# ECE 254 Midterm Exam Solutions

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**(1a)**

**(1b)**

**(1c)**

**(1d)**

Variable `i` is a local variable and will go out of scope (be deallocated from the stack) when this function is finished. This can cause unexpected behaviour.

**(1e)**

**(2a)**

**(2b)**

**(2c)**

No. Although allowing philosophers to pick up non-adjacent chopsticks may allow some philosophers to eat faster or prevent a particular run from leading to deadlock, it does not address the fundamental problem. It is still possible for each philosopher to pick up one chopstick and be blocked waiting for any other chopstick to become free. Thus, deadlock is still possible.

**(3a)**

**(3b)**