The Interrupt Mechanism in Computer

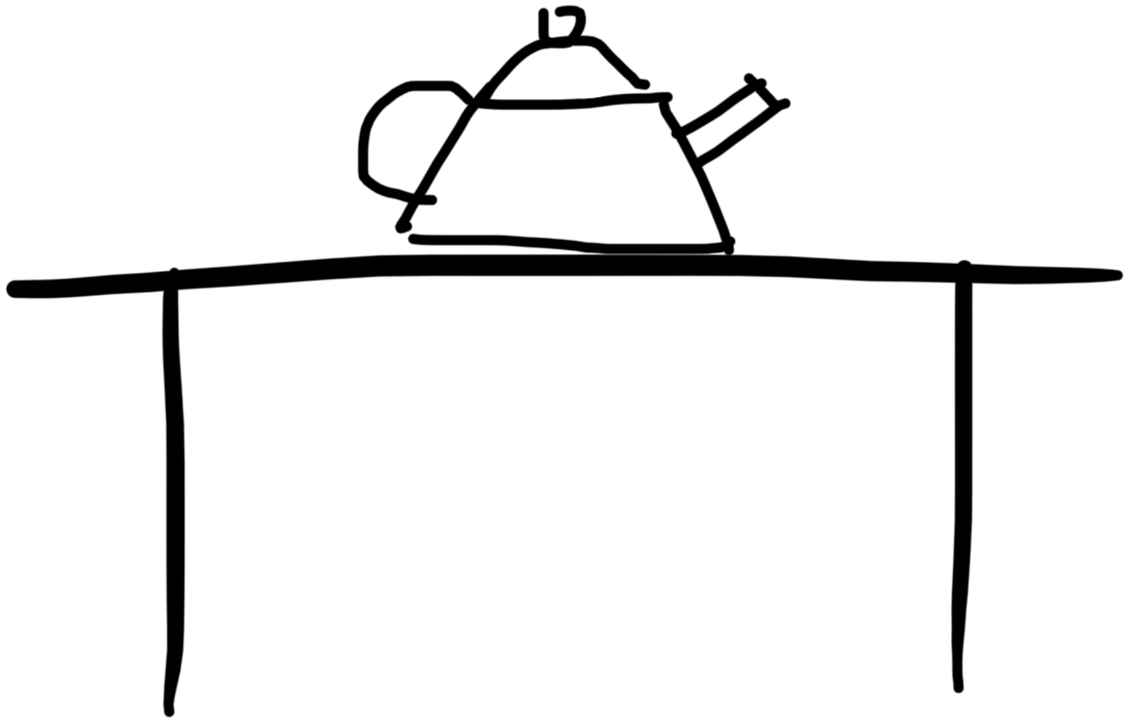
Presented by Yibo Huang & Yuchao Qian

What Is Interrupt?

What Is Interrupt?

And Why?

Example: Boiling A Kettle Of Water



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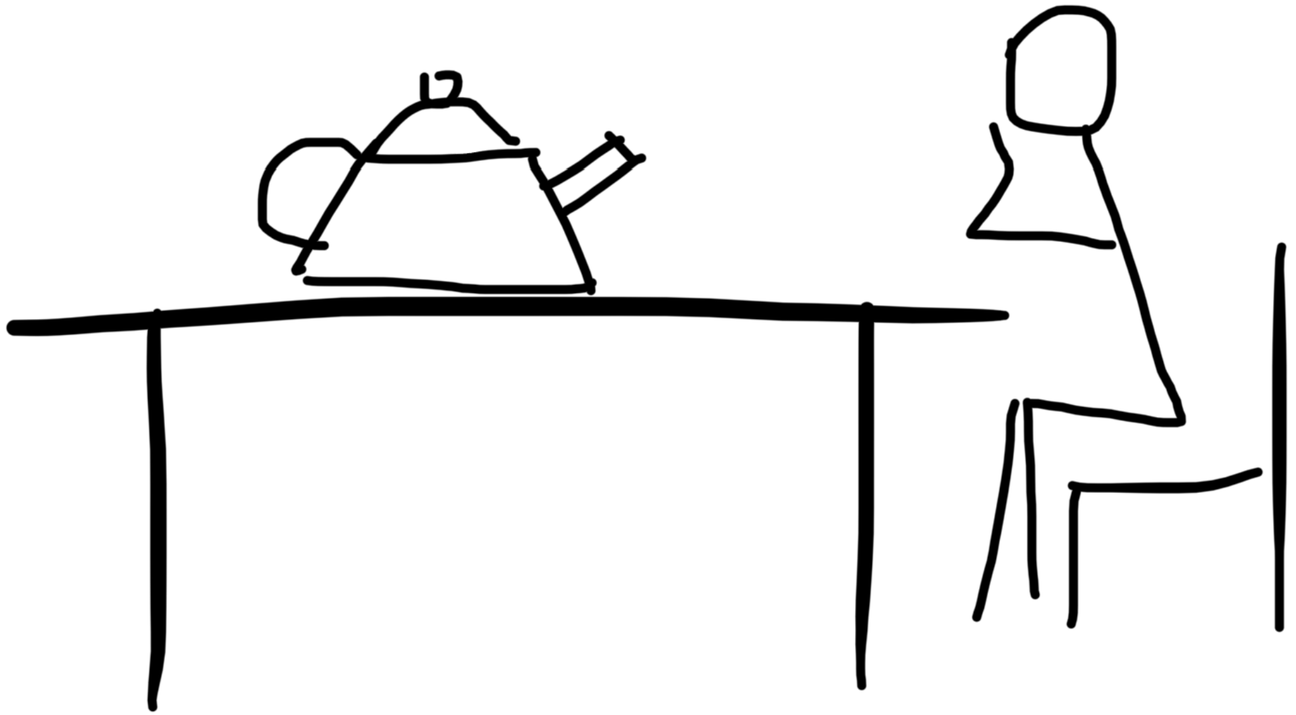

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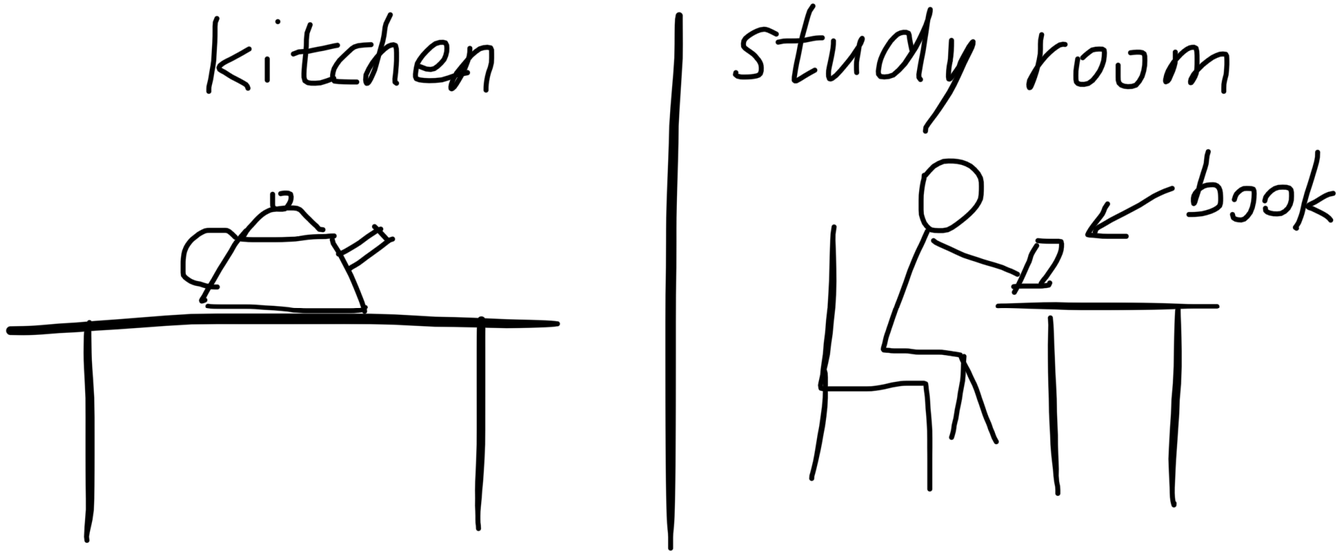

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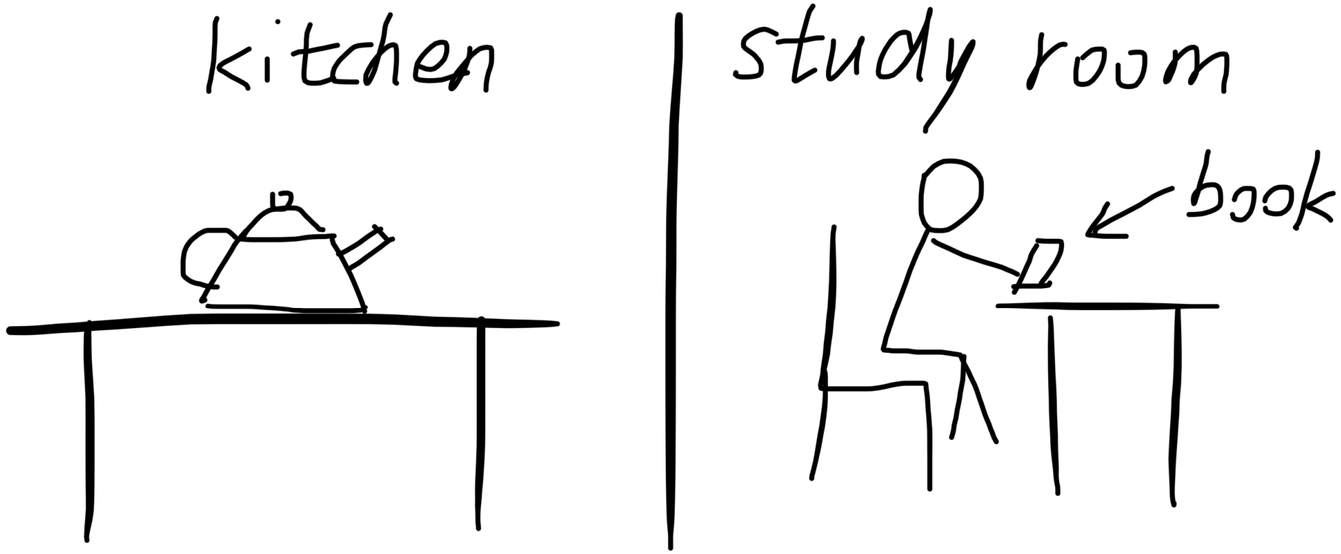
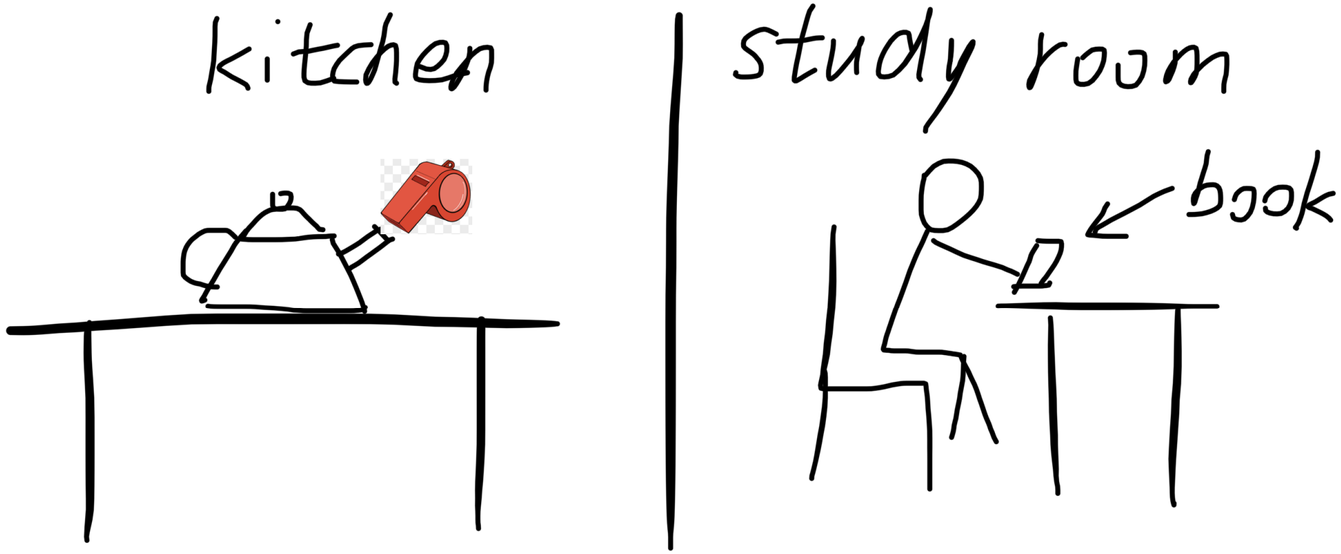


What Do You Do When The Kettle Is Boiling?

- *Stare at the kettle, waiting for the water to be boiled?*
- *No! You want to study!*
- *Then how can you know it when it's done?*
- *Use a whistle!*



Computer Systems

- *CPU has to communicate with peripherals*
  - *Keyboards*
  - *Monitors*
  - *Disks*
  - *Ethernet cards*
  - …

Polling – The Old And "Silly" Approach

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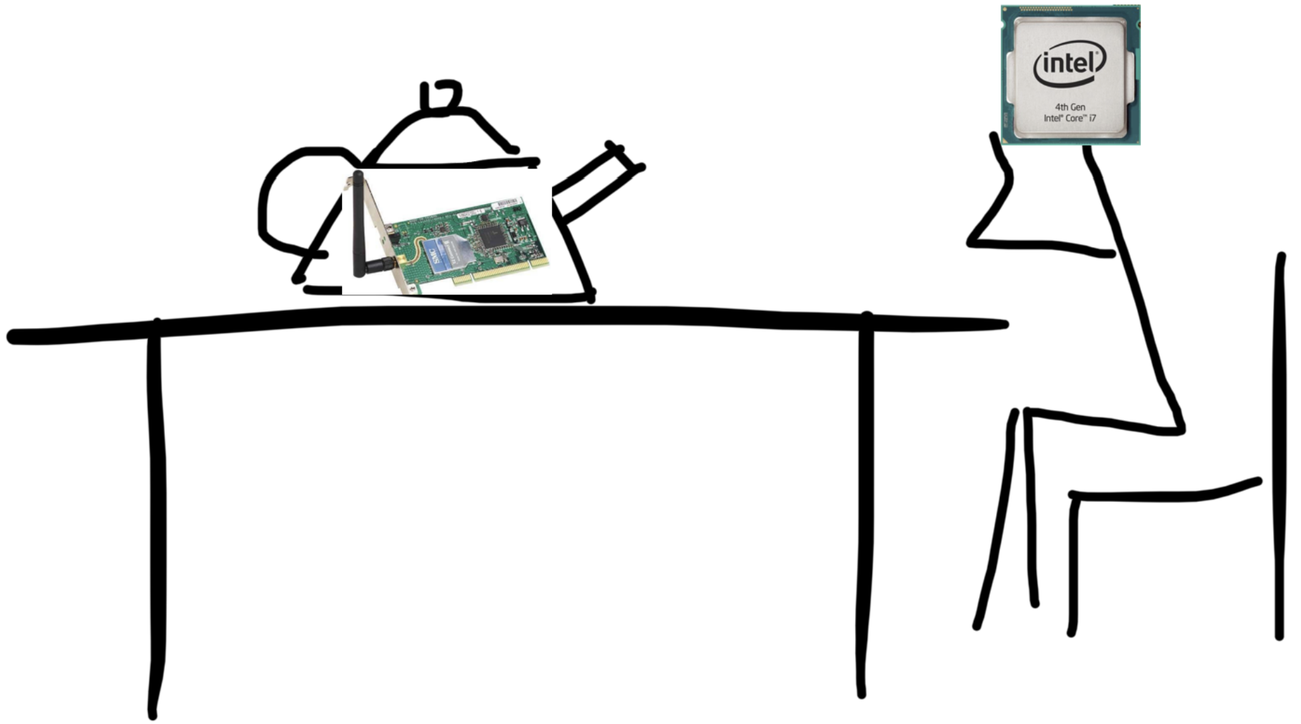

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- *CPU can do other things during I/O*
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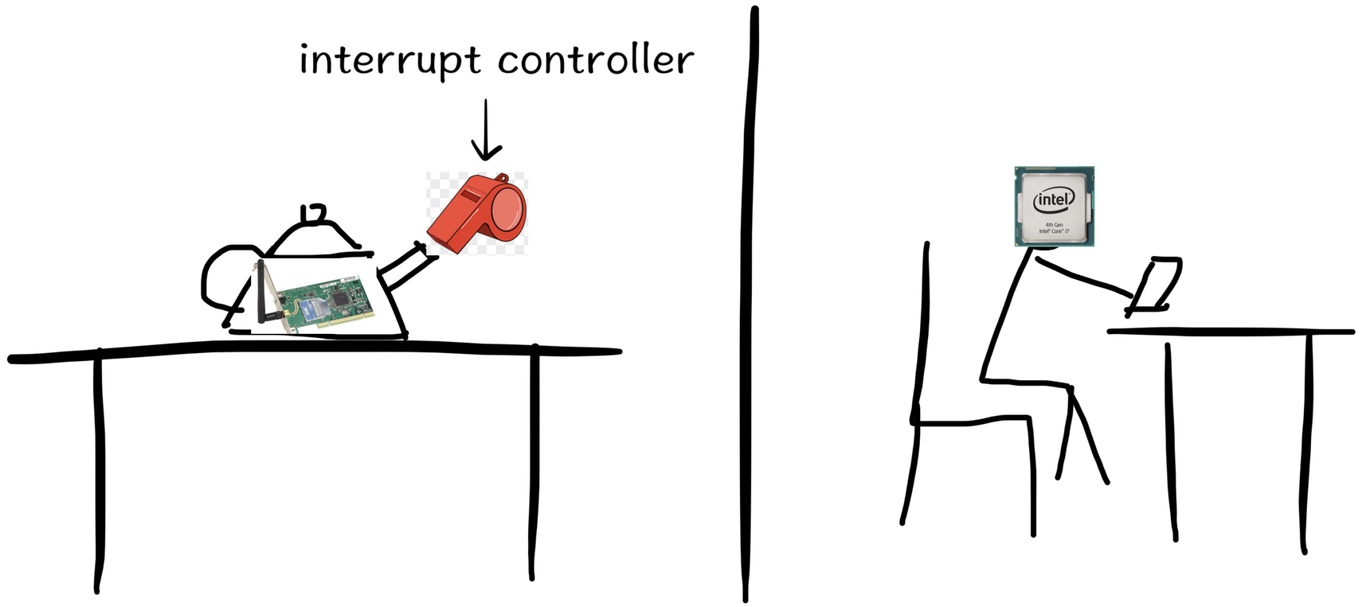

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No!

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- *Water boiling example:*
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- *Context switch*

Solution: Interrupt + Polling

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- *Network card example:*
  - *Interrupt for the first packet*
  - *Polling for the remaining packets*

Problem 2: Occupy the CPU

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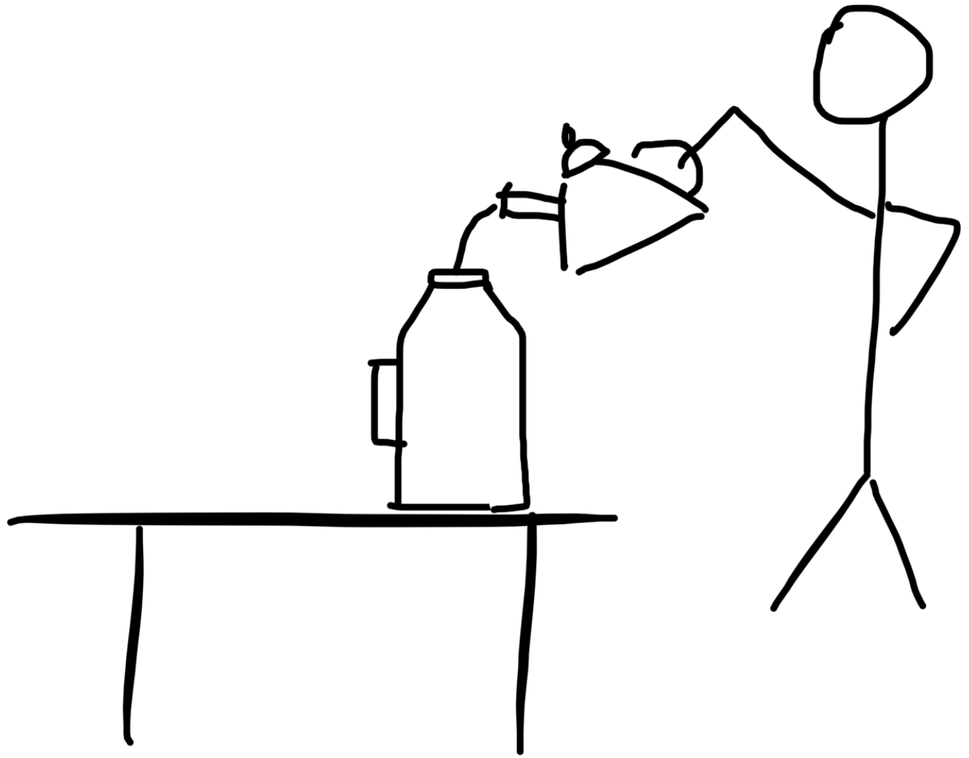

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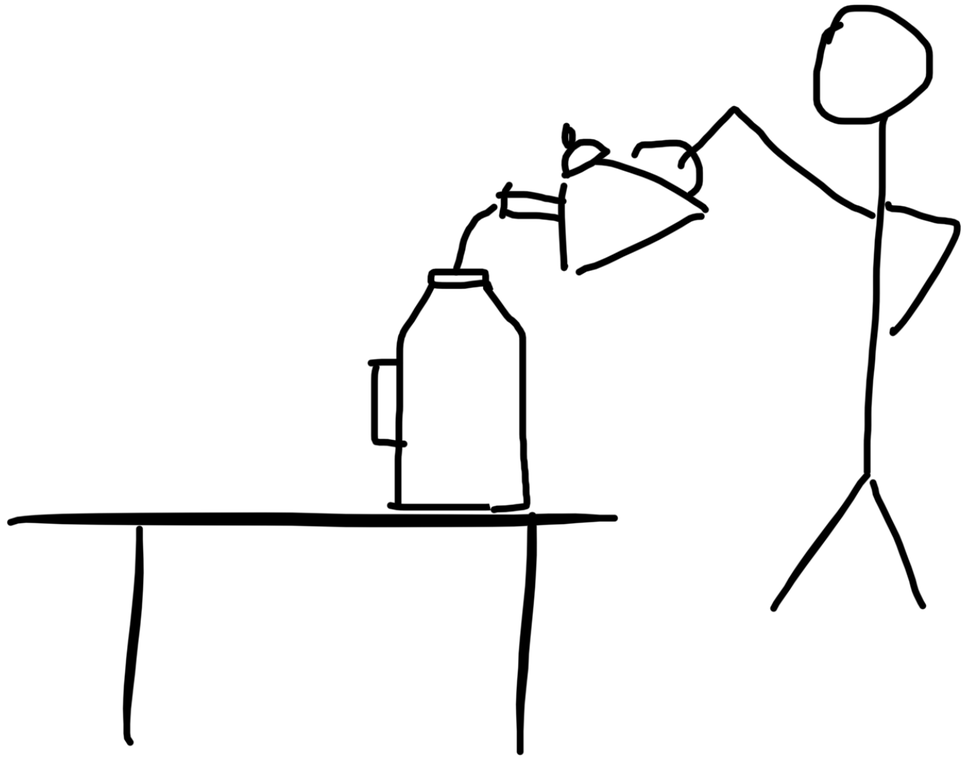
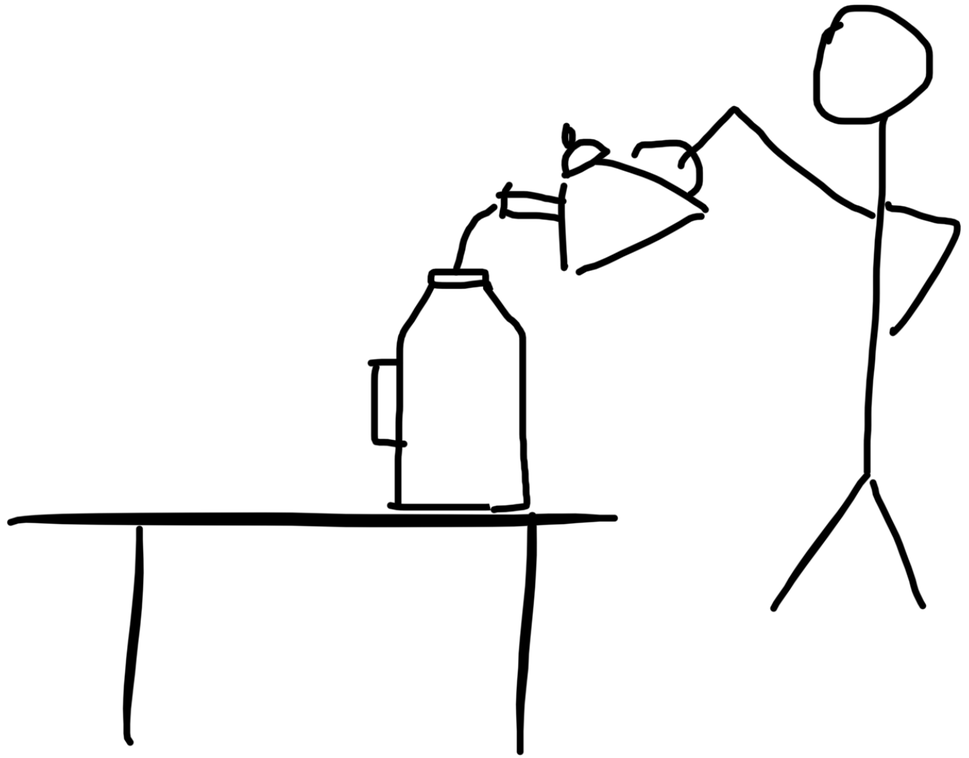


Problem 2: Occupy the CPU

- *Water boiling example:*
  - *Can't be interrupted when pouring water*
- *Other interrupts are MASKED during the processing of a previous one*
- *Affect the performance of other urgent tasks*



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2. *Unmask other interrupts*

Solution: Top Half + Bottom Half

1. Do the most necessary things with interrupt masked - Top Half
2. Unmask other interrupts
3. Finish the remaining work - Bottom Half

Thank You!