Computer Networks 2021 Exercises - Unit 1

FAN: scha0174

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`	Defines the electrical specifications of a data connection

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

Question#	Description
`ad`	Defines the physical specifications of a data connection

Question#	Description
`ae`	Responsible for data compression

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

Question#	Description
`ag`	Facilitates connection-oriented communications

Question#	Description
`ah`	Interprets the address in the header to determine which receiver on a local network segment should receive it.

Question#	Description
`ai`	Responsible for selecting the best path between nodes

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

Question#	Description
`ak`	De-duplicates received packets

Question#	Description
al	Responsible for establishing sessions

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

Question#	Description
an	Responsible for flow-control in a network

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

Question#	Description
ap	Responsible for electromagnetic compatibility

Question#	Description
aq	Allows the checkpointing of activity in a network connection

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	iSCSI

Question#	Protocol
as	Transmission Control Protocol

Question#	Protocol
at	Asynchronous Transfer Mode (ATM)

Question#	Protocol
au	iSNS

Question#	Protocol
av	LattisNet

Question#	Protocol
aw	NetBIOS Frames (NBF)

Question#	Protocol
ax	NetBIOS

Question#	Protocol
ay	NetWare Core Protocol (NCP)

Question#	Protocol
az	IPX

Question#	Protocol
ba	LLDP-MED

Question#	Protocol
bb	User Datagram Protocol

Question#	Protocol
bc	Ethernet physical layer

Question#	Protocol
bd	Datagram Congestion Control Protocol (DCCP)

Question#	Protocol
be	Distributed Multi-Link Trunking

Question#	Protocol
bf	802.11

Question#	Protocol
bg	Neighbor Discovery Protocol (NDP)

3

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: 'einraucht'

OSI Layer #	Name	PDU Header Size (bytes)
7	einrauchse	26
6	auftraut	92
5	vergehung	51
4	ausgestehkeit	61
3	angestehung	46
2	enkatzeheit	91

Network Stack 2: 'ausgetrause'

OSI Layer #	Name	PDU Header Size (bytes)
7	enfahrt	1
6	gekrautete	41
5	enlaufse	50
4	verwitzung	94
3	enrabarbheit	68
2	enrauchkeit	37

Network Stack 3: 'beklettse'

OSI Layer #	Name	PDU Header Size (bytes)
7	auslaufung	32
6	verrauchtest	51
5	austraus	78
4	einrabarbkeit	57
3	angerenntete	82
2	verkatzete	80

Network Stack 4: 'verwitzs'

OSI Layer #	Name	PDU Header Size (bytes)
7	einlaufheit	83
6	verrabarbung	58
5	ausgesinnse	49
4	enwitzs	40
3	aufgesprachst	74
2	ansetzs	57

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
verfahrkeit	25	7387	529
verpflumkeit	92	3187	680
ausgesprachen	62	3235	123
einlauftete	73	3411	979

Network Diagram
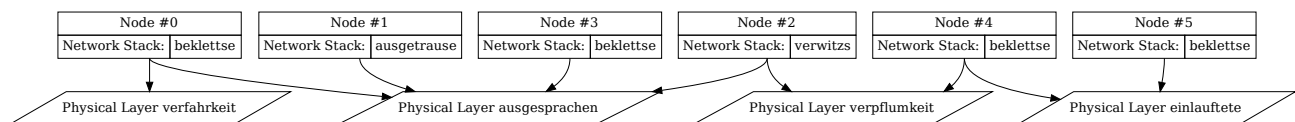
Question#	Question
bh	Could applications on nodes 2 and 3 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
bi	If an application on node 3 sends 683 bytes of data, how large would the PDU be at layer 1? *Provide the exact number of bytes as your answer.*
bj	What is the data rate that is possible between nodes 3 and 3? *Provide the exact number of kilo-bits per second as your answer.*
bk	How many milli-seconds would it take node 3 to send 9828 bytes of data to node 3? *Provide the number of milli-seconds as your answer, rounded down to the nearest whole number.*

Fictional Network Topology 2

Network Stack 1: 'enkatzeen'

OSI Layer #	Name	PDU Header Size (bytes)
7	vertrittheit	8
6	getraus	13
5	austritter	76
4	aufrabarbung	69
3	ausgepflumse	71
2	angeschmecktest	60

Network Stack 2: 'aushaltkeit'

OSI Layer #	Name	PDU Header Size (bytes)
7	versitztete	72
6	ansitzt	77
5	gesprachtete	84
4	gehunden	79
3	aufschmeckung	3
2	angerennst	9

Network Stack 3: 'angerenns'

OSI Layer #	Name	PDU Header Size (bytes)
7	angegehkeit	35
6	anlaufheit	98
5	aufgewitzung	71
4	entritts	62
3	eintrittte	74
2	aussetzkeit	77

Network Stack 4: 'aushaltt'

OSI Layer #	Name	PDU Header Size (bytes)
7	angekrauen	100
6	angehunder	57
5	angegeht	9
4	zersetzse	4
3	begeht	58
2	angepflumer	61

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
gestehtest	24	3994	555
besinnung	73	9244	212
vergehen	14	2342	837
angekaesen	67	2317	731

Network Diagram
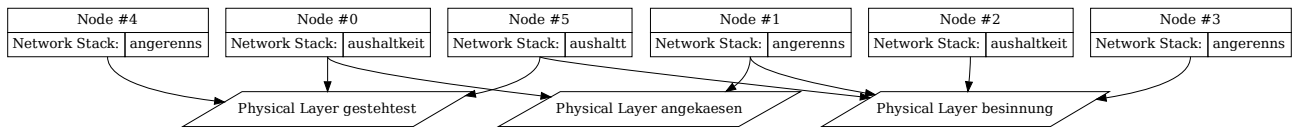
Question#	Question
bl	Could applications on nodes 3 and 2 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
bm	If an application on node 2 sends 843 bytes of data, how large would the PDU be at layer 6? *Provide the exact number of bytes as your answer.*
bn	What is the data rate that is possible between nodes 2 and 2? *Provide the exact number of kilo-bits per second as your answer.*
bo	How many milli-seconds would it take node 2 to send 835 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 3

Network Stack 1: 'gekletttete'

OSI Layer #	Name	PDU Header Size (bytes)
7	berabarber	3
6	angekrause	11
5	aufgekraukeit	44
4	anrauchheit	4
3	aufhaltung	79
2	berabarbs	7

Network Stack 2: 'bekraust'

OSI Layer #	Name	PDU Header Size (bytes)
7	verkrause	73
6	enwarfse	35
5	angefahrte	52
4	gekrautest	74
3	aufwarfte	92
2	eingehheit	84

Network Stack 3: 'aussetzer'

OSI Layer #	Name	PDU Header Size (bytes)
7	einsprachen	79
6	ausrauchst	59
5	angeklettst	39
4	eingehen	80
3	einsitztete	68
2	gewarfer	4

Network Stack 4: 'enhalts'

OSI Layer #	Name	PDU Header Size (bytes)
7	angelauftest	42
6	angeschmeckheit	35
5	geklettse	70
4	angehs	42
3	anstehst	4
2	aufwitzs	24

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
aufrennung	55	2072	515
angesetztete	77	8209	712
enstehtete	50	5334	330
zerwarfheit	7	4826	510

Network Diagram
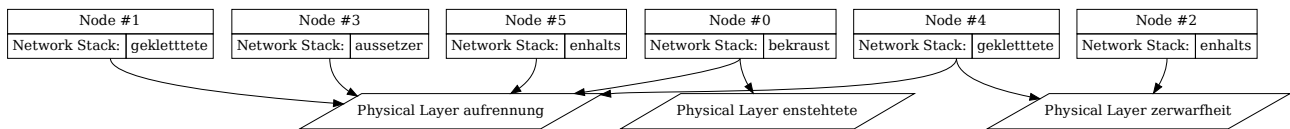
Question#	Question
bp	Could applications on nodes 4 and 3 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
bq	If an application on node 3 sends 743 bytes of data, how large would the PDU be at layer 3? *Provide the exact number of bytes as your answer.*
br	What is the data rate that is possible between nodes 3 and 3? *Provide the exact number of kilo-bits per second as your answer.*
bs	How many milli-seconds would it take node 3 to send 8392 bytes of data to node 3? *Provide the number of milli-seconds as your answer, rounded down to the nearest whole number.*

Fictional Network Topology 4

Network Stack 1: 'engehs'

OSI Layer #	Name	PDU Header Size (bytes)
7	ausgehkeit	76
6	enrennte	51
5	ansitzst	80
4	aufrabarbheit	67
3	aufkaesse	77
2	zerrauchst	78

Network Stack 2: 'belaufkeit'

OSI Layer #	Name	PDU Header Size (bytes)
7	einkrautest	58
6	aufsitzheit	28
5	zersetzt	2
4	ausgewitzen	47
3	einklettse	69
2	aufrauchtest	19

Network Stack 3: 'aufgekrautest'

OSI Layer #	Name	PDU Header Size (bytes)
7	angewarfung	84
6	betritten	43
5	aufschmeckst	87
4	verhundheit	100
3	aufstehtete	11
2	aufgesetzung	79

Network Stack 4: 'aufgekaeskeit'

OSI Layer #	Name	PDU Header Size (bytes)
7	gehunder	7
6	aufgelauftete	23
5	ausgerennse	57
4	enschmeckkeit	67
3	angesteht	52
2	getraukeit	54

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
ausrauchen	9	8783	797
auftraukeit	17	9467	20
ausgewitzs	60	692	910
ausgetrittte	63	4143	928

Network Diagram

Node #0	Node #1	Node #2	Node #5	Node #3	Node #4
Network Stack: aufgekrautest	Network Stack: engehs	Network Stack: engehs	Network Stack: aufgekrautest	Network Stack: aufgekaeskeit	Network Stack: aufgekrautest

Physical Layer ausrauchen Physical Layer ausgetrittte Physical Layer ausgewitzs Physical Layer auftraukeit
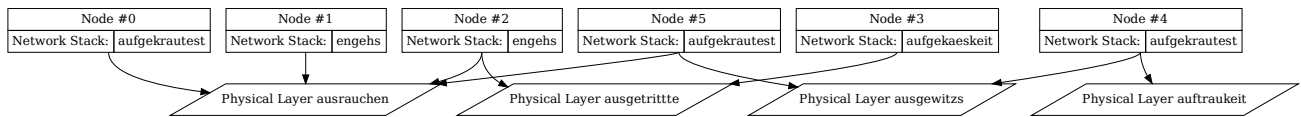
Question#	Question
bt	Could applications on nodes 5 and 0 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
bu	If an application on node 5 sends 439 bytes of data, how large would the PDU be at layer 4? *Provide the exact number of bytes as your answer.*
bv	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.*
bw	How many milli-seconds would it take node 5 to send 1174 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 5

Network Stack 1: 'einsinnst'

OSI Layer #	Name	PDU Header Size (bytes)
7	enkletten	71
6	angerenntest	34
5	verpflumheit	66
4	anschmeckung	87
3	zertrause	74
2	enwitzheit	72

Network Stack 2: 'angesinntest'

OSI Layer #	Name	PDU Header Size (bytes)
7	angekrauer	61
6	enkraut	28
5	gewitztest	58
4	gewitzkeit	96
3	aufgekaesheit	50
2	auswarfte	72

Network Stack 3: 'aufgesetzst'

OSI Layer #	Name	PDU Header Size (bytes)
7	angehunds	22
6	eingeht	90
5	bewitztest	56
4	verrabarbtete	17
3	aufgerauchs	27
2	verfahren	46

Network Stack 4: 'ausgewitzt'

OSI Layer #	Name	PDU Header Size (bytes)
7	ankrautete	62
6	enrauchtete	80
5	befahrst	67
4	einhalten	59
3	verwitzst	26
2	getritttest	100

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
aufgestehung	51	8247	645
ausgegeht	42	5922	988
auslauftest	9	6762	784
antrauer	91	1297	10

Network Diagram
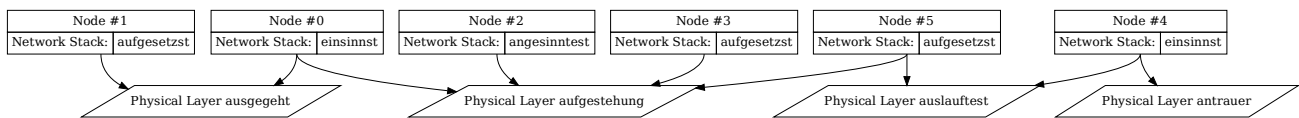
Question#	Question
bx	Could applications on nodes 2 and 4 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
by	If an application on node 0 sends 154 bytes of data, how large would the PDU be at layer 1? *Provide the exact number of bytes as your answer.*
bz	What is the data rate that is possible between nodes 0 and 4? *Provide the exact number of kilo-bits per second as your answer.*
ca	How many milli-seconds would it take node 0 to send 3886 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 6

Network Stack 1: 'ausgerabarbtest'

OSI Layer #	Name	PDU Header Size (bytes)
7	berennen	42
6	zerpflumung	27
5	angehundtete	91
4	zertrittung	87
3	angehunden	50
2	aufkaeskeit	99

Network Stack 2: 'gerabarben'

OSI Layer #	Name	PDU Header Size (bytes)
7	ausklettse	75
6	zerfahrkeit	79
5	ensitzte	76
4	einrauchst	52
3	aufkatzete	70
2	aufgewitzst	90

Network Stack 3: 'versinns'

OSI Layer #	Name	PDU Header Size (bytes)
7	einfahrt	2
6	ansinnte	16
5	zerkraukeit	55
4	ausrennen	36
3	auftrittte	63
2	angewarftete	24

Network Stack 4: 'einpflumtete'

OSI Layer #	Name	PDU Header Size (bytes)
7	ausgegeher	19
6	aufgegehtest	55
5	vergehtete	22
4	einwitzt	45
3	enpflumtest	11
2	aufgefahrte	43

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milliseconds)
betraute	7	4802	706
ausrauchtest	97	4308	436
anfahren	40	6635	946
einfahrtest	34	3808	149

Network Diagram
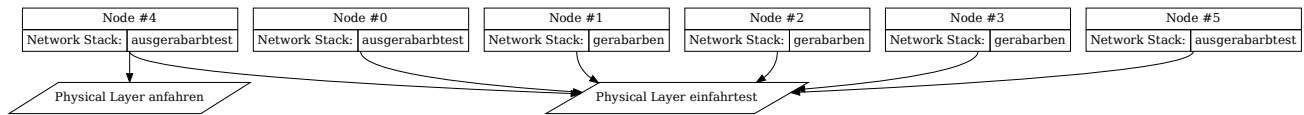
Question#	Question
cb	Could applications on nodes 0 and 1 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
cc	If an application on node 0 sends 737 bytes of data, how large would the PDU be at layer 6? *Provide the exact number of bytes as your answer.*
cd	What is the data rate that is possible between nodes 0 and 1? *Provide the exact number of kilo-bits per second as your answer.*
ce	How many milli-seconds would it take node 0 to send 6561 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 7

Network Stack 1: 'einhundtest'

OSI Layer #	Name	PDU Header Size (bytes)
7	enfahrer	76
6	enkatzeer	29
5	einwarfst	33
4	versetzkeit	29
3	einklettkeit	48
2	einrauchtete	91

Network Stack 2: 'angelauftete'

OSI Layer #	Name	PDU Header Size (bytes)
7	berauchen	28
6	ausgehung	37
5	aufkaeste	74
4	auskatzeen	53
3	ausgerauchst	63
2	ankaesen	39

Network Stack 3: 'angekaesse'

OSI Layer #	Name	PDU Header Size (bytes)
7	enrennse	21
6	angehaltung	7
5	ausgestehheit	92
4	verlaufse	92
3	ausgerauchkeit	3
2	einrenntest	47

Network Stack 4: 'enpflumtete'

OSI Layer #	Name	PDU Header Size (bytes)
7	ausgekatzeheit	87
6	antrittse	45
5	angekatzes	25
4	ausgerauchte	92
3	zerfahrheit	65
2	aufschmeckte	62

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
aufsetzen	16	4806	997
gepflumte	75	1207	374
ausgerenns	23	8475	202
aufkatzeen	43	5873	981

Network Diagram
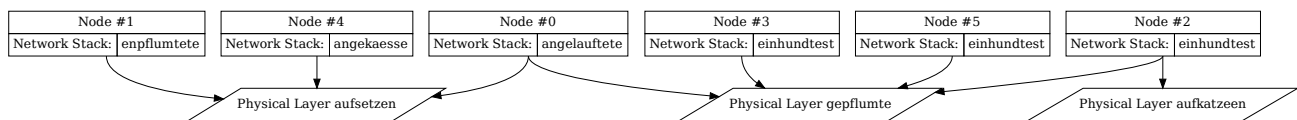
Question#	Question
cf	Could applications on nodes 1 and 2 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
cg	If an application on node 0 sends 406 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 0 and 2? *Provide the exact number of kilo-bits per second as your answer.*
ci	How many milli-seconds would it take node 0 to send 5041 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 8

Network Stack 1: 'gewitzen'

OSI Layer #	Name	PDU Header Size (bytes)
7	engeher	25
6	angeschmecktest	57
5	angeraucht	89
4	belauftest	89
3	begehse	91
2	verlaufung	99

Network Stack 2: 'aushalttete'

OSI Layer #	Name	PDU Header Size (bytes)
7	zerwitzse	82
6	aussinnheit	27
5	aufschmeckt	41
4	behundst	65
3	ausklettung	1
2	ankatzete	97

Network Stack 3: 'angestehs'

OSI Layer #	Name	PDU Header Size (bytes)
7	engehkeit	65
6	bekaesse	58
5	angeschmecktete	71
4	anwarfkeit	25
3	angehse	88
2	zersinnen	43

Network Stack 4: 'versetztete'

OSI Layer #	Name	PDU Header Size (bytes)
7	auffahren	7
6	ankatzeheit	47
5	aufklettt	43
4	einsinntest	82
3	angerauchse	6
2	ensprachkeit	20

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
aufgetritten	72	3089	900
austrittt	44	3149	747
ausgekrause	46	6205	701
gerabarbkeit	5	1860	940

Network Diagram
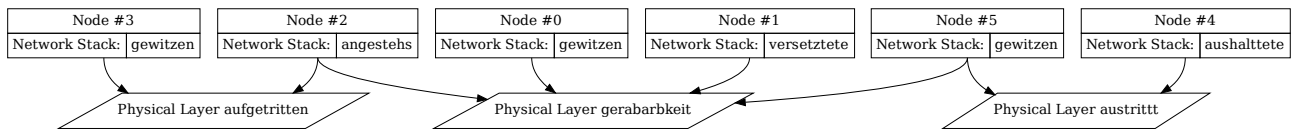
Question#	Question
cj	Could applications on nodes 0 and 5 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
ck	If an application on node 2 sends 512 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 2 and 5? *Provide the exact number of kilo-bits per second as your answer.*
cm	How many milli-seconds would it take node 2 to send 3118 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 9

Network Stack 1: 'bekaess'

OSI Layer #	Name	PDU Header Size (bytes)
7	auftrittkeit	33
6	einwarfs	60
5	angesinnen	34
4	zersteher	48
3	ausrenntete	13
2	getrittung	15

Network Stack 2: 'angesitzung'

OSI Layer #	Name	PDU Header Size (bytes)
7	angewarfte	6
6	einlaufs	91
5	enkatzes	72
4	ansprachung	79
3	aufgewarfte	3
2	angeht	45

Network Stack 3: 'auffahrt'

OSI Layer #	Name	PDU Header Size (bytes)
7	aussprachkeit	94
6	ausrauchheit	66
5	aufgelaufer	82
4	ausgesitzen	4
3	enlaufst	6
2	gesinns	85

Network Stack 4: 'angerabarbheit'

OSI Layer #	Name	PDU Header Size (bytes)
7	ausgerauchung	22
6	verhundse	99
5	einrennt	50
4	einkatzes	3
3	zerkatzeung	36
2	bewarfte	77

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milli-seconds)
betrittung	91	7416	178
aufsinnkeit	73	2611	880
gegehen	64	7968	406
angehundse	66	5607	911

Network Diagram
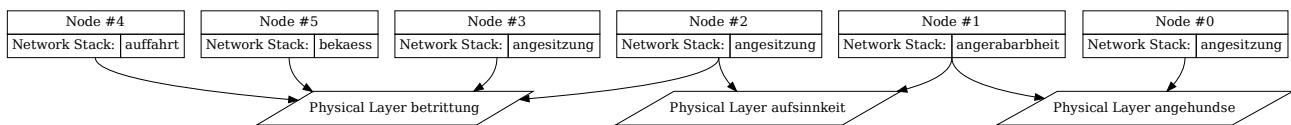
Question#	Question
cn	Could applications on nodes 4 and 0 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
co	If an application on node 4 sends 696 bytes of data, how large would the PDU be at layer 4? *Provide the exact number of bytes as your answer.*
cp	What is the data rate that is possible between nodes 4 and 0? *Provide the exact number of kilo-bits per second as your answer.*
cq	How many milli-seconds would it take node 4 to send 1647 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 10

Network Stack 1: 'angestehse'

OSI Layer #	Name	PDU Header Size (bytes)
7	angesitztete	43
6	einklettung	63
5	ausstehte	16
4	ausgesitzung	82
3	getritten	99
2	gekatzeheit	41

Network Stack 2: 'ankraute'

OSI Layer #	Name	PDU Header Size (bytes)
7	angekraute	15
6	zerrennen	23
5	angesinnheit	89
4	betrittheit	56
3	behunds	94
2	angehunds	23

Network Stack 3: 'einsitzen'

OSI Layer #	Name	PDU Header Size (bytes)
7	einsprachtest	40
6	aufhalten	63
5	zerfahrst	31
4	angespracht	54
3	anrabarbte	8
2	gesetztete	17

Network Stack 4: 'ausgeklettheit'

OSI Layer #	Name	PDU Header Size (bytes)
7	zerrauchkeit	73
6	enwitzst	19
5	einkrautete	20
4	aussinnt	63
3	ansitzte	81
2	aufgehtete	52

Physical Layer Properties

Physical Layer	PDU Header Size (bytes)	Data Rate (kilo-bits per second)	Propagation delay (milliseconds)
zerstehheit	28	2185	513
austraust	86	8573	475
angekraust	94	9025	145
gekaesheit	90	5864	28

Network Diagram

Node #0	Node #4	Node #5	Node #1	Node #2	Node #3
Network Stack: ausgeklettheit	Network Stack: angestehse	Network Stack: angestehse	Network Stack: einsitzen	Network Stack: einsitzen	Network Stack: einsitzen

Physical Layer zerstehheit

Physical Layer gekaesheit
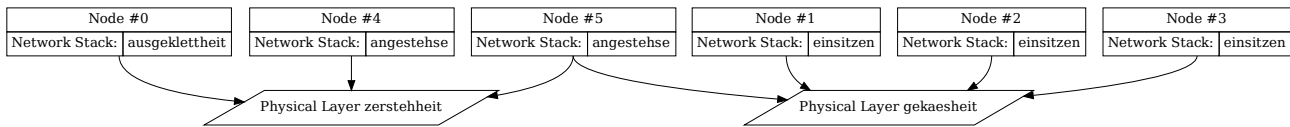
Question#	Question
cr	Could applications on nodes 2 and 3 communicate with one another? i.e., are they using compatible network stacks, and is there a compatible path through the network between them? *Answer Y or N. Any other answer will be marked incorrect.*
cs	If an application on node 3 sends 336 bytes of data, how large would the PDU be at layer 7? *Provide the exact number of bytes as your answer.*
ct	What is the data rate that is possible between nodes 3 and 3? *Provide the exact number of kilo-bits per second as your answer.*
cu	How many milli-seconds would it take node 3 to send 8257 bytes of data to node 3? *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	What are the differences and similarities between congestion and packet loss in computer networks. The Transmission Control Protocol is known to confusing these two situations. Describe the implications of this confusion, its cause and/or how it can be mitigated.

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	Describe how a layered network approach can be used to increase the security of a network, without having to change the applications that use the network. If a network was not built using a layered approach, how might security need to be fitted to such a network, if it were required? What would the impacts be?.