1

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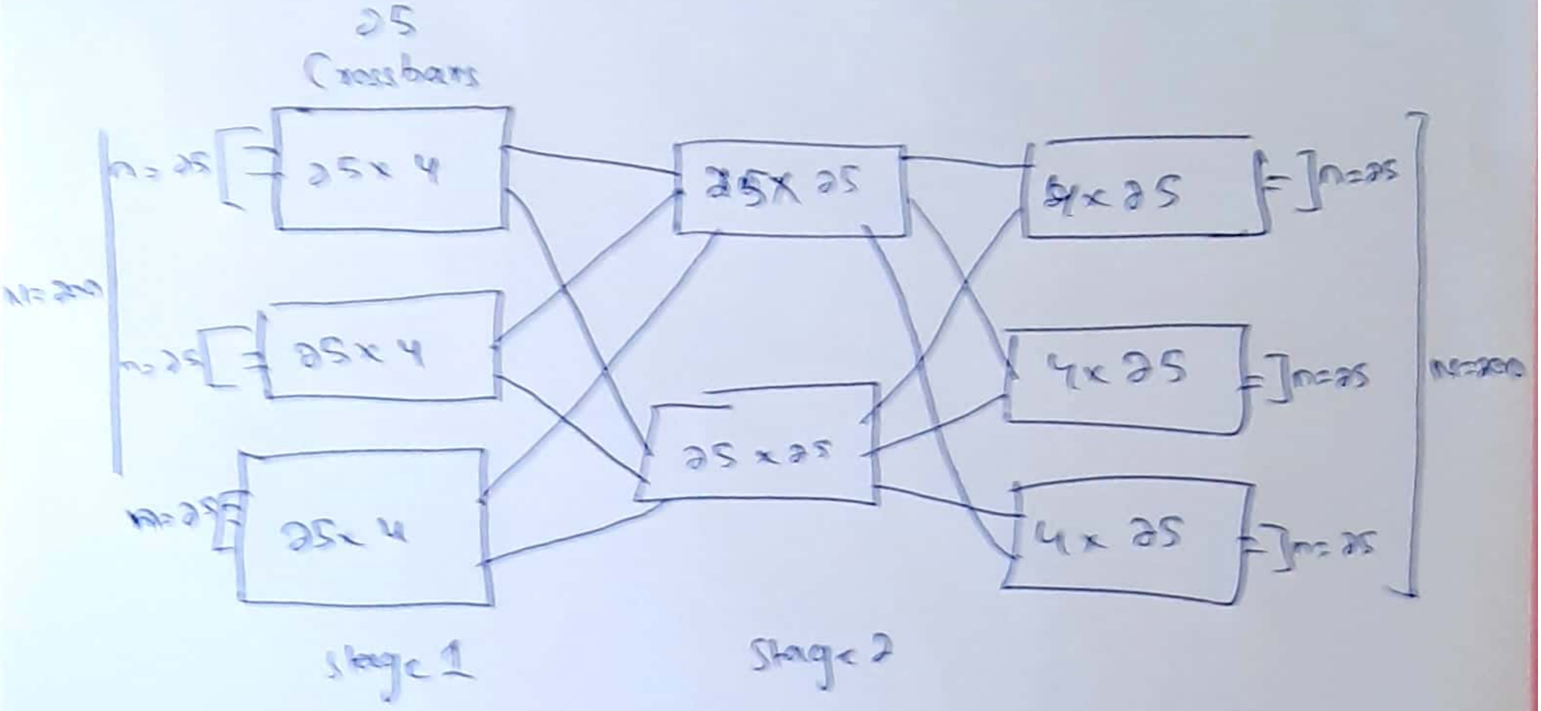
Q No. 1 ~~solution~~ we need a three ——— ?

- Draw the configuration ... ?



Total number of Cross points

$$= 25(25\times4) + 4(25\times25) + 25(25\times4)$$

$$= \boxed{= 7500}$$

Ibrahim Jan (2) 10.68.28

Q No. 2 Explain & show graphically what will happen when fram 1 is lost using selective - - - - ?

Ans Frame 1 is lost. The receiver receives frames 2 & 3, but they are discarded because they are recieved out of order. The sender receives no acknowledgment about the frames 1, 2, or 3. Its timer finally expires. The sender sends all outstanding frames (1, 2, 3) because it does not know what is wrong. Note that the resending of frame 1, 2 and 3 is the response to one single event. when the sender is responsed to one single event, when the sender is responsending to this events. This means that when ACK 2 arrives, the sender is still busy with sending fram 3.

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The physical layer must wait until this event is completed and the data link layer goes back to its sleeping state. we have show a vertical line. to indicate the delay. it is the Same story with Ack 3. but when Ack 3 arrives, the sender is busy responding to Ack 2. it happens again when Ack 4 arrives. Note that the secound timer expires. all outstanding frames have been sent the timer is stopped.

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Q No.3 A digitized voice channel is made by digitizing 4-KHz bandwith analog ----?

Solution

The bit rate can be calculated as

$2 \times 4000 \times 16 = 80{,}000$ bps

$= 80$ kbps

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Q.No 104. An ISP is granted a block of address starting with 10.100.10.0/16. The ISP need to ----?

Ans - The first group has 64 customer; each need 128 addresses.

For this group, each customer need 128 address. This means that 7 ($\log_2 128$) bits are needed to define each host. The prefix 32 - 7 = 25. The addresses are ---

1st Customer ⟶ 10.100.10.0/25
10.100.10.127/25

2nd customer ⟶ 10.100.10.128/25
10.100.10.255/25

~~64th Customer~~ ⟶ 10.100.~~127~~ 63.128/25
64th customer 10.100.~~127~~ 63.255/25

Total = 64 × 128 = **8,192**

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- The Second group has 128 customers; each needs 128 addresses.

For this group, each customer needs 128 address. This means the suffix length is 7 ($2^7 = 128$). The prefix length is then $32 - 7 = 25$.

The address are:

1st Customer ⟶ 10.100.10.0/25
10.100.10.127/25

2nd customer ⟶ 10.100.10.128/25
10.100.10.255/25

128th customer 10.100.127.128/25
10.100.127.255/25

Total = 128 x 128 = **16384**

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- The Third group has 128 customers, each need 32 address.

For this group, each customer need 32 addresses. This means the suffix length is 6 ($\log_2 32$). The prefix length is then 32 − 6 = 26. The address are:

1st customer ⟶ 10.100.128.0/26
10.100.128.63/26

2nd customer ⟶ 10.100.128.64/26
10.100.128.127/26

128th Custome ⟶ 10.100.159.192/26
10.100.159.255/26

Total = 128 × 32 = **4096**

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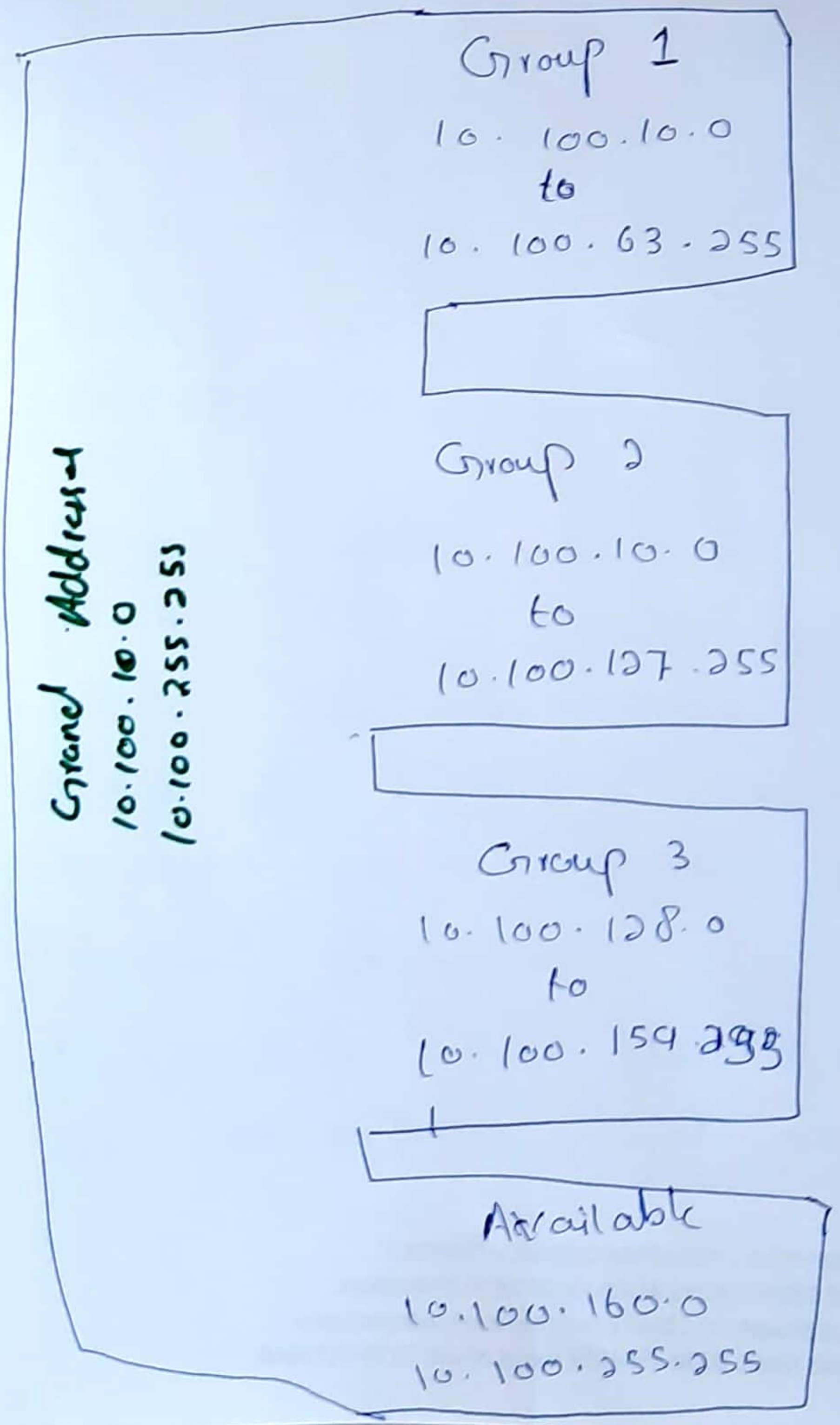
- Design the sub blocks & find out how many address are still available after these allocations.



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Q No 5. Below shows a part of an internet with two routers connecting three LANs. Each devices (computer or routers) has a ~~part~~ pair of address ----?

Ans: In this case, each computer is connected to only one link and therefore has only one pair of addresses. Each router, however, is connected to three network (only two are show in the figure). So each router has three pairs of addresses, one of each connection. Although it may be obvious that each router must have a separate physical address for each connection, it may. The computer with logical address A and physical address 10 needs to send a packet to the computer with logical address P & physical address 95. The sender encapsulates its data in a packet at the network layer and add two

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logical destination address (A and P).
Note that is most protocols, the logical source address comes before the logical destination address (countrary to the order of physical address). The network layer, however, needs to find the physical address of the next hop before the packet can be delivered. The network layer consults its routing table and finds the logical address of the next hop (router 1) to be F.
Another protocol, Address Resolution Protocols (ARP) find the physical address of router 1 that corresponds to its logical address (20). Now the network layer passes this address to the data link layer, which in turn, encapsulates the packet with physical destination address 20 and Physical source address 10.
The router decapsulates the packet from the frame to read the logical

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destination address P. Since the logical destination address does not match the router's logical address, the router knows that the packet needs to be forwarded. The router consult its routing table and ARP to find the physical destination address of the next hop (router2), creates a new frame, encapsulates the Packet, the sends it to router 2.