[SR-ROUTER.C]

Helper functions :-

- print IP $\longrightarrow$ print IP from uint32_t ip.
- printMAC $\rightarrow$ print MAC from char* MAC
- ip_2_iface $\twoheadrightarrow$ return interface given the IP of the interface
- mac_2_iface $\rightarrow$ return interface given MAC
- find_best_route $\rightarrow$ Longest Prefix Match
- forward_ip_packet $\rightarrow$ Forward the IP packet if it is not destined to the router.
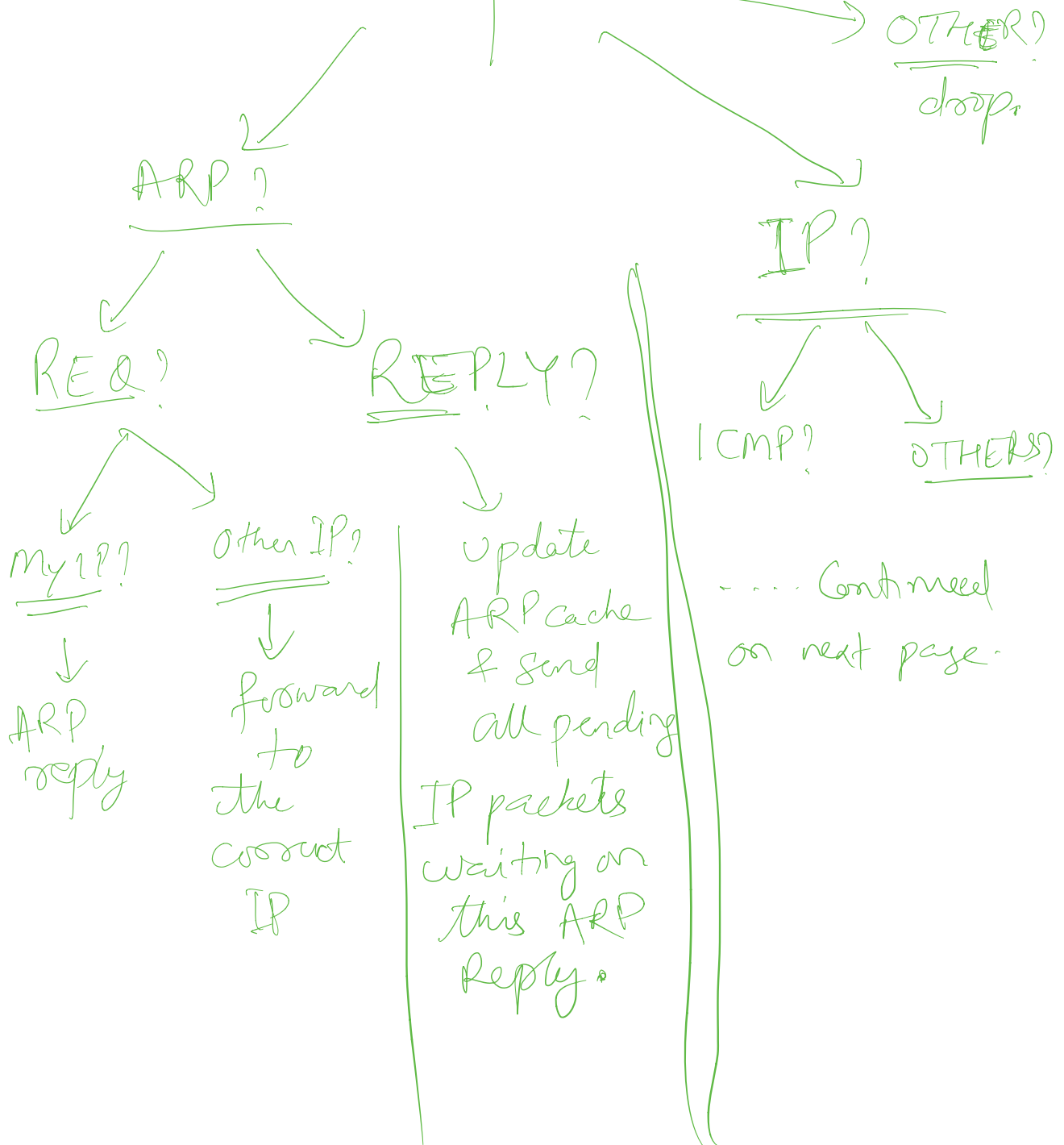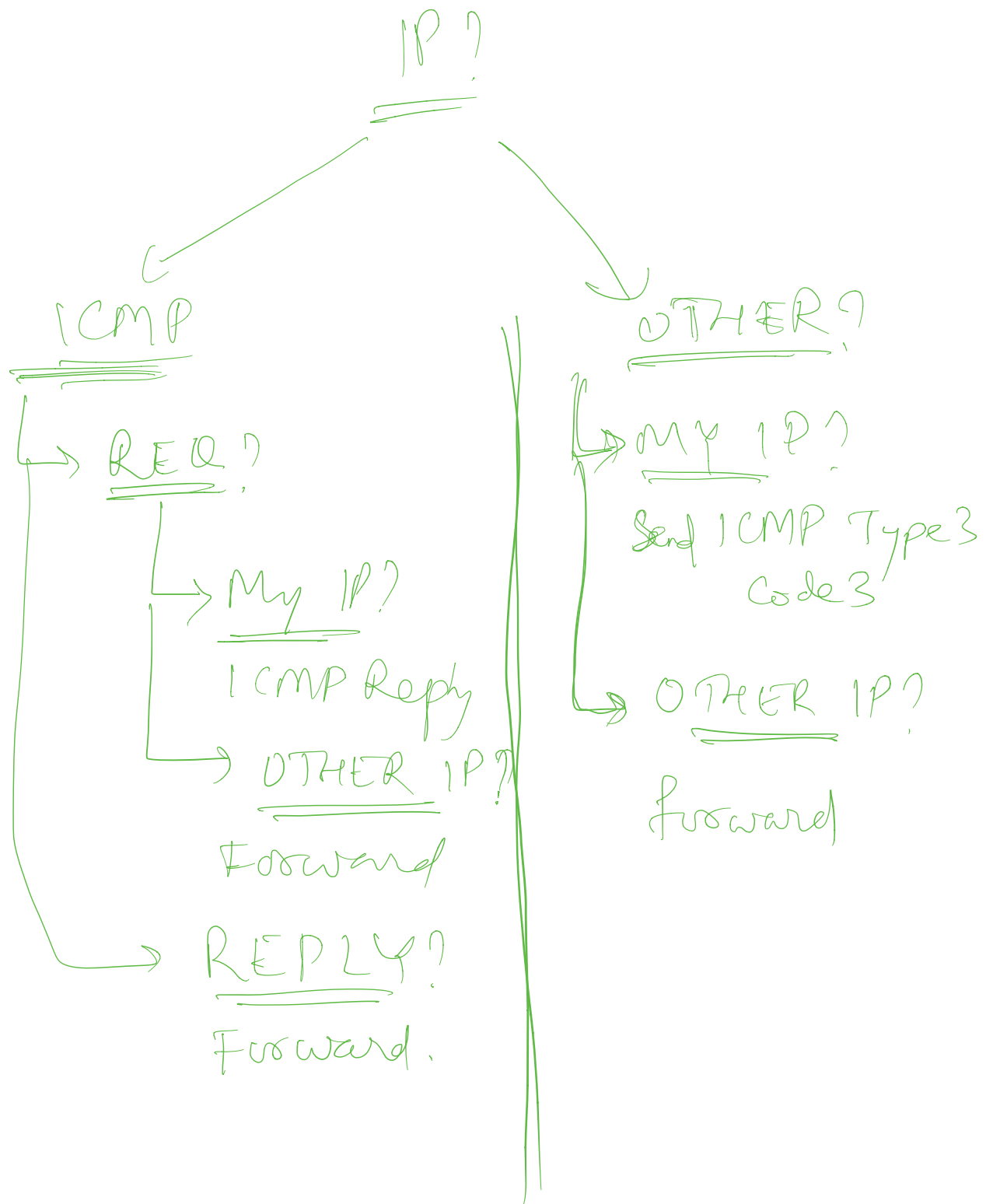
TTL > 1

- Find best route using LPM.
- Reduce TTL by 1.
- Update IP headers.
- Set IP checksum
- Set MAC src & dest.
- $\rightarrow$ Send packet if ARP cache hit else
- Send pkt to ARP request Queue

TTL <= 1

$\rightarrow$ Send ICMP - Type 11 Code 0 with TTL = 64 with pooper ICMP and IP chksum.

— Sr_handle packet ⟶ OTHER? drop.

ARP?
├── REQ?
│   ├── My IP??
│   │   └── ARP reply
│   └── Other IP?
│   └── Forward to the correct IP
└── REPLY?
    └── Update ARP cache & send all pending IP packets waiting on this ARP Reply.

IP?
├── ICMP?
│   └── ..... Continued on next page.
└── OTHERS?

IP ?

ICMP

→ REQ ?

→ My IP ?
ICMP Reply

→ OTHER IP ?
Forward

→ REPLY ?
Forward.

OTHER ?

→ MY IP ?
Send ICMP Type 3
Code 3

→ OTHER IP ?
Forward

SR_ARP CACHE _ SWEEPREQS

— Loop over all pending Requests.
  └─ If sent < 5 times, send ARP
  └─ Else for all pending packets
     on this ARP request,
     send ICMP TYPE3 CODE1