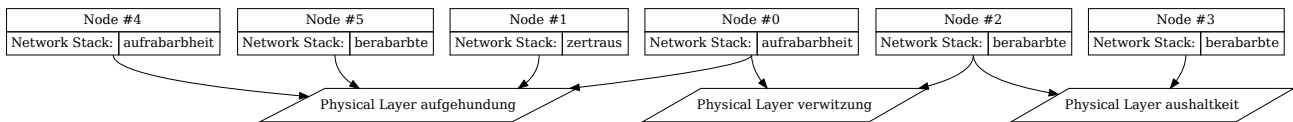
Question#	Question
bp	Could applications on nodes 4 and 0 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
bq	If an application on node 1 sends 509 bytes of data, how large would the PDU be at layer 5? *Provide the exact number of bytes as your answer.*
br	What is the data rate that is possible between nodes 1 and 0? *Provide the exact number of kilo-bits per second as your answer.*
bs	How many milli-seconds would it take node 1 to send 7135 bytes of data to node 0? *Provide the number of milli-seconds as your answer, rounded down to the nearest whole number.*

Fictional Network Topology 4

Network Stack 1: 'gehalttest'

OSI Layer #	Name	PDU Header Size (bytes)
7	entraus	94
6	behaltte	42
5	versprachse	21
4	einhundtete	80
3	versinner	89
2	aufsinns	61

Network Stack 2: 'aufgegehse'

OSI Layer #	Name	PDU Header Size (bytes)
7	angesetzte	71
6	ensprachtest	43
5	angefahrs	63
4	aufgekaesse	9
3	aufsprachst	36
2	aushundheit	29

Network Stack 3: 'zerhundse'

OSI Layer #	Name	PDU Header Size (bytes)
7	berauchte	88
6	gelaufse	16
5	verlaufen	1
4	gegehst	12
3	eintrittst	67
2	angehundheit	64

Network Stack 4: 'zerklettte'

OSI Layer #	Name	PDU Header Size (bytes)
7	beschmeckkeit	40
6	berauchheit	34
5	angekatzese	94
4	gepflumkeit	51
3	gekaestete	91
2	auswarfte	33

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
aufgerabarbheit	82	2881	855
ausgeschmecker	25	7495	383
auftrauheit	97	2294	445
ausrauchheit	35	5214	476

Network Diagram
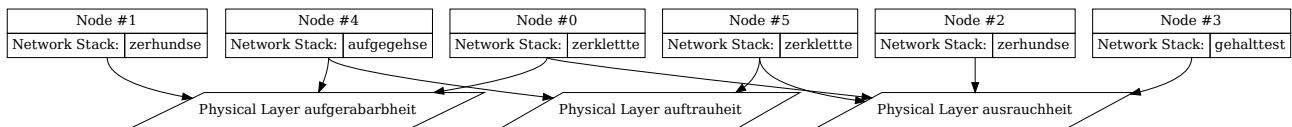
Question#	Question
bt	Could applications on nodes 3 and 5 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
bu	If an application on node 2 sends 142 bytes of data, how large would the PDU be at layer 7? *Provide the exact number of bytes as your answer.*
bv	What is the data rate that is possible between nodes 2 and 5? *Provide the exact number of kilo-bits per second as your answer.*
bw	How many milli-seconds would it take node 2 to send 5950 bytes of data to node 5? *Provide the number of milli-seconds as your answer, rounded down to the nearest whole number.*

Fictional Network Topology 5

Network Stack 1: 'einrauchst'

OSI Layer #	Name	PDU Header Size (bytes)
7	angestehse	71
6	antrittheit	70
5	einhalts	29
4	aufhalttest	79
3	enkaesung	28
2	gewitzheit	6

Network Stack 2: 'angehtest'

OSI Layer #	Name	PDU Header Size (bytes)
7	enrabarbtete	84
6	angetrauer	61
5	einwarfung	22
4	angewarfst	64
3	zergehtete	21
2	angestehung	99

Network Stack 3: 'einfahrkeit'

OSI Layer #	Name	PDU Header Size (bytes)
7	aussinnung	36
6	ausgesitztest	12
5	angehaltte	93
4	ausfahrst	83
3	angestehst	24
2	austrautest	68

Network Stack 4: 'zerkaesen'

OSI Layer #	Name	PDU Header Size (bytes)
7	angerennte	99
6	ausrennheit	96
5	geschmecktest	69
4	aufwitztete	63
3	ausgepflumen	9
2	einlaufs	64

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
anrabarbse	98	7661	174
aufgesitzte	28	4969	504
anlaufkeit	17	2377	888
enrennst	54	1010	255

Network Diagram
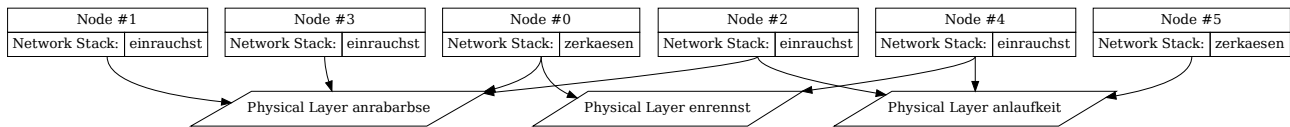
Question#	Question
bx	Could applications on nodes 5 and 0 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
by	If an application on node 5 sends 646 bytes of data, how large would the PDU be at layer 2? *Provide the exact number of bytes as your answer.*
bz	What is the data rate that is possible between nodes 5 and 0? *Provide the exact number of kilo-bits per second as your answer.*
ca	How many milli-seconds would it take node 5 to send 1091 bytes of data to node 0? *Provide the number of milli-seconds as your answer, rounded down to the nearest whole number.*

Fictional Network Topology 6

Network Stack 1: 'verkatzetest'

OSI Layer #	Name	PDU Header Size (bytes)
7	verstehkeit	91
6	besinnst	68
5	versprachte	90
4	angepflumkeit	66
3	vergehse	2
2	eingehheit	11

Network Stack 2: 'ensprachtete'

OSI Layer #	Name	PDU Header Size (bytes)
7	auskrauheit	63
6	ausgepflumtete	1
5	einlaufheit	6
4	austrittt	100
3	vergehs	39
2	ausgekletter	33

Network Stack 3: 'ausgekatzet'

OSI Layer #	Name	PDU Header Size (bytes)
7	auskaesheit	70
6	aufgesprachung	8
5	verhalttete	18
4	ausgetrittheit	62
3	bekaeser	49
2	zerwarfte	33

Network Stack 4: 'aufhaltt'

OSI Layer #	Name	PDU Header Size (bytes)
7	gesinnung	71
6	aufgefahrse	19
5	aufsetzen	40
4	angeschmecks	29
3	aufgestehen	39
2	einwitzse	70

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
ausgehundheit	6	8586	755
verfahrheit	27	393	534
angespracht	58	1281	708
angekraut	98	8543	744

Network Diagram
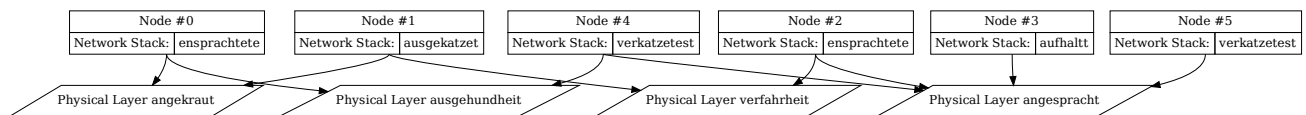
Question#	Question
cb	Could applications on nodes 0 and 2 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
cc	If an application on node 3 sends 522 bytes of data, how large would the PDU be at layer 5? *Provide the exact number of bytes as your answer.*
cd	What is the data rate that is possible between nodes 3 and 2? *Provide the exact number of kilo-bits per second as your answer.*
ce	How many milli-seconds would it take node 3 to send 6957 bytes of data to node 2? *Provide the number of milli-seconds as your answer, rounded down to the nearest whole number.*

Fictional Network Topology 7

Network Stack 1: 'besinnte'

OSI Layer #	Name	PDU Header Size (bytes)
7	anrauchheit	65
6	aufrennte	59
5	enstehen	43
4	befahren	93
3	gesteht	11
2	verkletten	37

Network Stack 2: 'ausgekaesung'

OSI Layer #	Name	PDU Header Size (bytes)
7	enkletten	61
6	ansitzse	11
5	aufsitztete	70
4	aufgerabarbs	12
3	gehundte	22
2	aufrabarbung	42

Network Stack 3: 'angetrittte'

OSI Layer #	Name	PDU Header Size (bytes)
7	vertrittheit	82
6	ausgetritts	90
5	angerabarben	17
4	eintrautete	48
3	angekraute	56
2	angetrittkeit	3

Network Stack 4: 'ausgewarfst'

OSI Layer #	Name	PDU Header Size (bytes)
7	aufwarfs	12
6	angeklettse	2
5	enhunden	76
4	ausgetrittse	7
3	aufgelauftest	18
2	angewarfst	59

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
antrittung	51	4675	567
angetritten	24	8979	977
ansprachs	91	5266	670
verwarft	40	7378	162

Network Diagram
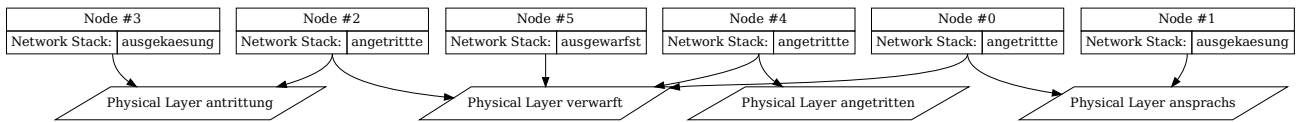
Question#	Question
cf	Could applications on nodes 3 and 1 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
cg	If an application on node 5 sends 330 bytes of data, how large would the PDU be at layer 5? *Provide the exact number of bytes as your answer.*
ch	What is the data rate that is possible between nodes 5 and 1? *Provide the exact number of kilo-bits per second as your answer.*
ci	How many milli-seconds would it take node 5 to send 2298 bytes of data to node 1? *Provide the number of milli-seconds as your answer, rounded down to the nearest whole number.*

Fictional Network Topology 8

Network Stack 1: 'aufpflumst'

OSI Layer #	Name	PDU Header Size (bytes)
7	aufgekraus	77
6	angehunder	14
5	belaufte	90
4	einschmeckse	29
3	enfahrst	100
2	ausgeschmeckst	50

Network Stack 2: 'auswarfkeit'

OSI Layer #	Name	PDU Header Size (bytes)
7	zerpflumse	37
6	anwarft	60
5	zerlaufkeit	95
4	aufgeklettung	85
3	auskrauung	91
2	auspflumung	67

Network Stack 3: 'bepflumtest'

OSI Layer #	Name	PDU Header Size (bytes)
7	enspracher	85
6	angewitzs	1
5	einstehte	39
4	ausgestehte	10
3	gewarfer	72
2	anfahrst	85

Network Stack 4: 'angesetzst'

OSI Layer #	Name	PDU Header Size (bytes)
7	anrennse	27
6	angekletttest	82
5	ausgesinnen	51
4	angestehtete	76
3	angeschmeckte	36
2	getritten	91

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
angefahrkeit	29	5251	265
bekatzetete	64	2363	580
behundkeit	77	3429	759
aufhalts	40	9879	854

Network Diagram
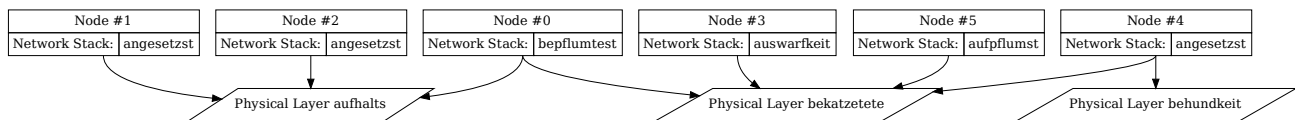
Question#	Question
cj	Could applications on nodes 1 and 2 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
ck	If an application on node 3 sends 722 bytes of data, how large would the PDU be at layer 5? *Provide the exact number of bytes as your answer.*
cl	What is the data rate that is possible between nodes 3 and 2? *Provide the exact number of kilo-bits per second as your answer.*
cm	How many milli-seconds would it take node 3 to send 3008 bytes of data to node 2? *Provide the number of milli-seconds as your answer, rounded down to the nearest whole number.*

Fictional Network Topology 9

Network Stack 1: 'aufsprachs'

OSI Layer #	Name	PDU Header Size (bytes)
7	aufgeschmeckheit	24
6	bekaest	39
5	begehse	65
4	angetrauung	11
3	besprachs	25
2	angewitzung	52

Network Stack 2: 'betraute'

OSI Layer #	Name	PDU Header Size (bytes)
7	ausfahrte	95
6	einwarfte	26
5	angegehst	46
4	ausgesinnse	2
3	zerhundtete	27
2	ausrabarbtest	35

Network Stack 3: 'enrennt'

OSI Layer #	Name	PDU Header Size (bytes)
7	ausgekaesst	27
6	einkaesen	96
5	besetzkeit	48
4	verkletter	57
3	gelauftest	90
2	einrauchtest	7

Network Stack 4: 'auftrauer'

OSI Layer #	Name	PDU Header Size (bytes)
7	angesitztete	74
6	auftrauung	56
5	aufwarfer	83
4	einsetzkeit	41
3	ausfahren	61
2	aufgehundtete	4

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
zerrennheit	58	1649	947
antrauung	94	5696	367
bekraukeit	67	5291	68
angerabarbung	85	2506	864

Network Diagram

Node #1	Node #2	Node #3	Node #0	Node #5	Node #4
Network Stack: enrennt	Network Stack: aufsprachs	Network Stack: auftrauer	Network Stack: auftrauer	Network Stack: aufsprachs	Network Stack: enrennt

Physical Layer zerrennheit Physical Layer antrauung Physical Layer bekraukeit
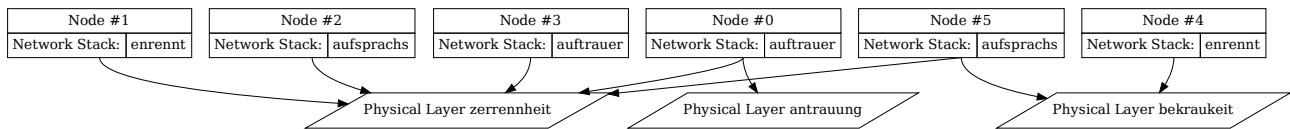
Question#	Question
cn	Could applications on nodes 1 and 4 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
co	If an application on node 2 sends 260 bytes of data, how large would the PDU be at layer 6? *Provide the exact number of bytes as your answer.*
cp	What is the data rate that is possible between nodes 2 and 4? *Provide the exact number of kilo-bits per second as your answer.*
cq	How many milli-seconds would it take node 2 to send 4126 bytes of data to node 4? *Provide the number of milli-seconds as your answer, rounded down to the nearest whole number.*

Fictional Network Topology 10

Network Stack 1: 'aufsprachkeit'

OSI Layer #	Name	PDU Header Size (bytes)
7	angehundheit	30
6	einsinnst	79
5	einfahrte	1
4	angeschmeckst	59
3	angeklettt	8
2	angesinntest	48

Network Stack 2: 'anhaltst'

OSI Layer #	Name	PDU Header Size (bytes)
7	ausgerauchte	76
6	versinntete	73
5	ankaeste	8
4	angehaltse	80
3	verhunder	54
2	aufgehalter	59

Network Stack 3: 'ausgerauchung'

OSI Layer #	Name	PDU Header Size (bytes)
7	aufgeschmecken	3
6	aufsetzkeit	27
5	aufstehst	41
4	ansprachheit	9
3	ansteher	5
2	beschmecken	3

Network Stack 4: 'versitzheit'

OSI Layer #	Name	PDU Header Size (bytes)
7	anwarftete	52
6	enkatzetete	5
5	beschmeckte	24
4	angerabarbt	47
3	aufgehen	7
2	aufgesinns	86

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
gelaufte	22	638	449
ausgefahrheit	8	9502	393
auspflumtest	11	4834	70
angegehtete	87	1411	1

Network Diagram
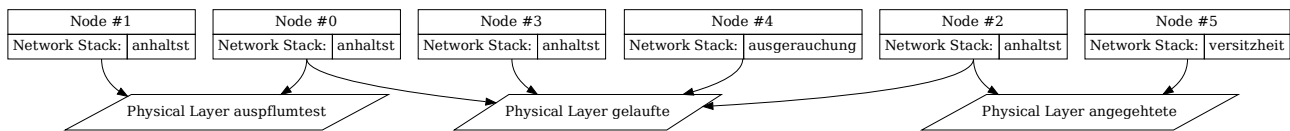
Question#	Question
cr	Could applications on nodes 4 and 1 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
cs	If an application on node 3 sends 654 bytes of data, how large would the PDU be at layer 1? *Provide the exact number of bytes as your answer.*
ct	What is the data rate that is possible between nodes 3 and 1? *Provide the exact number of kilo-bits per second as your answer.*
cu	How many milli-seconds would it take node 3 to send 1247 bytes of data to node 1? *Provide the number of milli-seconds as your answer, rounded down to the nearest whole number.*

4 Name and describe five reliability challenges for computer networks, referring to the network layers at which these challenges either arise, or are solved.

For each of the five challenges, you must record your answer in the unit1-answers.txt file in your git repository.

Question#	Description
cv	Reliability Challenge #1
cw	Reliability Challenge #2
cx	Reliability Challenge #3
cy	Reliability Challenge #4
cz	Reliability Challenge #5

The following question forms part of the DN/HD vs lower grade diagnosis for this work unit. Your answer will be used to assess if you are demonstrating the depth of understanding commensurate with a DN or HD grade. The pedagogical diagnosis is made based on the guidance from: `https://www.flinders.edu.au/content/dam/documents/staff/policies/academic-students/grading-scheme.pdf`.

Specifically, in this item, the DN gate will be:

- *iii. produced work which shows a developing capacity for original, critical and creative thinking over and above the essential requirements of the learning outcomes*

  and the HD gate will be:

- *iii. consistently demonstrated knowledge skills and application at the highest level expected of a student at a given topic level*

You must write your answer in the `unit1-answers.txt` *text file in your github repository between the lines* `BEGIN:da` *and* `END:da`.

Question#	Description
da	Reliable delivery of a streaming video (such as watching a YouTube video) and a video conferencing session have different reliability requirements. What are the commonalities and differences in their requirements? What implications do these have for the way these services are provided and consumed on a network? Describe these implications with reference to the layered networking model, and/or to particular protocols and layers within the model.

Open Answer Question

The following question forms part of the DN/HD vs lower grade diagnosis for this work unit. Your answer will be used to assess if you are demonstrating the depth of understanding commensurate with a DN or HD grade. The pedagogical diagnosis is made based on the guidance from: `https://www.flinders.edu.au/content/dam/documents/staff/policies/academic-students/grading-scheme.pdf`.

Specifically, in this item, the DN gate will be:

- *iii. produced work which shows a developing capacity for original, critical and creative thinking over and above the essential requirements of the learning outcomes*

  and the HD gate will be:

- *v. demonstrated an ability to combine knowledge of the subject matter of the topic with original, critical and creative thinking relevant to the discipline,*

You must write your answer in the `unit1-answers.txt` *text file in your github repository between the lines* `BEGIN:db` *and* `END:db`.

Question#	Description
db	In which layer is security normally implemented in the OSI layered network model? Choose two other layers, and suggest how security might be implemented in each of those layers instead.