Date: ...13/-02/2024 CSE421-Computer Networks-SEQ Lecture 07 - TCP Mate TCP - Transport layer 4 Port Address Seg. 1000 O: DA 4 20 MBO bytes rest 40 for options Sequence Number - a random number as a start point 3000-304d → 100 PAtec Acknowledgement Number - a number to expect next after receiving -> 2100 Initial Sequence Number (ISN) will be given, suppose ISN = 2000 Control Bits / Control Flag 1018: DA SYN (sync) To establish connection (3-way handshate) ACK (acknowledge) -JNOWS FIN (finish) SYN FIN SYNTACK FINTACK ACK Server SRIVEY client client Termination Connection Establishment stones data 200 bytes window size (rund) ~5000 current window size Flord Ma

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		MT) = 1000	F TCP LICHE	Lecture
	- V Cite		gound transmi	A=1000
	Seq: 1000	<i>Q</i> , ,	Seq: 3000	
000	Ack: O	SYN (1 byte)	Ack! O	
			> Seg: 3000 (comes from	client)
	800:1001	SUN + ACK Tigo	Ack! 1000+1	2,99%
pposite	ACK 13001	ACK + Data	990976	pene
pposite side's acknowledge	wier werdy	TXXX DOGRAM	\$09! 3001 7 0 PPOSITE 2001 ACK: 1001+200=1201	o almondo A
-ment	19 - 1121 0	(00 byte	MCK: (10014 200 5190)	
	809: 1201	(00	its/control Hag	200-200
doroo	Ack : 3101	Jahlinhelen	rund = 1	800
	Catholds byen	mechiona (3 sery b	Lacknowledge (co	- (24)
2900	<u></u>	ient	Server (Harriel)	
	4 4-7.4	ata is lost or not r		
to-Back- Selective f	N Japon - Koo	p the slot empty we rest stored in the	e buffer/window.	(10)
to-Back- Selective f	N Japon - Koo	p the slot empty we rest stored in the	e buffer/window.	
coas last Co-Back-	N Japont - koo & keep the N - discard	rout of order segment of the slot empty of rest stored in the stored in the stored in the rest after production	e huffer window.	Siz Godhaid) Strots
Solective for Back- Cao-Back-	N J C [AXIA] Repeat - koo E keep the N - discard Back-N TCP	rout of order segment of the slot empty of rest stored in the stored in the stored in the stored of the rest ofter production	e huffer/window.	port; star
Solective for Back- Coop Back- EX: Go-	N CANA. Repeat - koo Exepthe N - discard Back-N TCP (client) = 8	rout of order segment of the slot empty of rest stored in the stored in the stored in the stored of the rest ofter production	e huffer/window.	port; star
Solective R coas last coas last Coo-Back- EX: Go-	N CAXIA. Repeat - keep the N - discard Back-N TCP (client) = 2	rout of order segments p the slot empty we rest stored in the sthe rest after p connection 2045 8935	e huffer window.	port; star
Solective R coas last coas last Coo-Back- EX: Go- ISN HTT	N CANA. Repeat - koo Exepthe N - discard Back-N TCP (client) = 8	rout of order segment of the slot empty of rest stored in the stored in the stored in the store of the rest after propertion (4) (8935)	e huffer/window.	port; star

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client Server (1) correction: client's 8:2045 SYN 15:8935 (11) POND = 3020 A: D (90-back-n) SYNTACK \$1 8935 5:2046 A: 2046 A: 8936 ACK+320 209: 2045+1+ 320 818936 A: 2366 cirent 5:2366 (whatever you have 082(878) A:9888 8: 2366 A: 10266 DS3 Ack; 8935+1+952 wasuot s: 2366 received. +378 = 10266 A 110266 DS-4 & DS-5 also notcounted +455 = 10721 Collatouer server has Ack: 2045+1+320+389 seut) = 2755 Cashatovor client has sent Flord ***

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(1)

CSEY21- Computer Netwoorks	2 - SEQ
lecture 09 - Transport d	
# Junctions of TCP - UD Str	
11	egmenting+Reassembling
II .	Multiplexing
. CVD	Full Duplex Service
(v) A	identifying + tracking the segments of diffe
	COMMECTION OFFICE
OID (Reliable service
Stream Delivery - sends and	receives data as a stream of bytes
Buffor - souding + receiving pr	rocesses may not read write at the sa
rate so TCP stores the data	in a place (empty) before being process
storage space -> buffer	the state of the s
9	
M	
empty	11 ampty
empty	Jamphy neiver
sember souter	receiver
House was	receiver buller
House was	or wreceived:
or Sent (1) next in line for	or wreceived:
or Seing sent	or wreceived: not yet read (11) stop ed the data
U) written; not sent to live for the live fo	(11) stop ed the data from sender; to which layer (appli)
U) workten; not sent to line to being sent on the line to being sent on the line to the li	(1) stop ed the data from sender; to which layer (appli) will the sent
U) written; not sent this less that it has secured data; all the secured data; all the secured secured that it has secured data; ACK	(11) stop ed the data from sender; to which layer (appli) will the sent
U) workten; not sent to line to being sent on the line to being sent on the line to the li	(1) stop ed the data from sender; to which layer (appu) will it be sent from transport layer; data not
U) written; not sent on the line for the line for the line sent of the lines sectived data; ACK (waiting)	(11) stop ed the data from sender; to which layer (appu) will the sent from transport layer; data not yet-pulled by Appu
U) written; not sent this less that it has secured data; all the secured data; all the secured secured that it has secured data; ACK	(11) stop ed the data from sender; to which layer (appu) will the sent from transport layer; data not yet-pulled by Appu
U) written; not sent on the line for the line for the line sent of the lines sectived data; ACK (waiting)	cor (1) received; buffer (11) stop ed the data from sender; to which layer (appu) will the sent from transport layer; data not yet pulled by Appu Layer A packets.

to another. Pop IP and sends its packets from one process?

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* Different sea	ment - different soutes -> out of order
Ly R	ecoiver end— it is reassembled
+ Full Duplex	- Exchange of data betw two entities at the same time
- Hultiplexiva	a-Sendentenast aviad atob (a extra - radiana atua
Domuitale	xing-Rocoiver Lesson - 925 ha passamman
* Ploutibus	a+ tracking the sognients 3 5 5001 - 2400 1273
>+0	différentiate seglidatagrame beth appr - Tep uses port
30	umbers.
1 TCP Sogn	went Header - 1 = 1990 ff billow who - 22 thing thought
29 MANY 2005 J	when the production exercial the contractions are the contractions and contractions are contractions and contractions are contractions and contractions are contracting and contractions are contracting and contracting are contracting are contracting and c
13131	2006 Divites
	20160 bytes in top 1221 to reduce 201+
Min ^M Header	size - 20 bytestnamps 2 sult ja noitras
Extra inform	nation/padding - 40 bytes -> maxm Header size - 60 by
Header -	Soume Port (16 bits) Destu Port (16 bits)
	Seq. Number (32 bits) Ack. Number (32 bits)
100	Header Length, HIEN (4 bits) -> to tell the receiving proce
andor	from where the data segistarts as header is of variable
stod)	length. So we specify the Header length is HLEN.
P. C.	Resorved bits (b bits)
	Header size = Multiple of 4
	(TCP) = 4x (SNIS) = 20n60 bytes
	HLEN number of 4 byte words
nites	CONTROL Bit Has - URG Politice weed per ACK 2 04
	Control Bit Flags - URG PO Halle when ACK > 011
	PSH -> PUSh SYN (Tele
	RST -> Reset FIN) to
	Urgent Pointer (16 bits) windowsize (16 bits) nu
	or checksum (16 bits) -> Mandatory field
Forton conjection	Optional Padding (40 bytes) - MSS (Marm Sog. Siz
7	- comput is not stored + skort to this app conting (from
6 2 H =	=1 -> elose/Reset TCP connection
RST	=7 → GLOZELKEZEL ICL CONNECTION

56 bytes of Fleader - 20 bytes b	ase header information size
to bethe a cutified of the acrual time	6 bytes - header padding 10
Byte number - bytes of data being	transferred in each connection
are numbered by TCP -> 0 ~ 232	· Vองเลือกจิ - อันก็หย่อใชยแนวส
construte - 1067 & 3000 dat	a is been thank toward thought to
First byte-1067 & 3000 dat (bytes)	Loop statuerallity of
1 astrogre 1900	of of the state of
Urgent-Pointer - only valid if URG=1.	- reboot Hongos 907 @
(16) - used when sog. conta	ins organt data
- holds a value that me	ins organt data the seas number of be added to obtain
the number of the	last urgent byte in the data
gention of the sea	mentatyung - asia roboot Mulu
02 - 200-1000 all Mixaline - 234 valor	Extra supportation/padding - 41
UP-50 Find 11) trag Nto 20	Header - Source Port (16 WHS
1000+50=1050 -> bytenum	Segistionalogy (20 mag
Dugnissan ontho tot (Stigh) N	all stones votable tes
MSS-larged block of data that a se	uder using TCP joil son a to
14 - becoiver not reposit out y	age to at withhall
(2)	icid) stiri Divoroti
1/100	garia seis volunale (90°C)
potypi odroba (21/2)	1xp = Cray
TEM - Winnpex of A potto consus	1
1090 201 1010109 F 2901	1211301-1-1
TOPA VOLUMENT PISO	- ppn/7 Hist Joshum)
ADULT STATE	
1-9-729	
A CARLAND A ADRON CARLAND	11) vobused transit
(atidal) sele andrisca (atida	11) retwied troparty
A (atidal) sele andrica (atida	He all Lourstand voice on real