Category	Requirement	Status	Code Implementation
Memory Manager	Stack, Heap allocation	**DONE**	k_malloc (memory.c) implements First-Fit heap allocation. create_process uses it for stack.
	Stack/Heap deallocation	**DONE**	k_free (memory.c) marks blocks as free. exit_process calls it to free stacks.
	Optimized allocation	**DONE**	k_free (memory.c) includes Coalescing Logic to merge adjacent free blocks.
Process Manager	Process table	**DONE**	PCB process_table[MAX_PROCESSES] in process.c.
	Process creation	**DONE**	create_process() sets up stack context and EFLAGS.
	State transition	**DONE**	READY, CURRENT, TERMINATED transitions handled in schedule () and exit_process().
	Process termination	**DONE**	exit_process() sets state to TERMINATED and frees memory.
	Utility functions	**DONE**	get_pid() and print_process_msg() implemented in kernel.c.
Scheduler	Clear policy to schedule	**DONE**	Round Robin policy implemented in schedule () loop.
	Context switch	**DONE**	context_switch assembly function in scheduler.c.