Minishell Memory Allocation Checklist

This checklist ensures that all necessary data structures in Minishell are properly allocated, with error checking and field initialization. Every malloc/calloc must be verified and integrated safely.

[ ]   Allocate t_minishell in main

   [ ] Check malloc success

   [ ] Initialize all fields (NULL, 0, etc.)

[ ]   Allocate t_token in lexer

   [ ] Allocate value string

   [ ] Set type and state fields

[ ]   Allocate t_command_tree nodes in parser

   [ ] Assign left and right children

   [ ] Set node type and data pointer

[ ]   Allocate t_exec struct for N_EXEC nodes

   [ ] Allocate argv array and strings

   [ ] Initialize infiles and outfiles to NULL

[ ]   Allocate t_infile and t_outfile nodes

   [ ] Set type and file name

   [ ] Link into infile/outfile lists

[ ]   Allocate t_env nodes from environment variables

   [ ] Duplicate name and value strings

   [ ] Set flags (is_export, printed)

[ ]   Allocate envp_arr from env list

   [ ] Allocate array size + 1 for NULL terminator

   [ ] Ensure each entry is key=value formatted

[ ]   Handle allocation failures gracefully

   [ ] Free partial allocations before returning NULL

   [ ] Print error message if needed

Use this checklist to ensure reliable memory allocation and program stability.