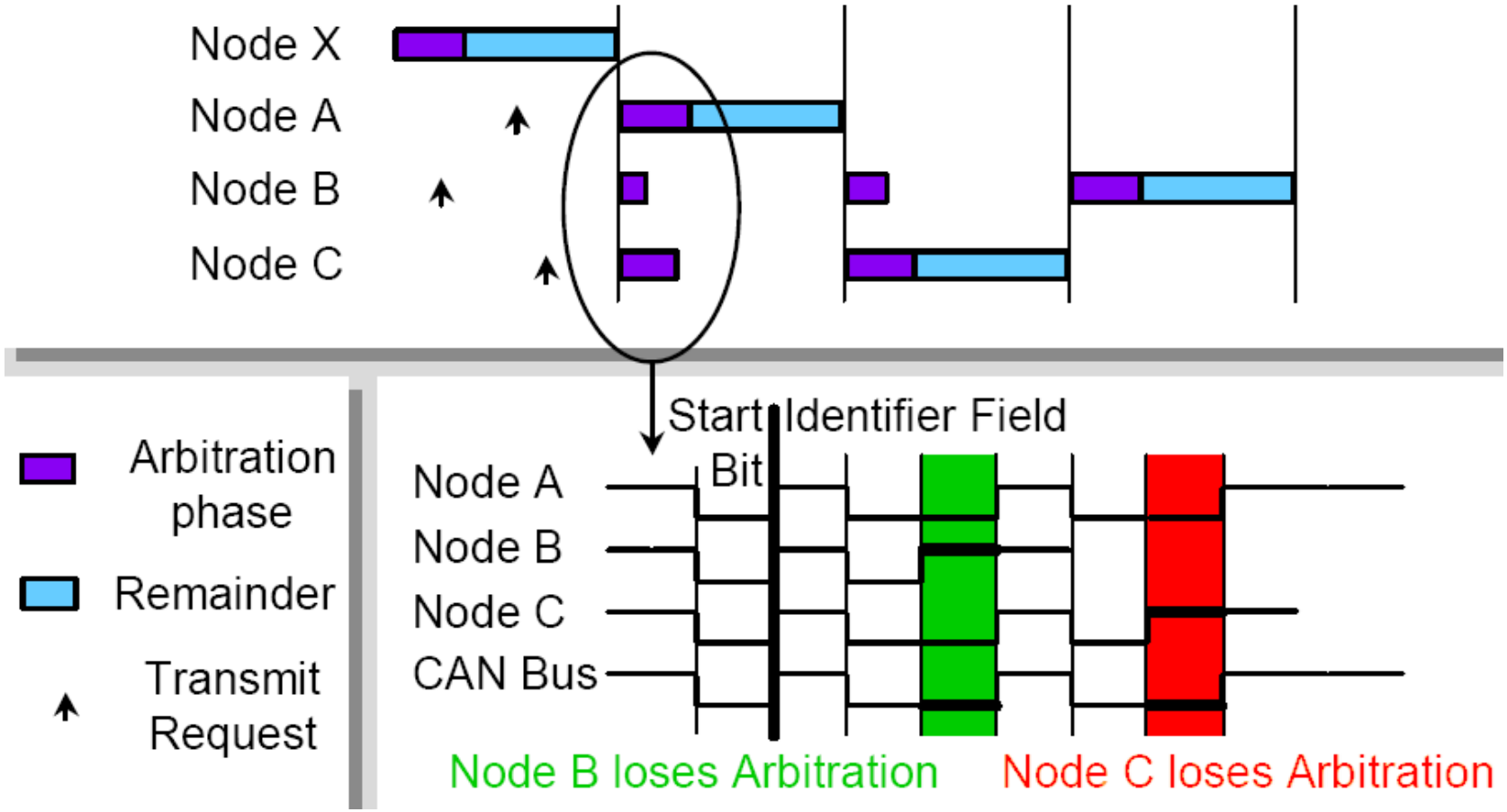
Sharif University of Technology
Department of Computer Engineering

Embedded System Design

CAN (Cont.)

A. Ejlali

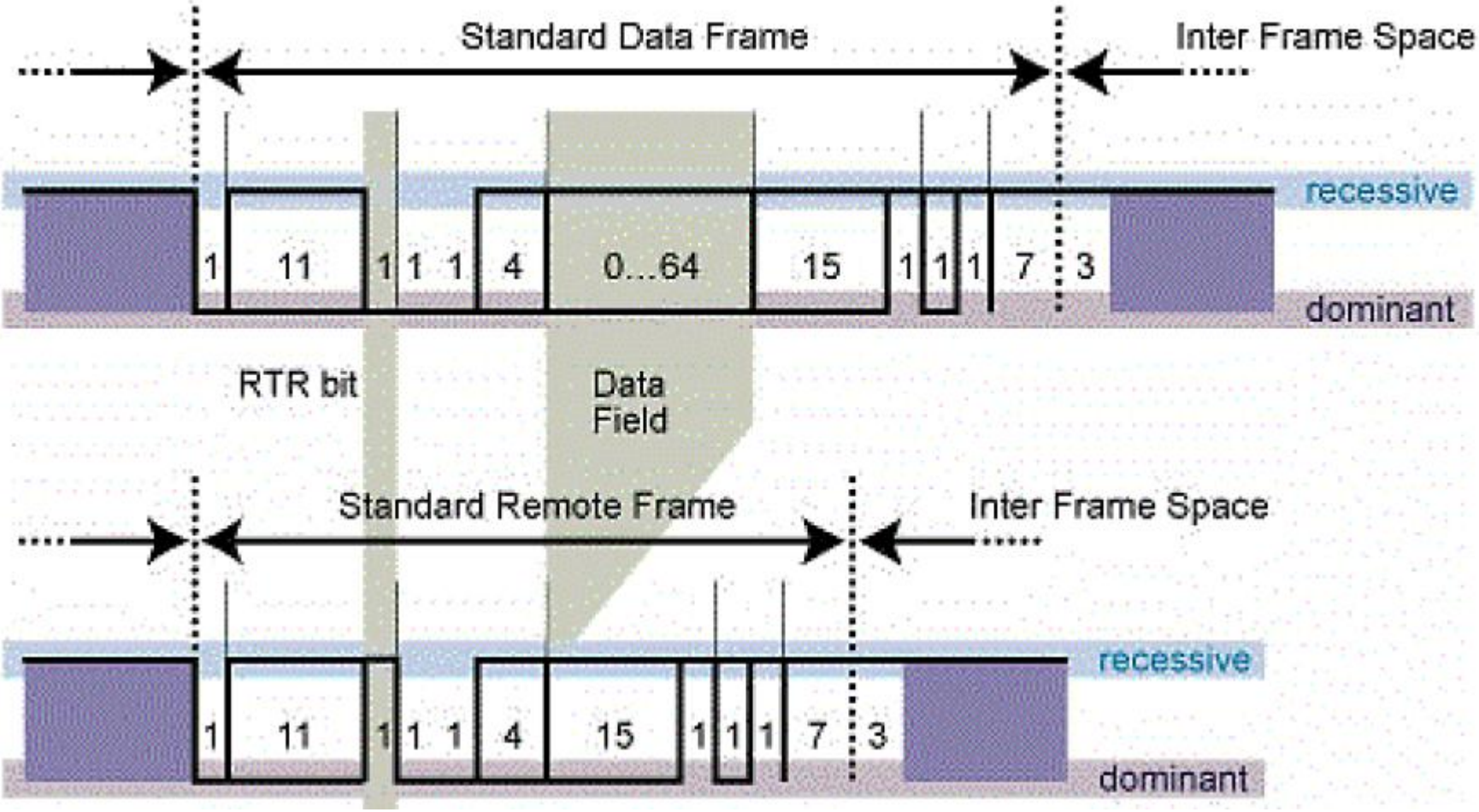
Arbitration Example



Acknowledgement Mechanism

- **Like the arbitration mechanism, the acknowledgement mechanism is based on Wired-AND.**
- **During the ACK slot the transmitting node sends out a '1'.**
- **Any node that has received the error free frame sends back a '1' during the same ACK slot.**
- **A '0' in the ACK slot indicates an erroneous frame transmission.**

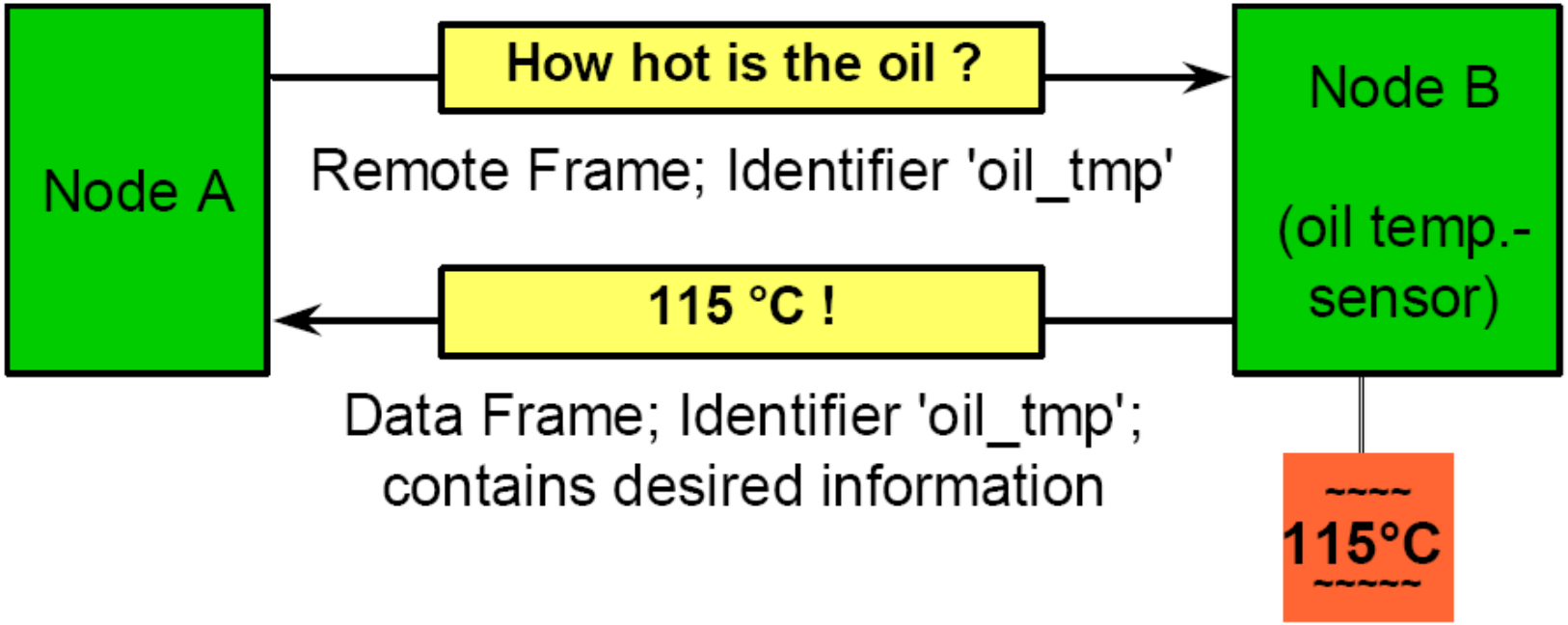
Remote Frame



Remote Frame

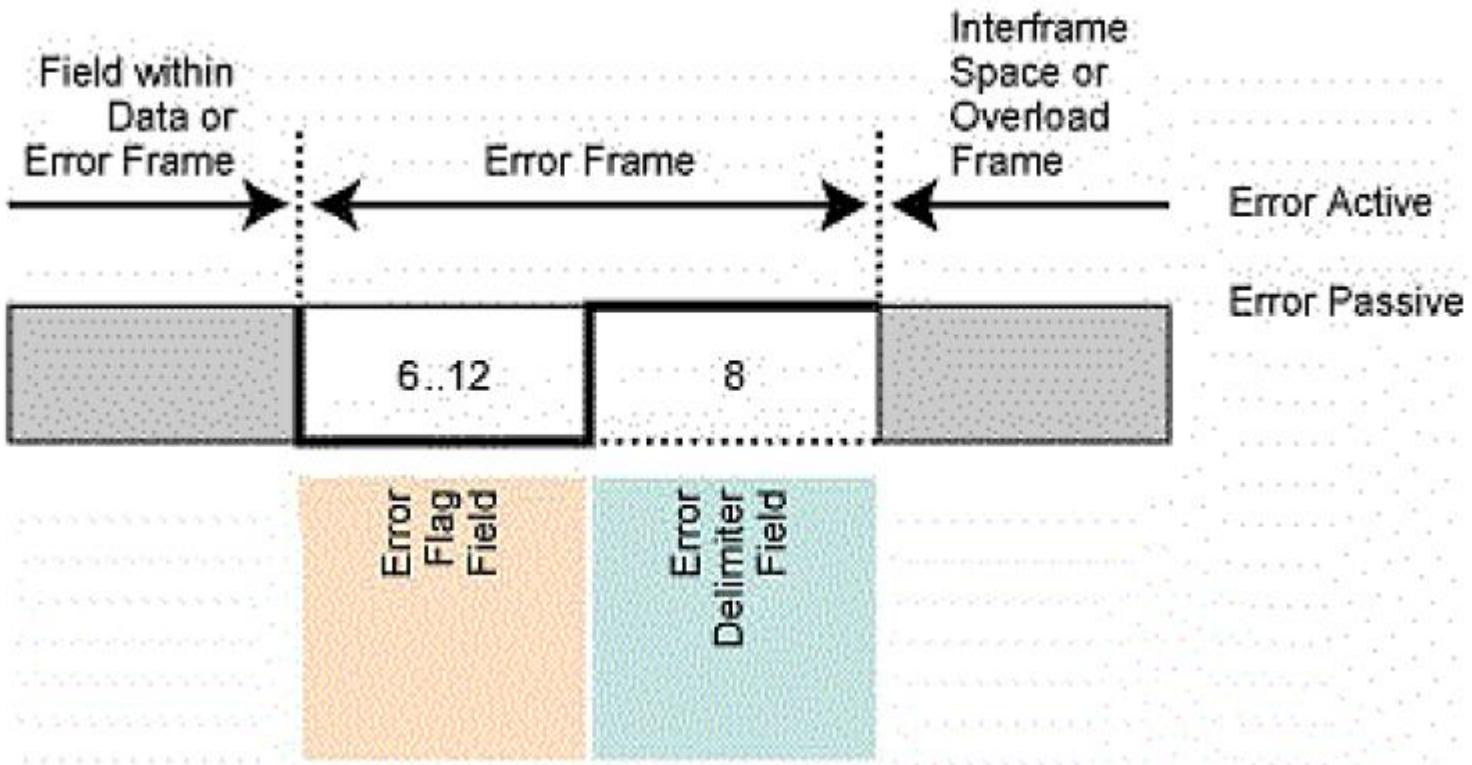
- Generally data transmission is performed on an autonomous basis.
  - No remote frame
  - e.g., a sensor sends out data frames continuously.
- A destination node can request the data from the source by sending a Remote Frame.
  - Request / Reply Model

Remote Frame



- **If a node wishes to request the data from the source, it sends a Remote Frame with an identifier that matches the identifier of the required Data Frame.**

Error Frame


Field within
Data or
Error Frame
Error Frame
Interframe
Space or
Overload
Frame
Error Active
Error Passive
6..12
8
Error
Flag
Field
Error
Delimiter
Field

Error Frame

- An Error Frame is generated by any node that detects a bus error.
- There are, two forms of Error Flag:
  - Active error flag = 6 consecutive 0
  - Passive error flag = 6 consecutive 1
- 6 consecutive 0 (or 1) violates the bit stuffing rule.
- Passive error flag is effective only when the bus master node sends it.