# MELTDOWN & SPECTRE FOR NORMAL PEOPLE

# MELTDOWN: READING FORBIDDEN DATA

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μOPs ordered by *instruction*

1 Check access

2 Read into register

1 *Magic*

μOPs ordered by *execution*

2 Read into register

1 *Magic*

1 Check access

Reordering is not a problem because the CPU will ensure that  is only seen *iff*  succeeds.

*Unless*  is able to hide the secret in such a way that the attacker can find it later.

The re-ordering on the right happens, when the “forbidden data” is already cached (because cache access is so fast).

# In our burger example:

1. Customer orders a burger
2. Customer gets his burger
3. Customer has not enough money
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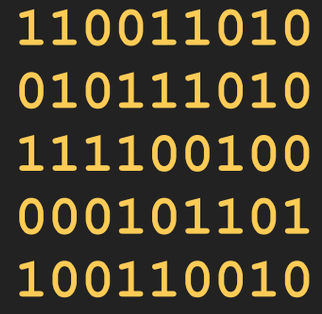
# MELTDOWN

For Meltdown two actors are needed

The a **spy** and a **collector**.




The **spy** will “steal” the secret and stash it away.

The CPU will kill him for accessing the secret information.

The **collector** will find the stashed away secret.