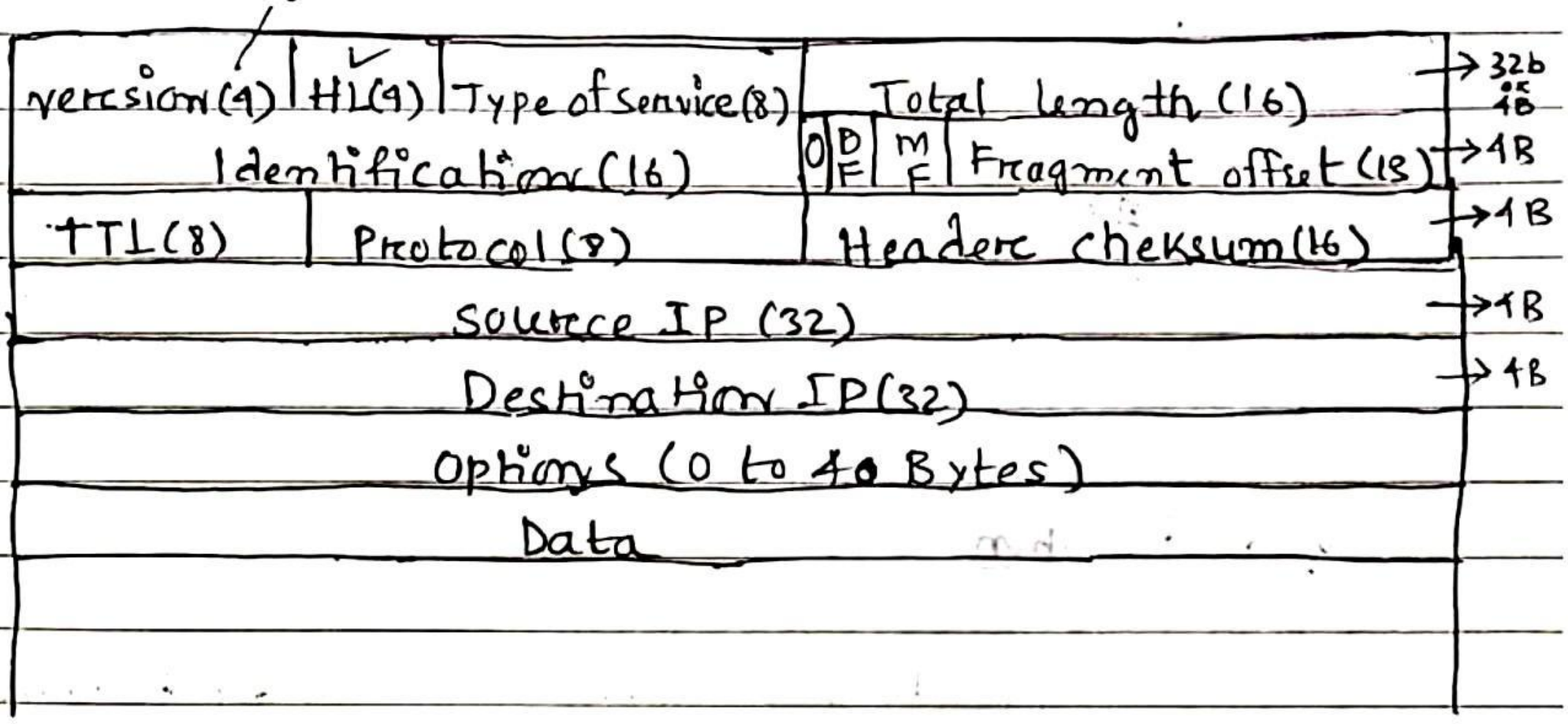
Internet protocol

IPV4 header.



HL → header length. (4 bit)
DF → Don't fragment (1 bit)
MF → More fragment (1 bit)
TTL → Time to leave (8 bit)

• HL (4) :

min header length → 20 Byte + 0 B → 20 B
max " " → 20 B + 40 B → 60 B

HL		HL field
20B	20/4 →	5
32B		8
40B	← 10×4	10

padding → adding dummy data with actual data

30 B → 7.5 X
(30+2) B → 8 ✓

• version (4)

V_1

V_2

V_3

V_4 ✓ — 0100

V_5 X

V_6 ✓ — not in syllabus
0110

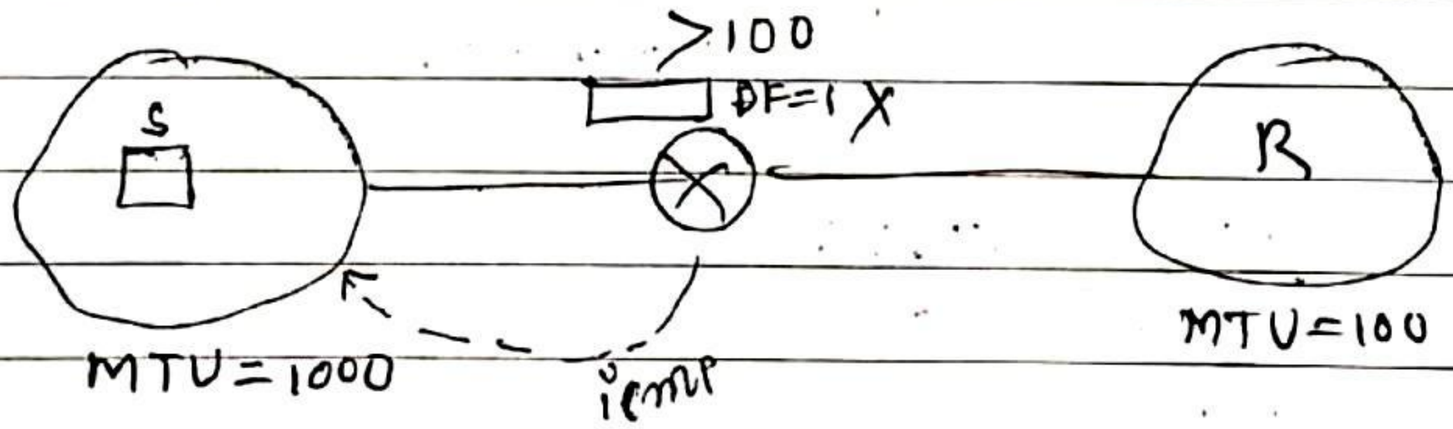
• Identification (16)

→ Identification number used inorder to number every datagram that is going out of a host.

• 3 Flags — zero, DF, MF

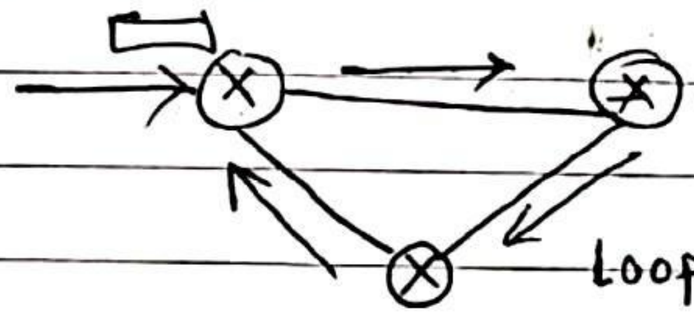
↓

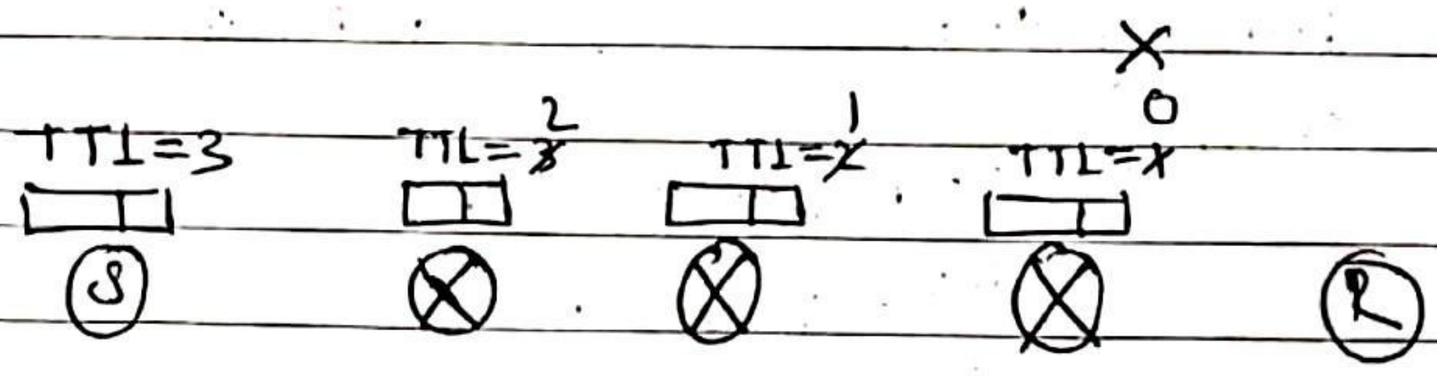
More fragments are following



• [illegible]

- Time to leave (TTL) (8 bit)

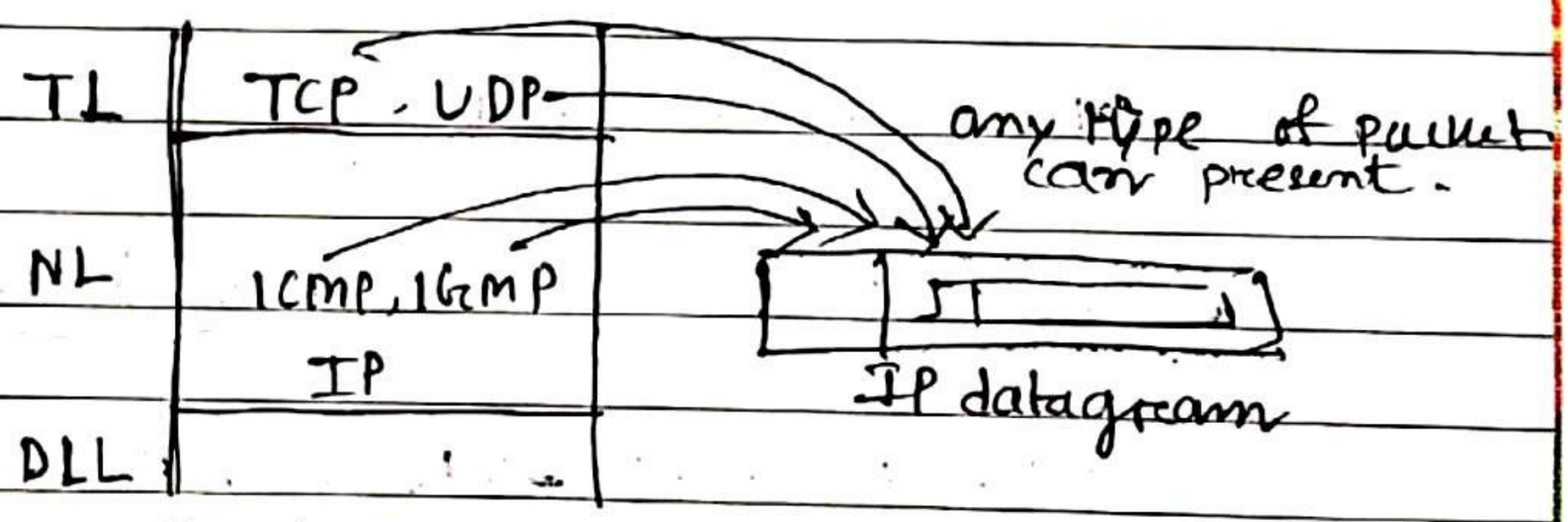




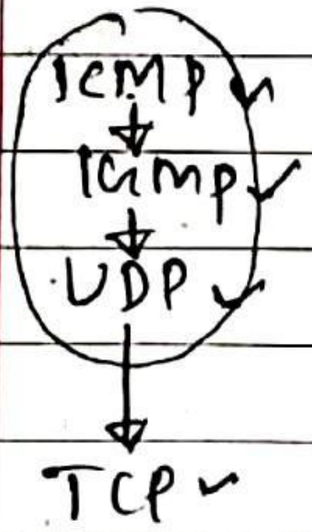
When, TTL=0 then packet will be discarded by router.

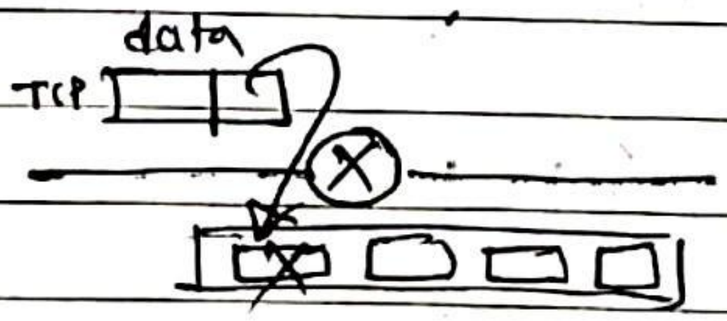
→ The main purpose of TTL is to discarded packets which fall in Infinite loop.

- protocol :

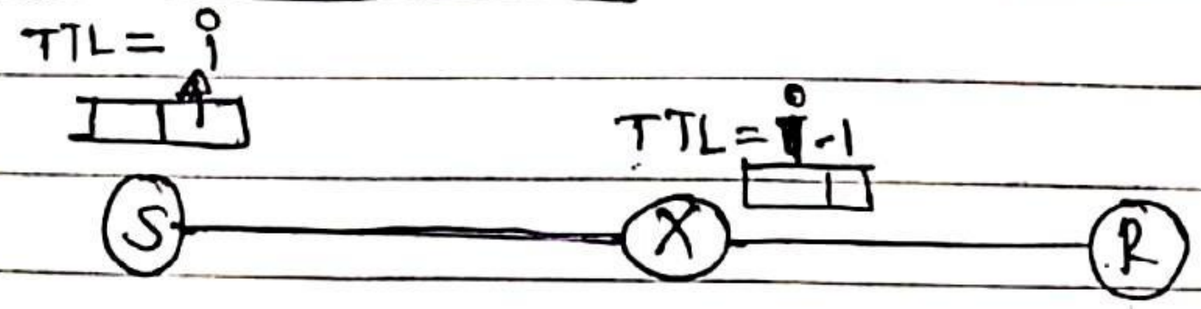


→ protocol field say that which types of packet present in IP data gram.





- **Header Checksum(16) –**



during transmission of data ~~the~~ fields which might change –

(i) FO, MF, TL.
(ii) options.
(iii) Header length.

Header	Data

↓

checksum calculated in header part

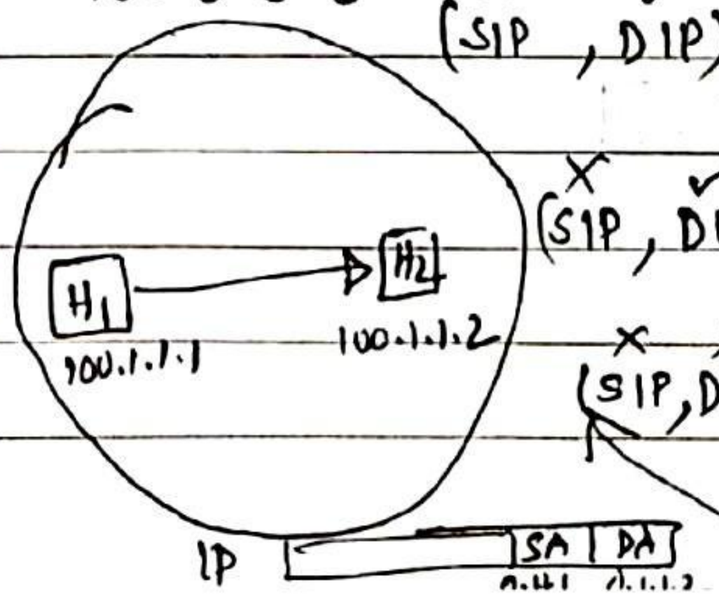
checksum → used to ~~check~~ ~~it~~ error detection.

- **Source IP and Destination IP address –**

IP has two parts → Network ID, Host ID.

SIP → source IP
DIP → Destination IP.

(✓SIP, ✓DIP)	valied – ✓	✓	→ ~~in~~valied IP
(✗SIP, ✗DIP)	✓	0's	→ NIP
(✗SIP, ✓DIP)	✓	1's	→ Directed Broadcast address.
100.0.0.0 (✗SIP, ✓DIP)	1's	1's	→ Limited Broadcast address.
(✗SIP, ✓DIP)	1's	0's	→ Network mask or subnet mask.
(✗SIP, ✗DIP)	0's	✓	→ Host within network.

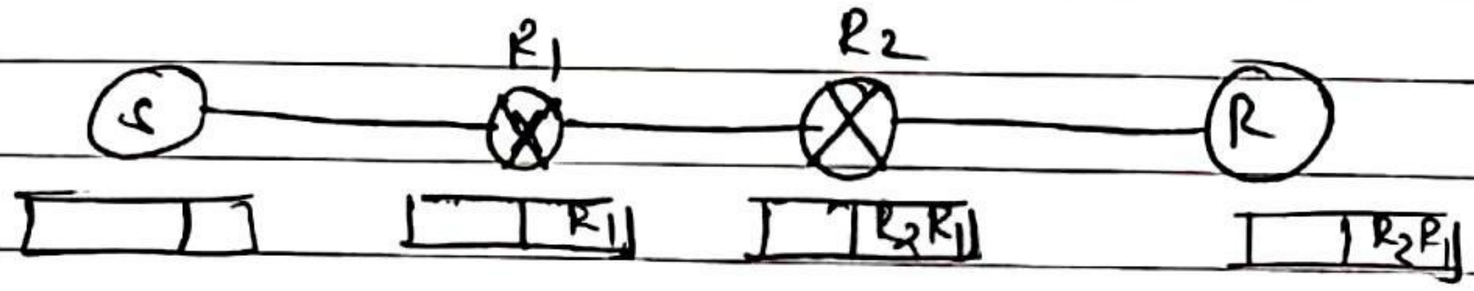


127.0.0.1

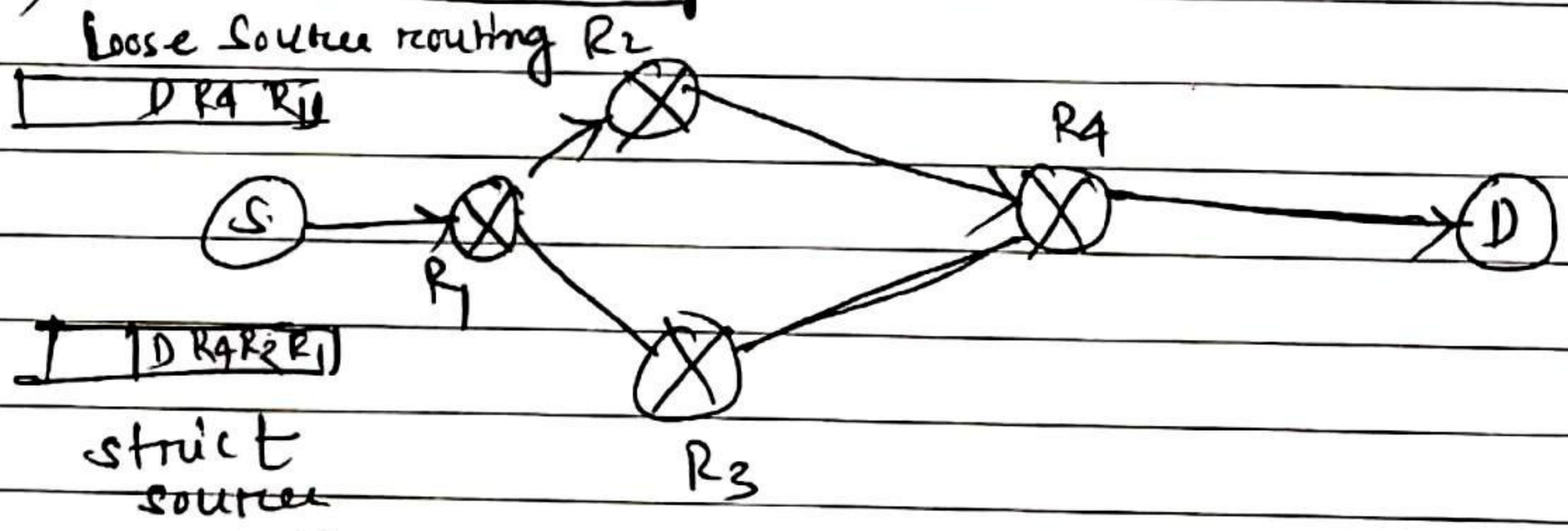
	NID	HID	
(SIP, DIP)	0's	0's	— "I don't have Ip"
(SIP, DIP)	127	✓	— "loop back address"

- **options** – (not important for gate).

(1) **Record route** –



(2) **Source routing** –



strict source routing.

(3) **padding**.

→ Record route, source routing → padding added in options.