P3 + P4

INE5424-06208B (20242) – Sistemas Operacionais II | Curso de Ciências da Computação

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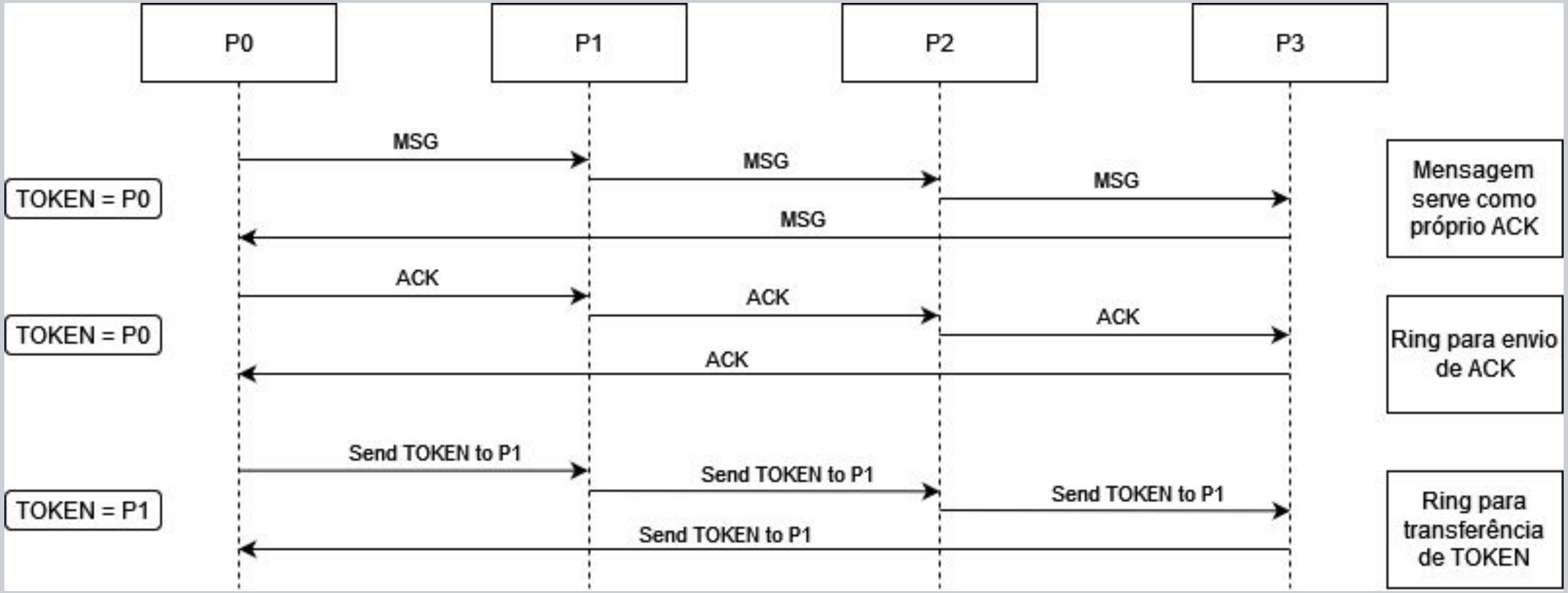
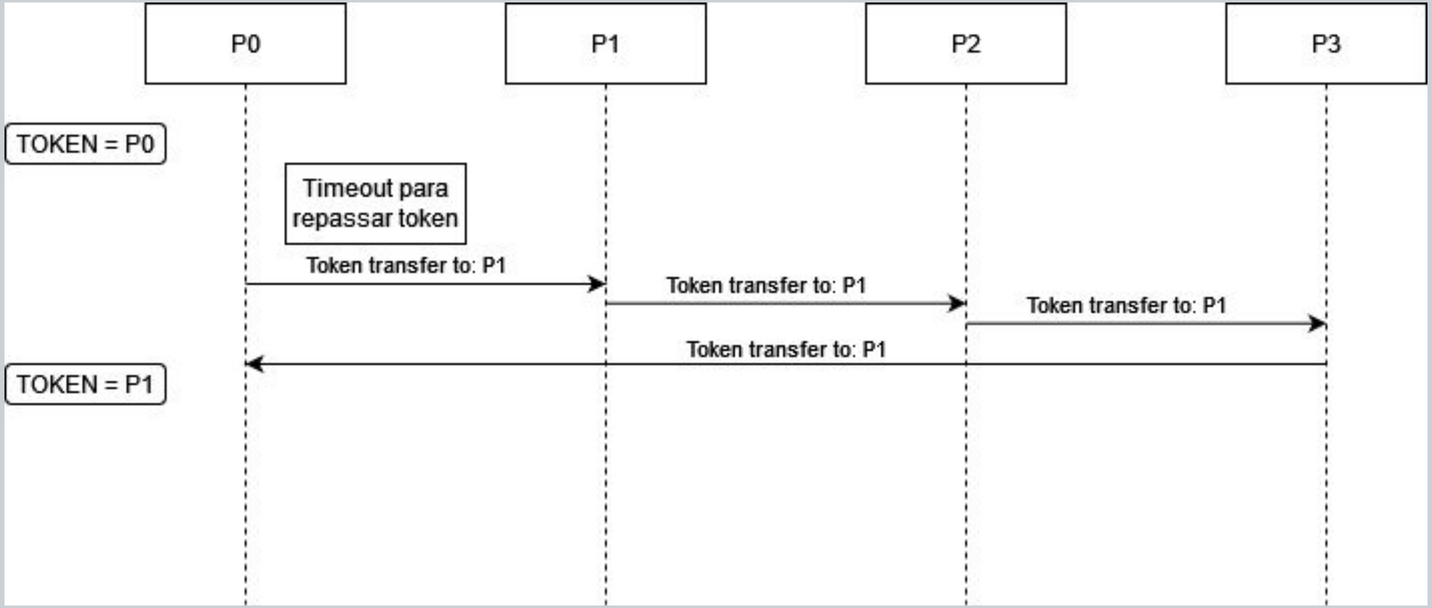
P3 - Atomic via Token Ring

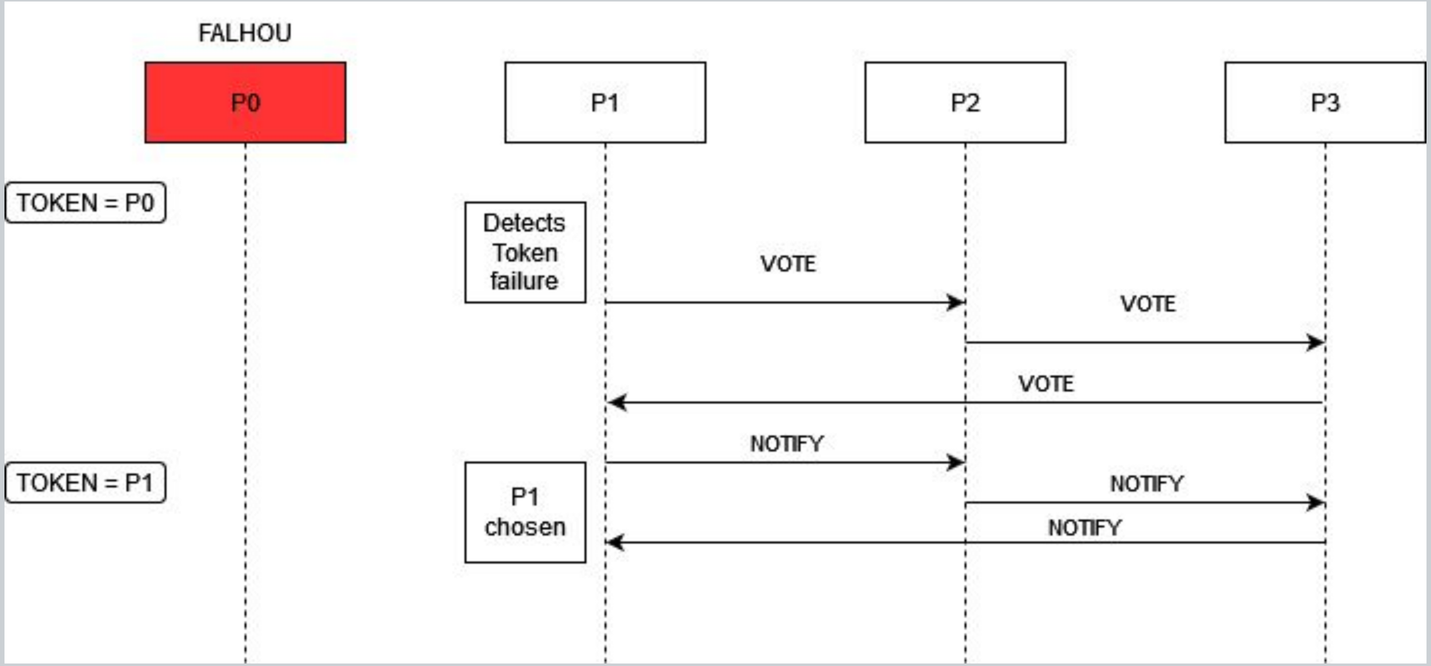


- Todos são notificados quando o token é passado

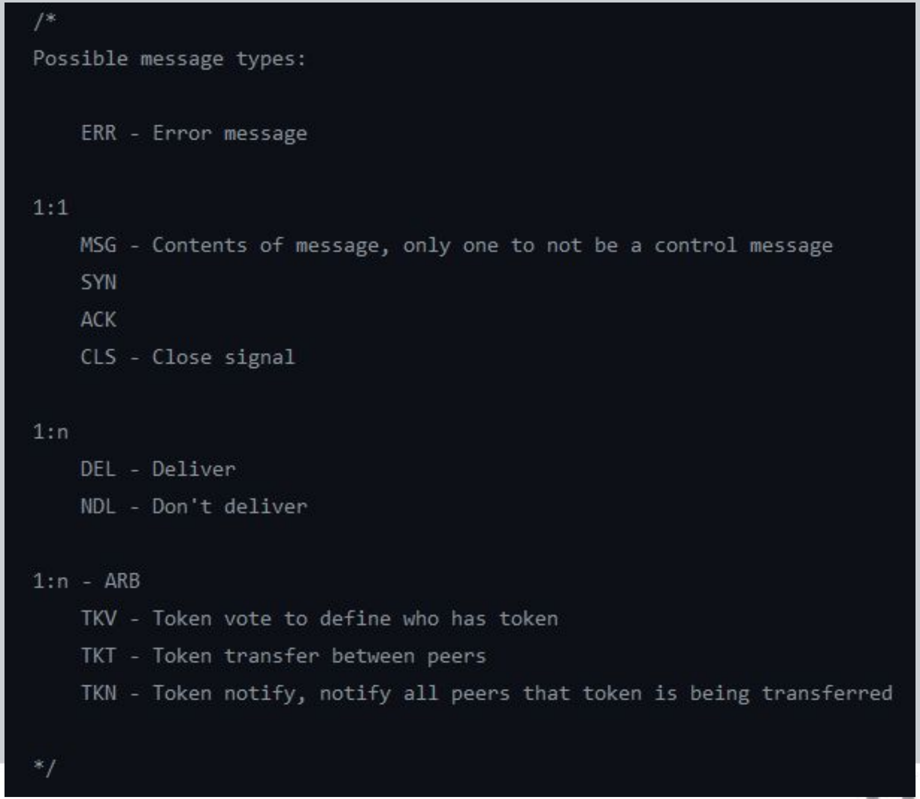
P3 - Timeout para repasse do Token



P3 - Falha do processo Token



P3 - Novos sinais de Message



```
/*
Possible message types:

    ERR - Error message

1:1
    MSG - Contents of message, only one to not be a control message
    SYN
    ACK
    CLS - Close signal

1:n
    DEL - Deliver
    NDL - Don't deliver

1:n - ARB
    TKV - Token vote to define who has token
    TKT - Token transfer between peers
    TKN - Token notify, notify all peers that token is being transferred

*/
```

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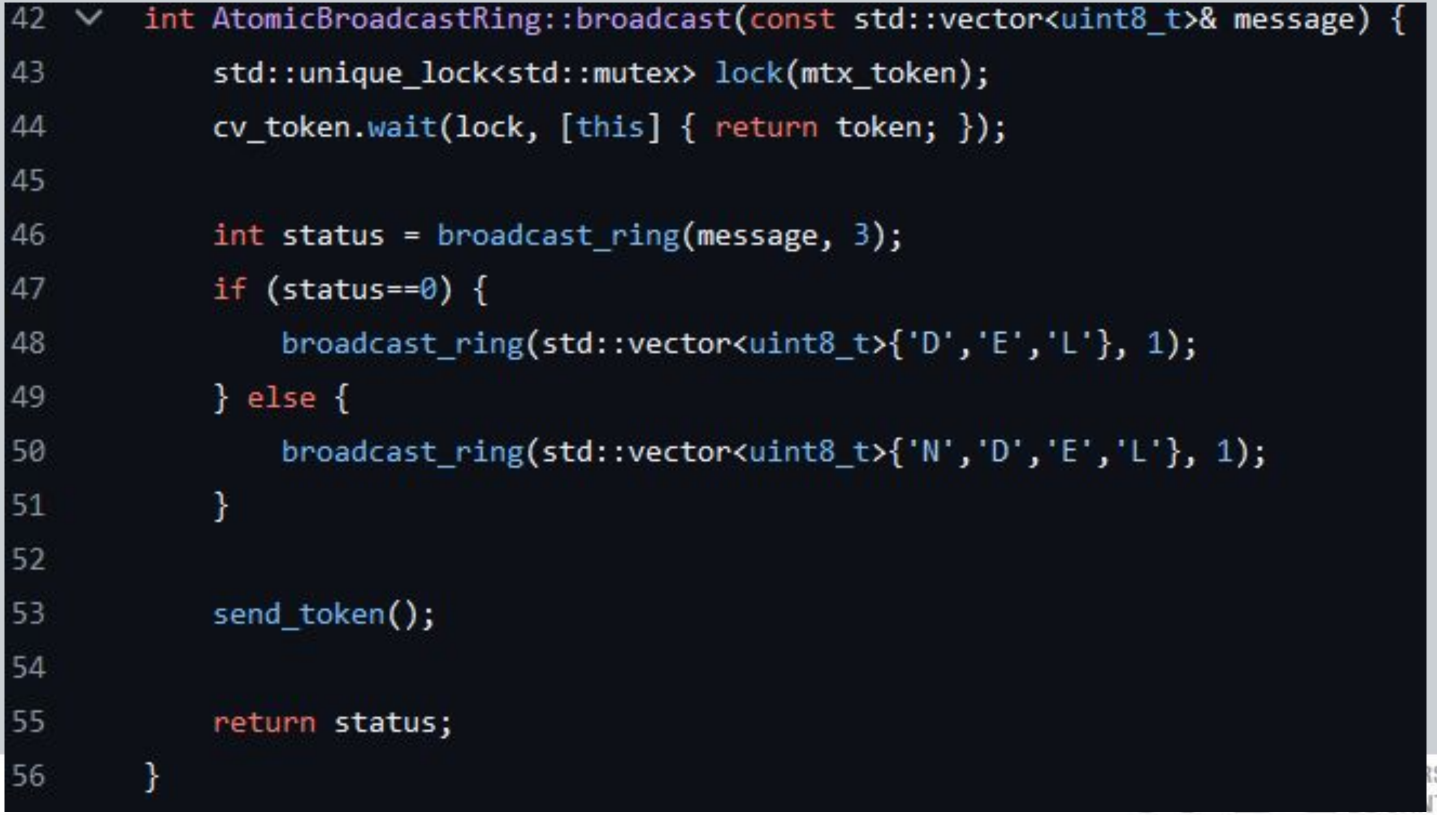
P3 - Broadcast



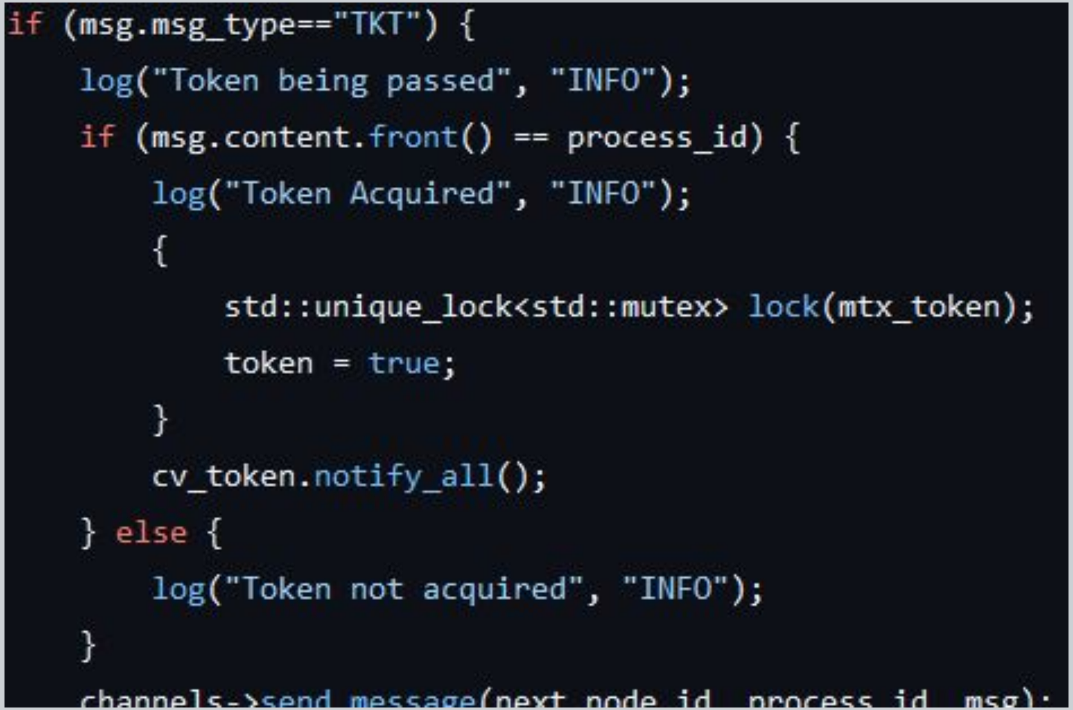
```
int AtomicBroadcastRing::broadcast(const std::vector<uint8_t>& message) {
    std::unique_lock<std::mutex> lock(mtx_token);
    cv_token.wait(lock, [this] { return token; });

    int status = broadcast_ring(message, 3);
    if (status==0) {
        broadcast_ring(std::vector<uint8_t>{'D','E','L'}, 1);
    } else {
        broadcast_ring(std::vector<uint8_t>{'N','D','E','L'}, 1);
    }

    send_token();

    return status;
}
```

P3 - Passando Token



```
if (msg.msg_type=="TKT") {
    log("Token being passed", "INFO");
    if (msg.content.front() == process_id) {
        log("Token Acquired", "INFO");
        {
            std::unique_lock<std::mutex> lock(mtx_token);
            token = true;
        }
        cv_token.notify_all();
    } else {
        log("Token not acquired", "INFO");
    }
    channels->send_message(next_node_id, process_id, msg);
```

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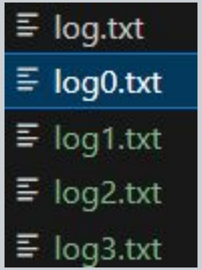
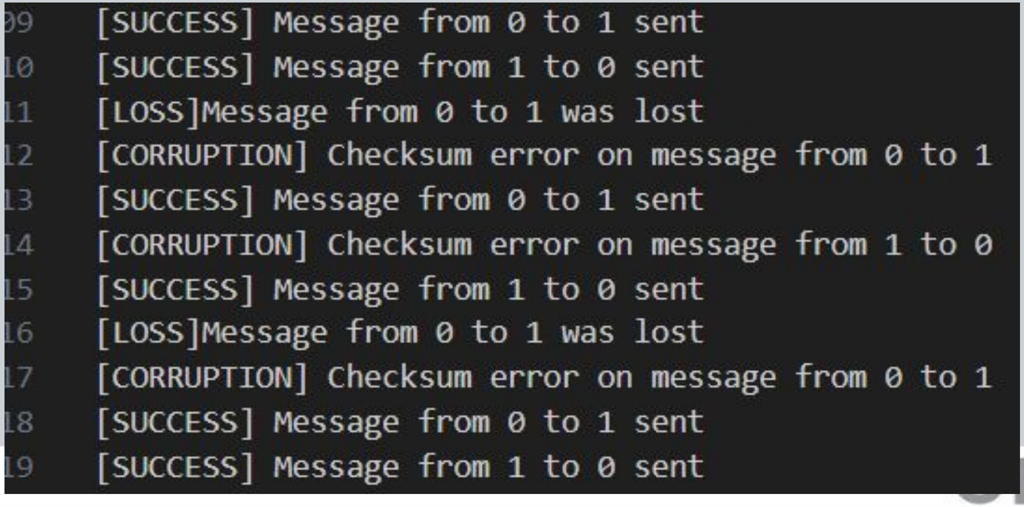
P4 - Injeção de Falhas

- Falhas selecionadas:
  - Loss de pacote - Não entrega ou não envio de mensagem
  - Corrupção de dados - Mudança no checksum

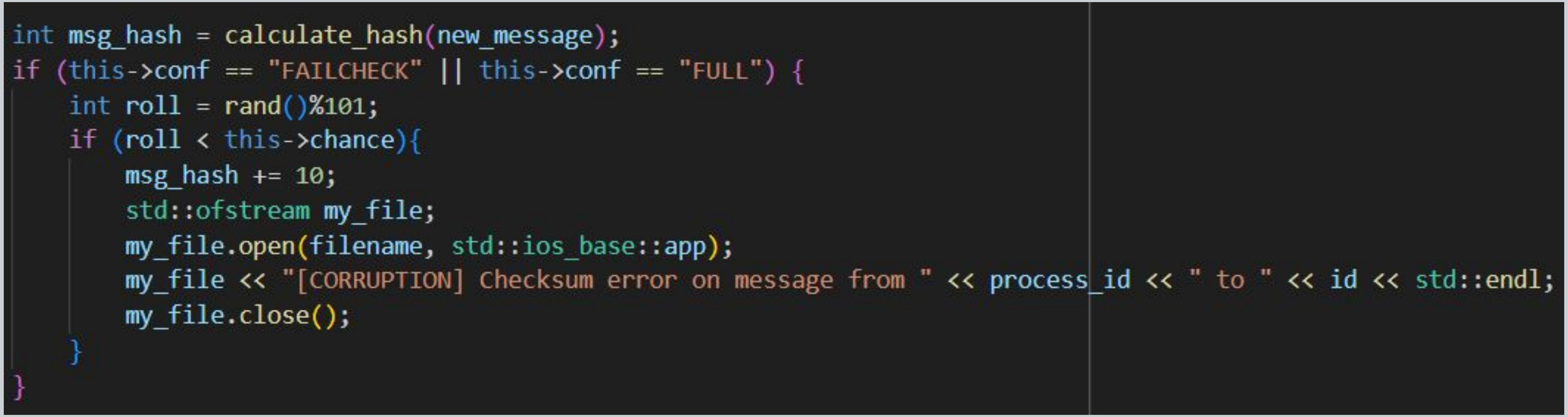
- Geração de arquivos de log via processo para demonstrar as falhas





```
[SUCCESS] Message from 0 to 1 sent
[SUCCESS] Message from 1 to 0 sent
[LOSS]Message from 0 to 1 was lost
[CORRUPTION] Checksum error on message from 0 to 1
[SUCCESS] Message from 0 to 1 sent
[CORRUPTION] Checksum error on message from 1 to 0
[SUCCESS] Message from 1 to 0 sent
[LOSS]Message from 0 to 1 was lost
[CORRUPTION] Checksum error on message from 0 to 1
[SUCCESS] Message from 0 to 1 sent
[SUCCESS] Message from 1 to 0 sent
```

P4 - Código



```cpp
int msg_hash = calculate_hash(new_message);
if (this->conf == "FAILCHECK" || this->conf == "FULL") {
    int roll = rand()%101;
    if (roll < this->chance){
        msg_hash += 10;
        std::ofstream my_file;
        my_file.open(filename, std::ios_base::app);
        my_file << "[CORRUPTION] Checksum error on message from " << process_id << " to " << id << std::endl;
        my_file.close();
    }
}
```

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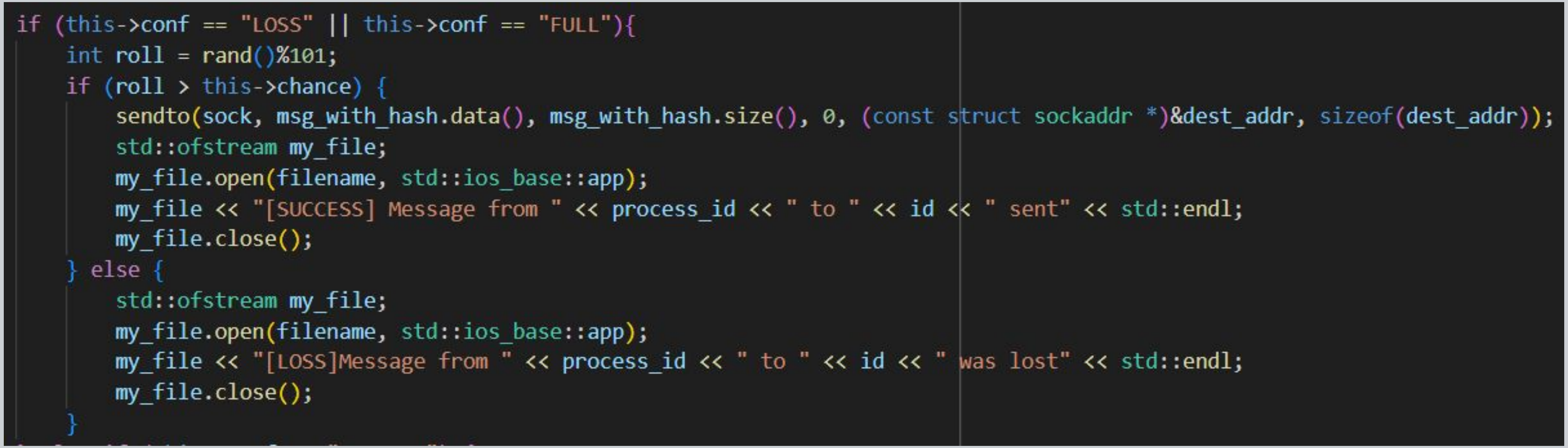
P4 - Código



```
if (this->conf == "LOSS" || this->conf == "FULL"){
    int roll = rand()%101;
    if (roll > this->chance) {
        sendto(sock, msg_with_hash.data(), msg_with_hash.size(), 0, (const struct sockaddr *)&dest_addr, sizeof(dest_addr));
        std::ofstream my_file;
        my_file.open(filename, std::ios_base::app);
        my_file << "[SUCCESS] Message from " << process_id << " to " << id << " sent" << std::endl;
        my_file.close();
    } else {
        std::ofstream my_file;
        my_file.open(filename, std::ios_base::app);
        my_file << "[LOSS]Message from " << process_id << " to " << id << " was lost" << std::endl;
        my_file.close();
    }
```

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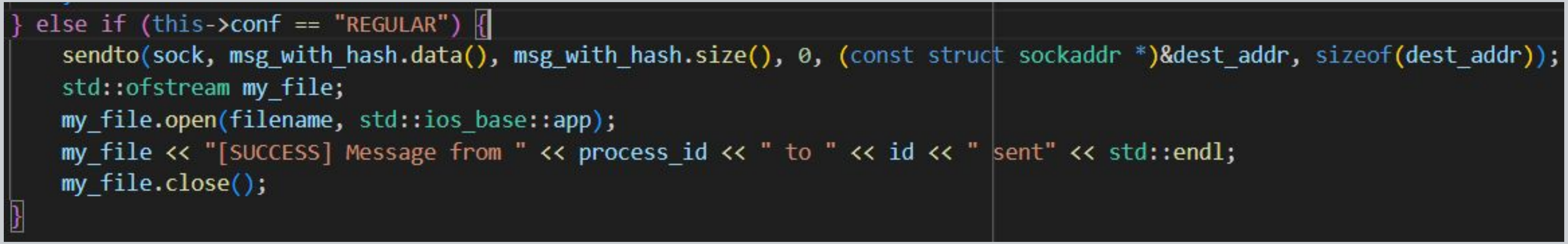
P4 - Código



```
} else if (this->conf == "REGULAR") {
    sendto(sock, msg_with_hash.data(), msg_with_hash.size(), 0, (const struct sockaddr *)&dest_addr, sizeof(dest_addr));
    std::ofstream my_file;
    my_file.open(filename, std::ios_base::app);
    my_file << "[SUCCESS] Message from " << process_id << " to " << id << " sent" << std::endl;
    my_file.close();
}
```

Equipe

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