

Problem Statement

The Dual Hack: A Cyber Heist Story

Cipher and Ghost were legends in the hacking underworld, each known for their mastery of breaking into seemingly impenetrable systems. But tonight, they faced their greatest challenge yet—the **Orion Data Center**, a vault of secrets so well-guarded that no hacker had ever cracked it.

It wasn't just any system. The data center had **two independent security networks**, each guarding a separate half of the access protocol. Even if one of them got in, the vault would remain locked unless **both networks were breached by both of them**.

Cipher's Challenge: The Mismatched Codes

Cipher stood before **Server A**, an aging relic, its defences still holding strong despite the years. The system's security was peculiar—not built on layers of encryption, but on a deceptively simple yet unforgiving mechanism.

Before him lay **four keys**, divided into **two distinct types**. To unlock the system, he had to select two keys, but of the same type. Any deviation, any mix between the two types, would trigger an immediate lockout, sealing the system off from him.

Ghost's Mission: The Adaptive Barrier

Meanwhile, Ghost was targeting **Server B**, a cutting-edge, AI-driven network. It constantly monitored its own defenses, adjusting its countermeasures in real time. There were only two ways to override it:

- **Either** force the AI into **dormant state**, tricking it into thinking it was in maintenance mode.
- **Or** activate the system's emergency override from inactive state.

But both methods had their risks. If Ghost made the wrong move, the AI would detect the breach and shut down the entire data center—locking Cipher inside the system with no escape.

The Perfect Synchronization

The real challenge wasn't just breaking in—it was to be done by **both** of them. If either of them failed, the entire system would recognize the anomaly and deny access.

With seconds to spare, Cipher sent a single encrypted message: **"Now"**.

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Your task is to design a circuit that emulates the system's logic and demonstrate its working, exactly similar to that of the security system of Orion's data centre through simulations using only one type of Analog Component (Only from the topics from where Round 1 questions were asked) in **LTSPICE** or **TI-TINA**.