C++ Models

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CSE687 – Object Oriented Design

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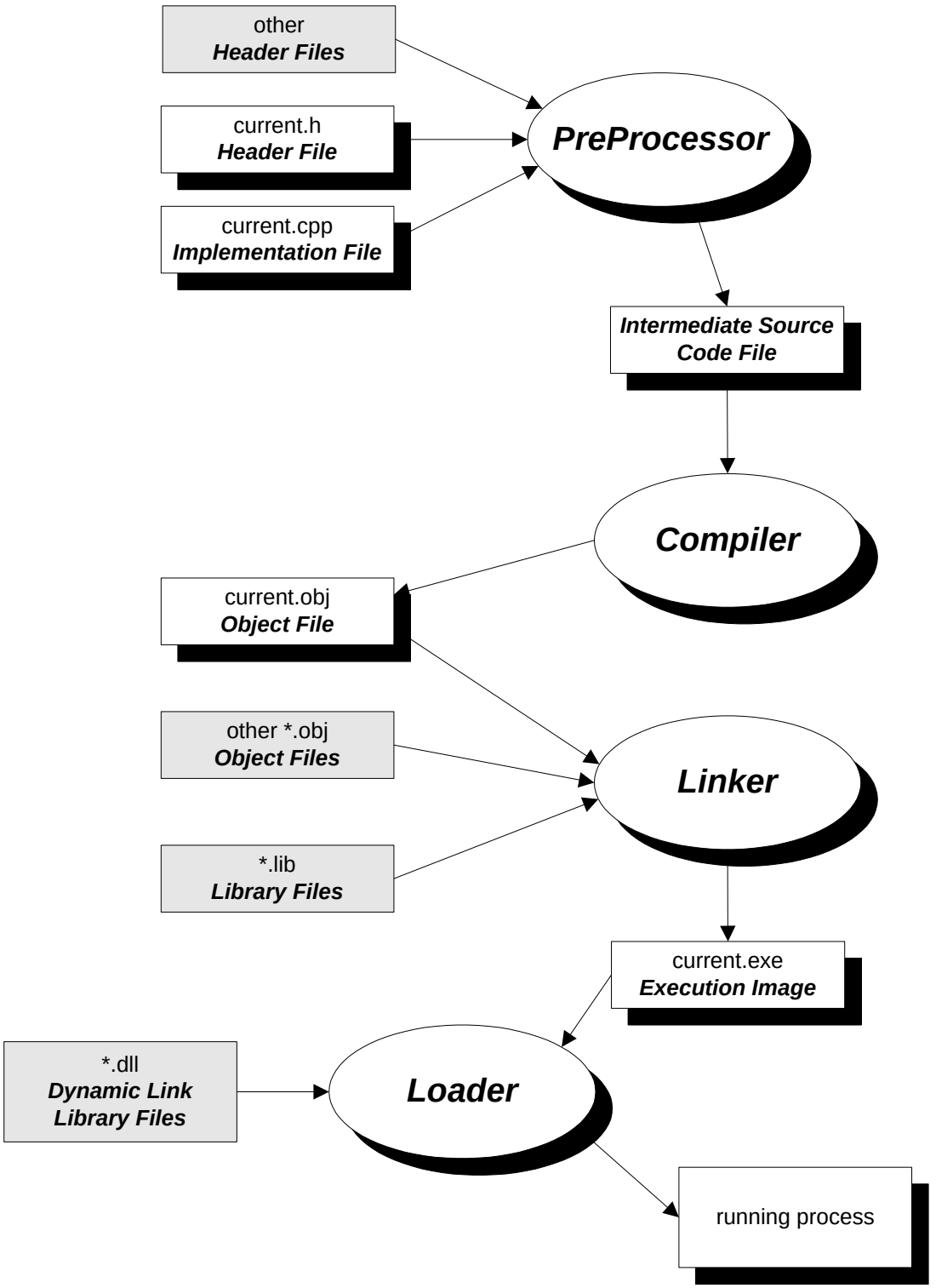
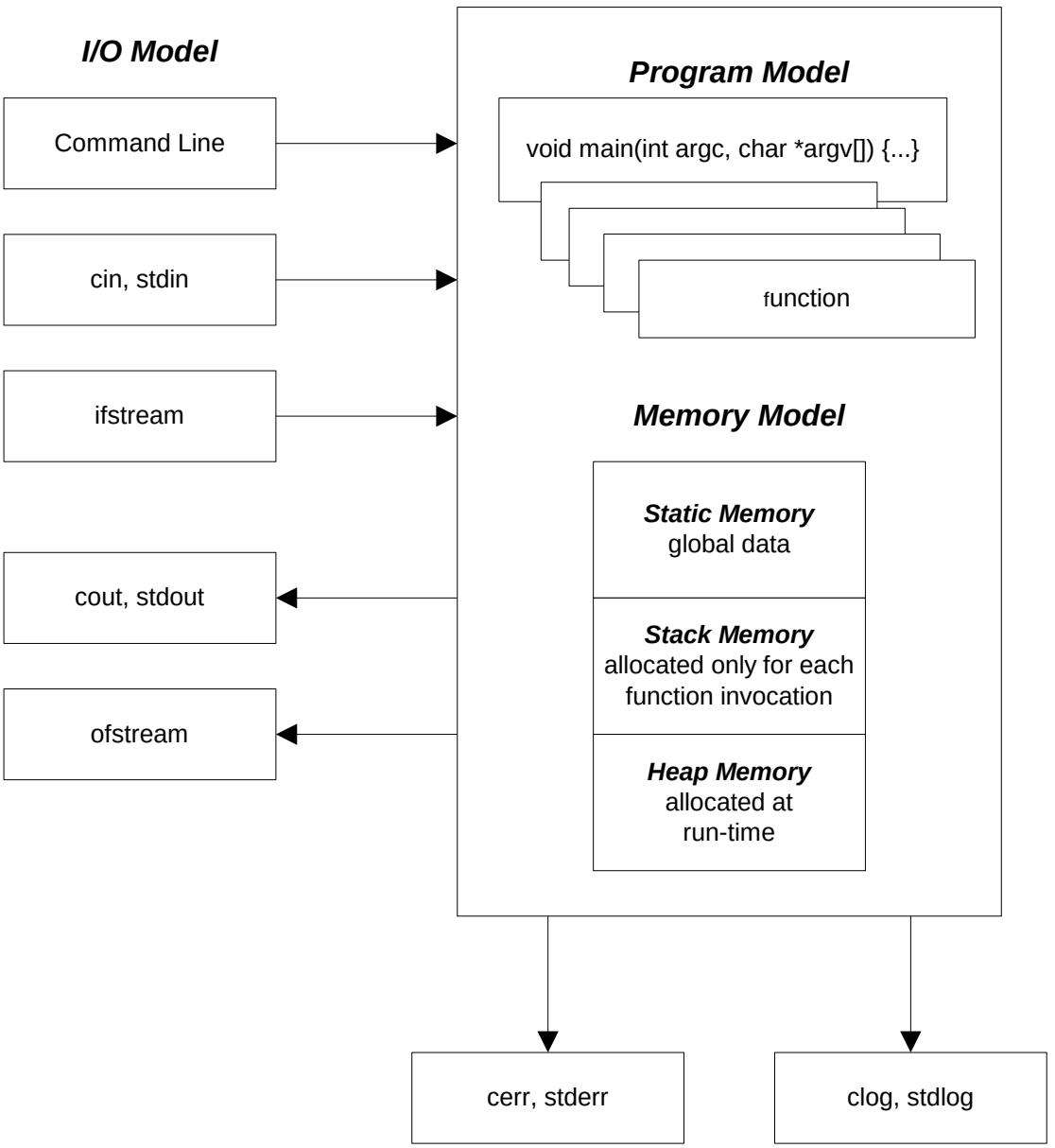
C/C++ Compilation Model

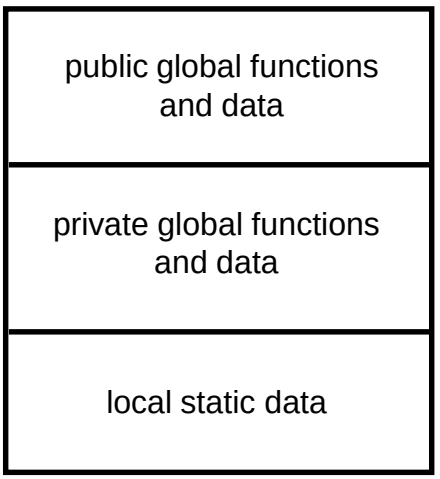


C/C++ Computational Model



C/C++ Memory Model

Static memory: - available for the lifetime of the program

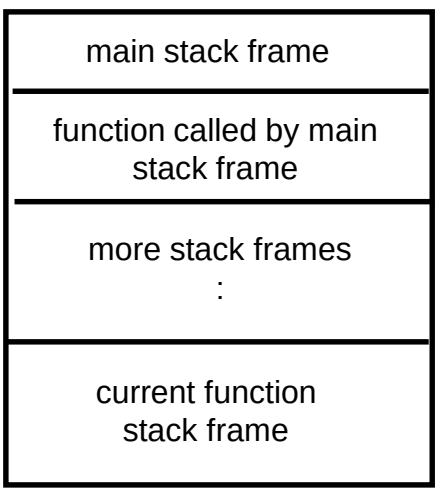


defined outside any function (globals)
Initialized before main is entered

global data and functions, made private by qualifying as static, otherwise public

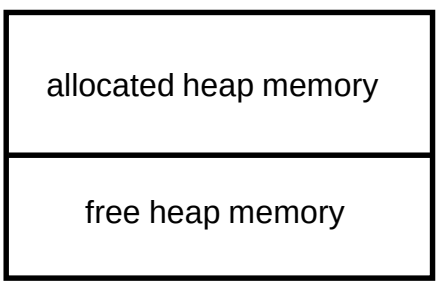
memory allocations local to a function, but qualified as static

Stack memory: - temporary scratch pad



- defined only while computational thread passes through a function or control scope.
- holds input parameters, local data, and return values, used as scratch-pad memory
- guaranteed to be valid during the evaluation of a containing expression, won't be valid after
- expression evaluation starts with function evaluation first, then expression evaluation as algebraic combination of terms
- stack frame is destroyed when expression evaluation is complete

heap memory: - valid from the time of allocation to deallocation



- allocated/deallocated at run time by invoking operators new /delete (or functions malloc/free)
- memory is available to anyone with a pointer to the allocated memory from the time of allocation until deallocated.