Advanced C Programming Cheat Sheet

Quick Reference for Advanced Users

1. Advanced Pointers

- Pointer to Pointer: `int **ptr;`
- Function Pointers: `void (*funcPtr)(int);`
- Pointer Arithmetic: `ptr + 1`

2. Dynamic Memory Management

- malloc: `int *ptr = (int *)malloc(sizeof(int));`
- calloc: `int *ptr = (int *)calloc(10, sizeof(int));`
- realloc: `ptr = (int *)realloc(ptr, newSize);`

3. Data Structures

- Linked List: `struct Node { int data; struct Node *next; };`
- Binary Tree: `struct TreeNode { int data; struct TreeNode *left, *right; };`

4. Advanced File Handling

- Binary File I/O: `fread(buffer, size, count, file);`
- File Locking: `flock(fileDescriptor, LOCK_EX);`

5. Concurrency

- Thread Creation: `pthread_create(&thread, NULL, function, arg);`
- Mutex Lock: `pthread_mutex_lock(&mutex);`