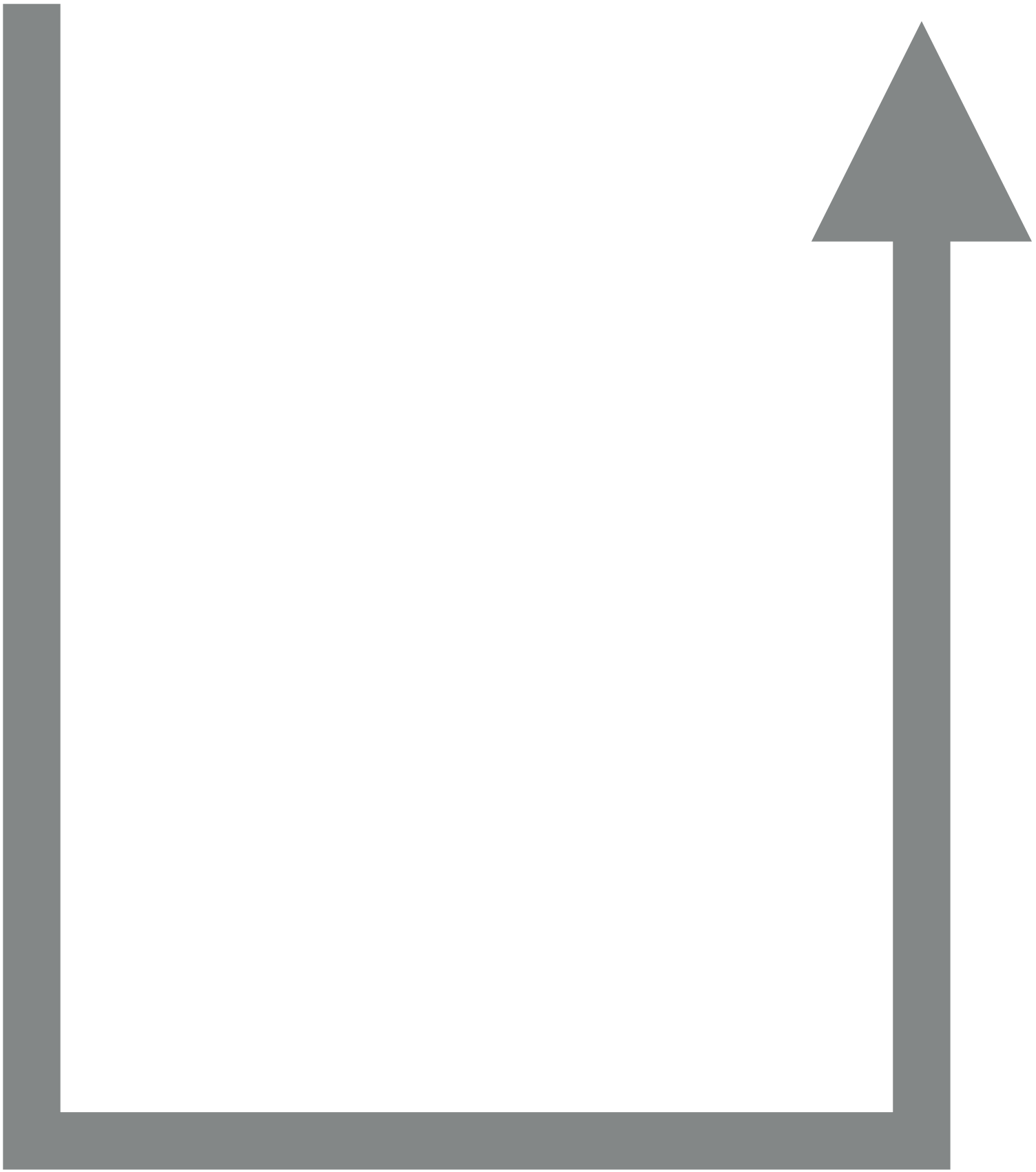
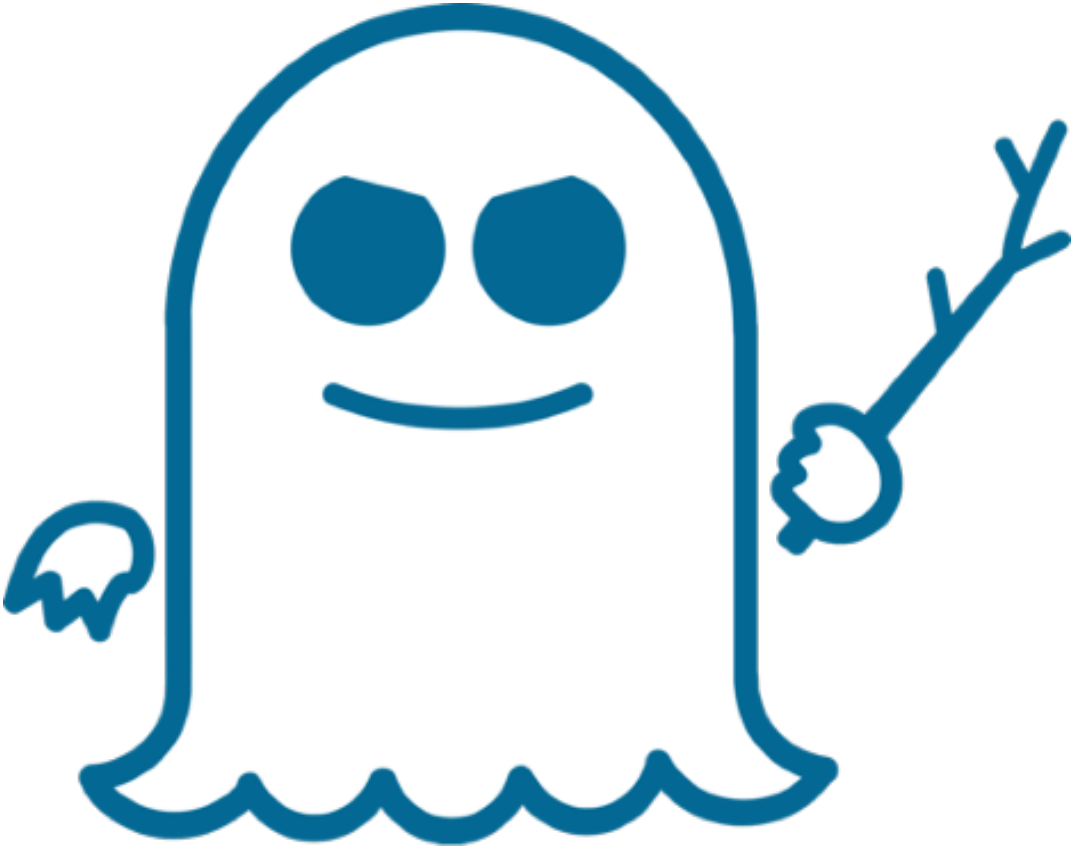




MELTDOWN & SPECTRE FOR NORMAL PEOPLE

SPECTRE: SPECULATIVE EXECUTION

47

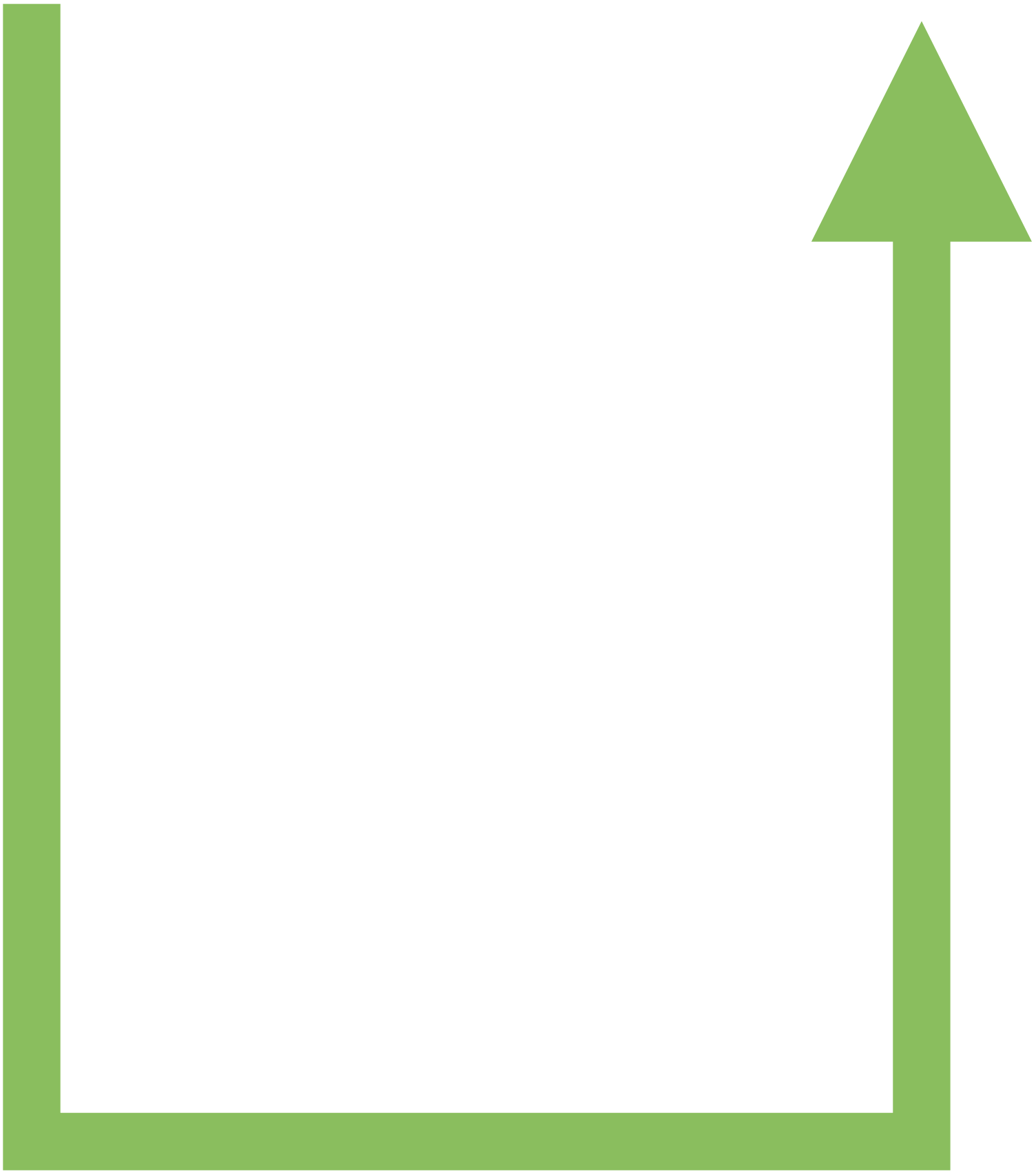

A

B


C


D


E



D

The CPU has learned that Counter *probably* is > 0

Reading Counter from memory is very slow

The CPU *speculatively* executes to improve performance

3

Counter

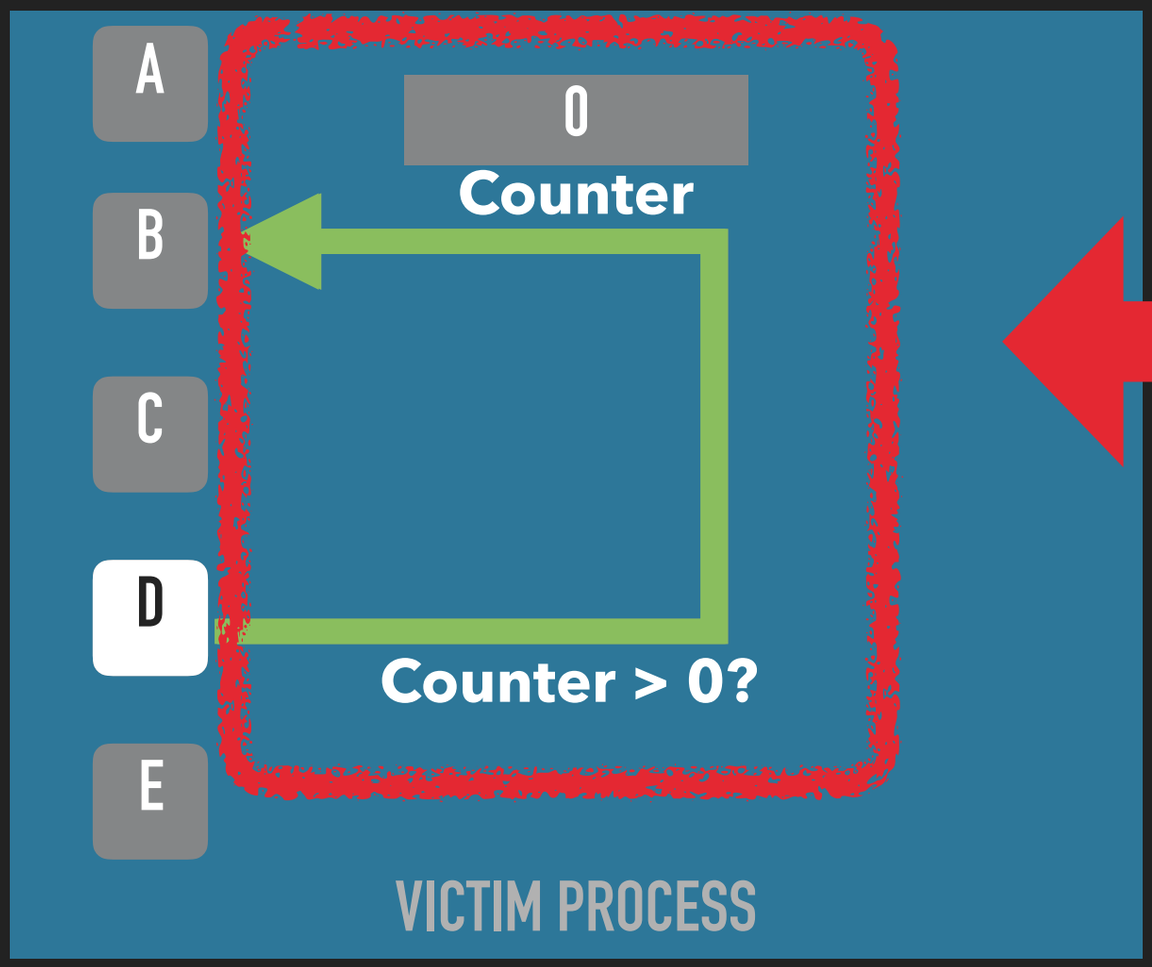
2

1

Counter > 0?

B C

SPECTRE: SPECULATIVE EXECUTION



1. **Prime the branch prediction to expect a loop**
2. **Make sure *Counter* is not cached so the CPU is more likely to *speculatively* run the code**
3. **Find a way that victim leaks data when B & C are executed speculatively**

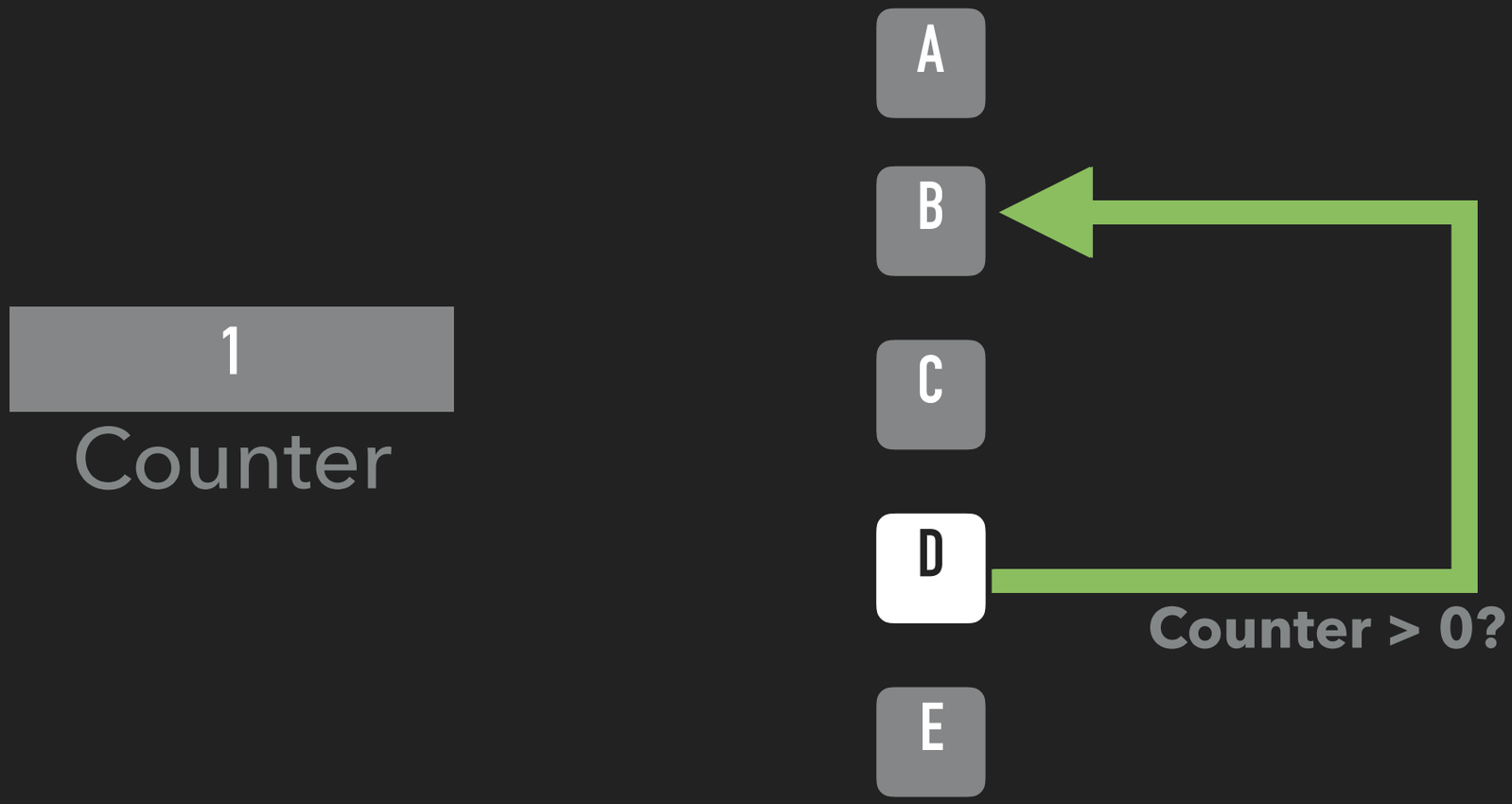
ATTACKER PROCESS

Attacker can influence the CPUs branch prediction of victim.

Making the victim *speculatively* execute “wrong” code.

E.g. loop even when Counter is == 0.

SPECTRE: SPECULATIVE EXECUTION



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