

Giotto

A Time-Triggered Language for Embedded Programming

Thomas A. Henzinger, Benjamin Horowitz

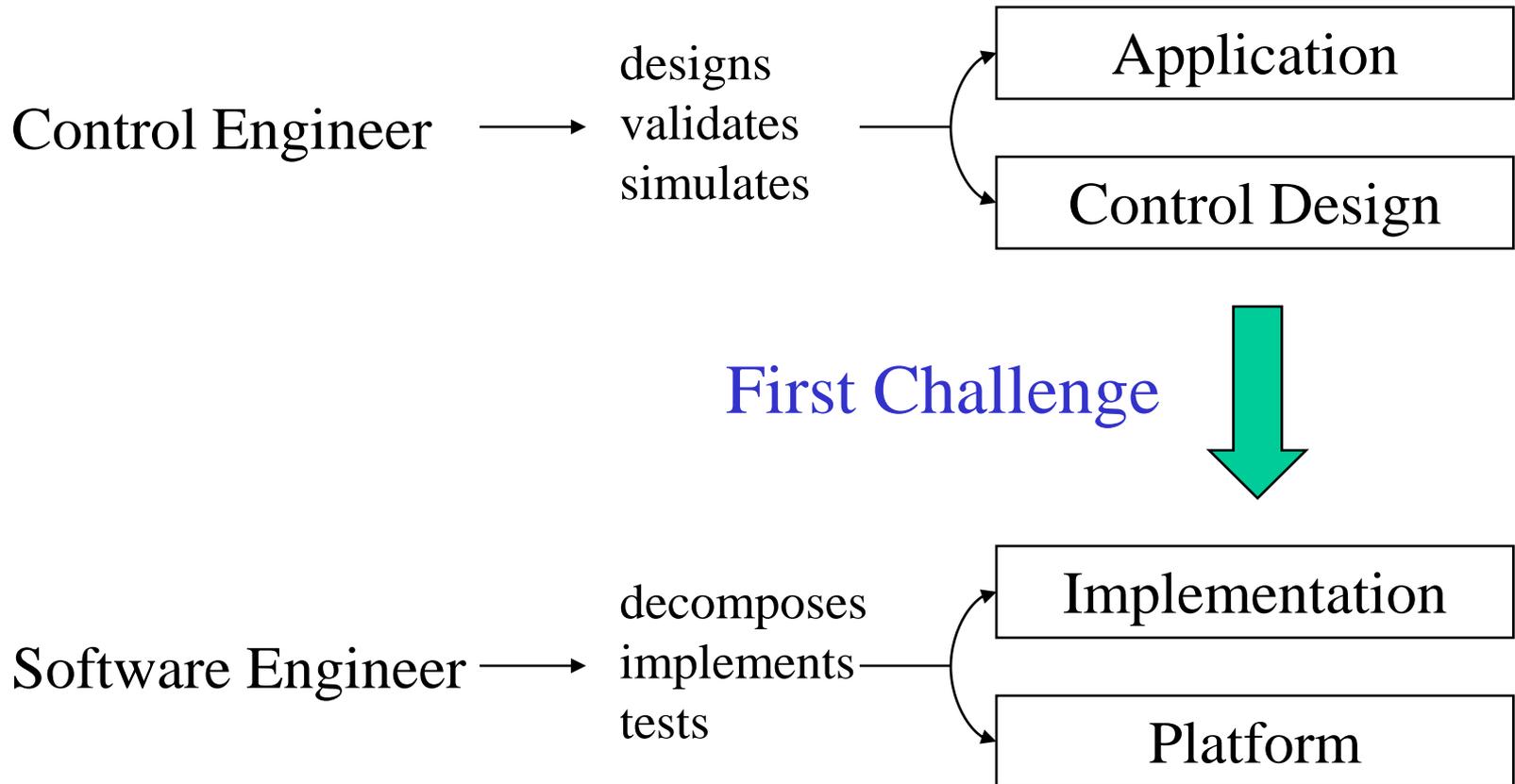
Christoph M. Kirsch, Rupak Majumdar

UC Berkeley

Embedded Programming

- Giotto aims at **hard real-time** applications
- Giotto is **time-triggered**
- Giotto is **platform independent**
- Giotto consists of **ports, tasks, modes**
- Giotto works, with VxWorks, Ptolemy

Functionality & Timing

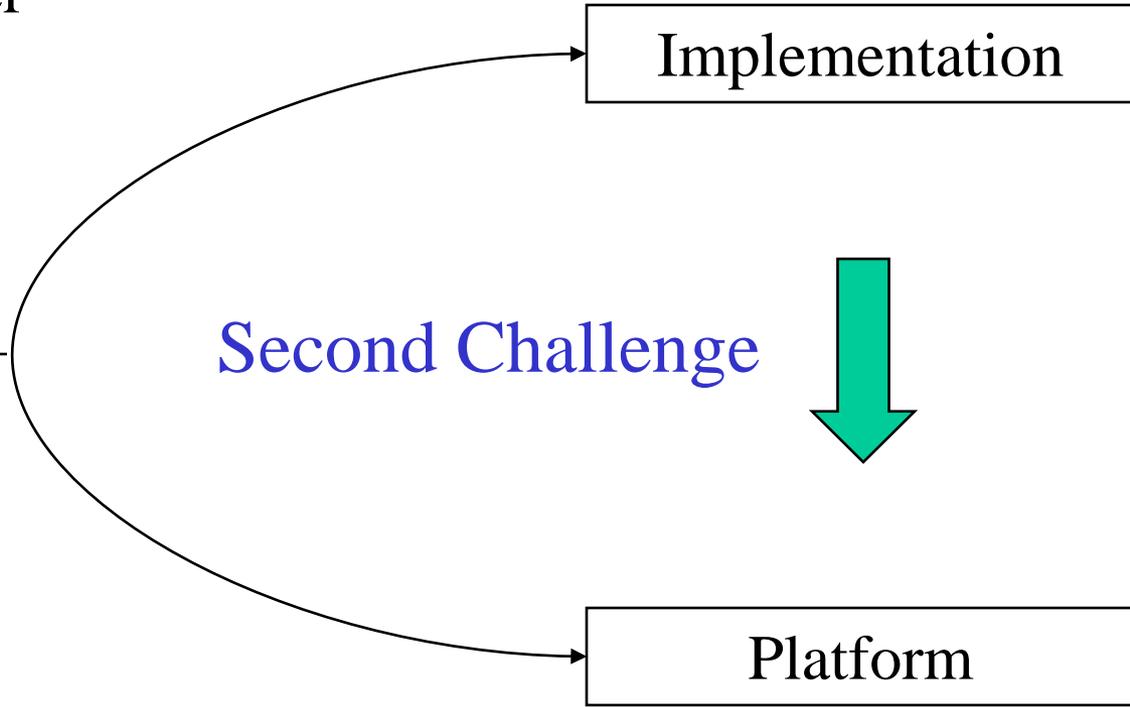


Compilation

Software Engineer



decomposes
implements
tests



Implementation

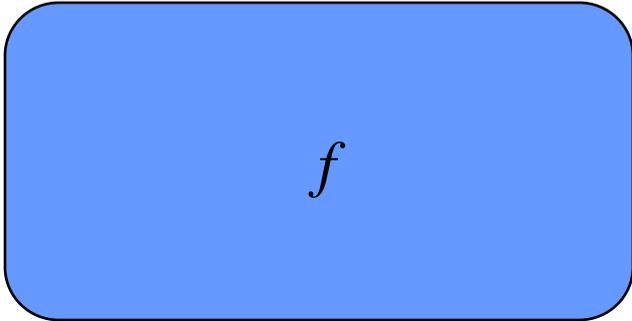
Second Challenge

Platform

A Task

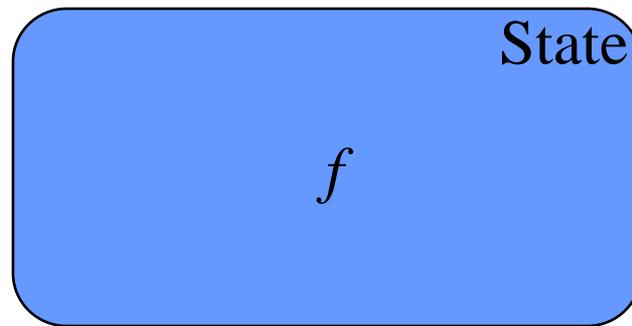


Abstract Syntax of a Task

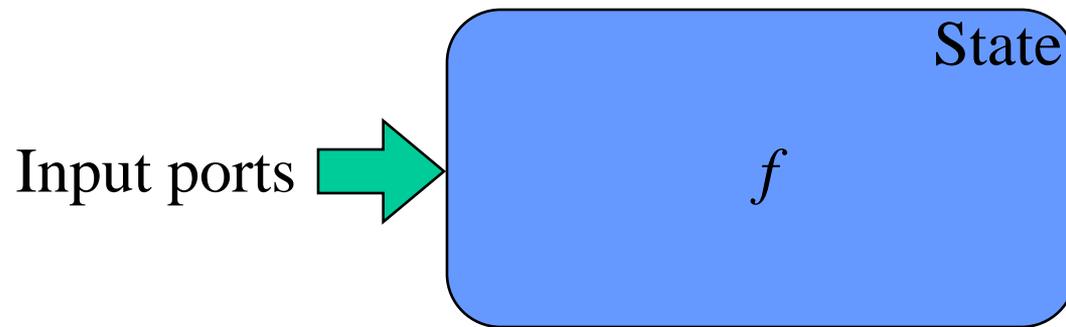


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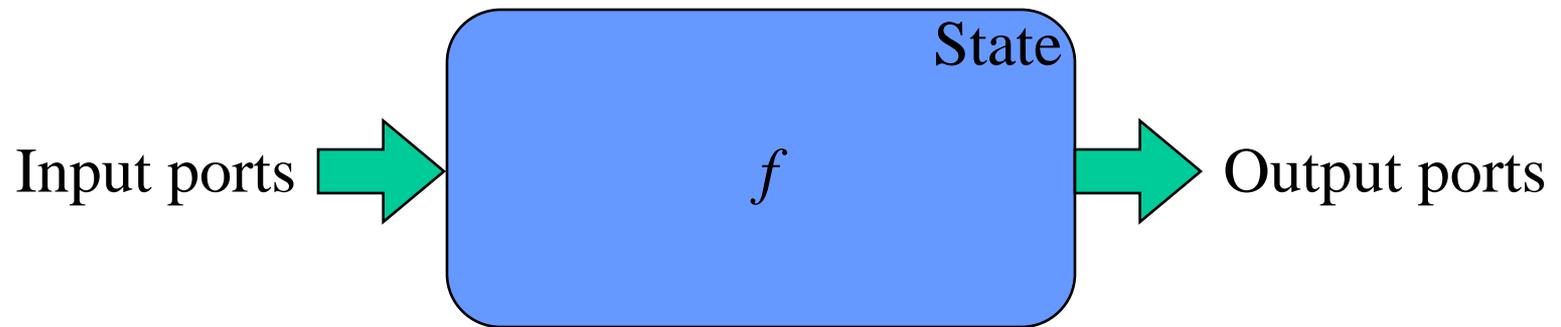
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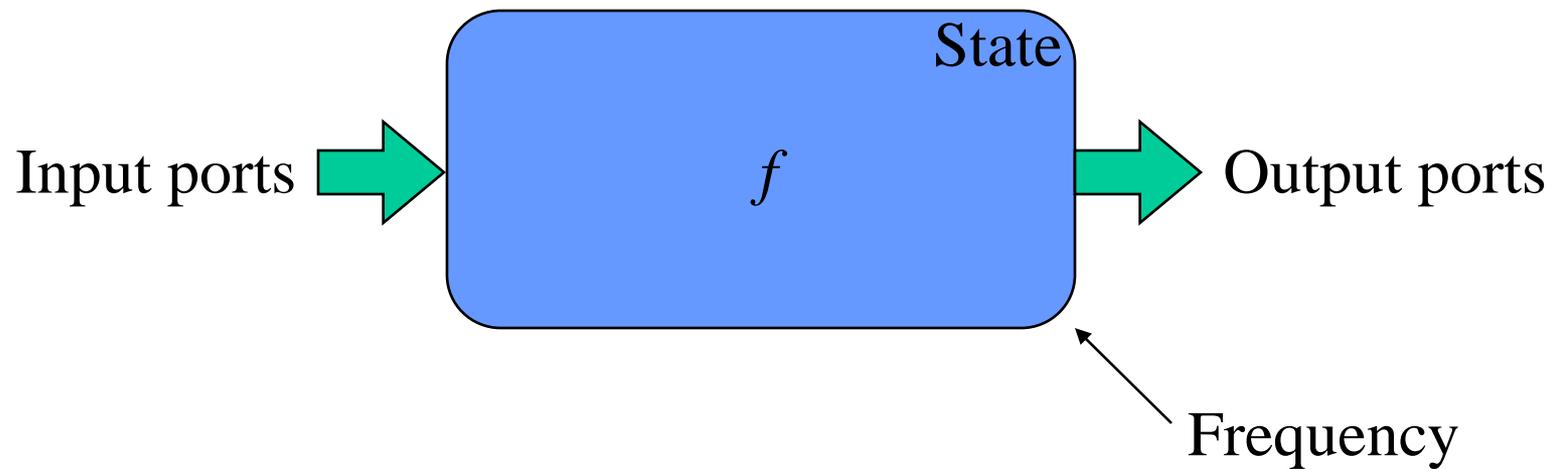
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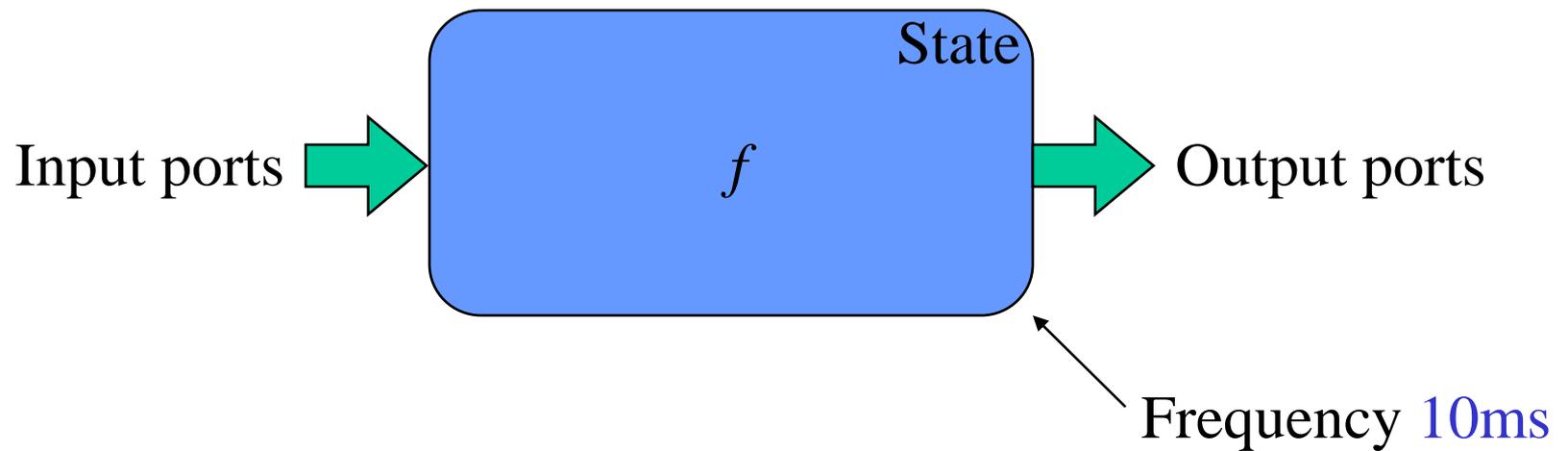
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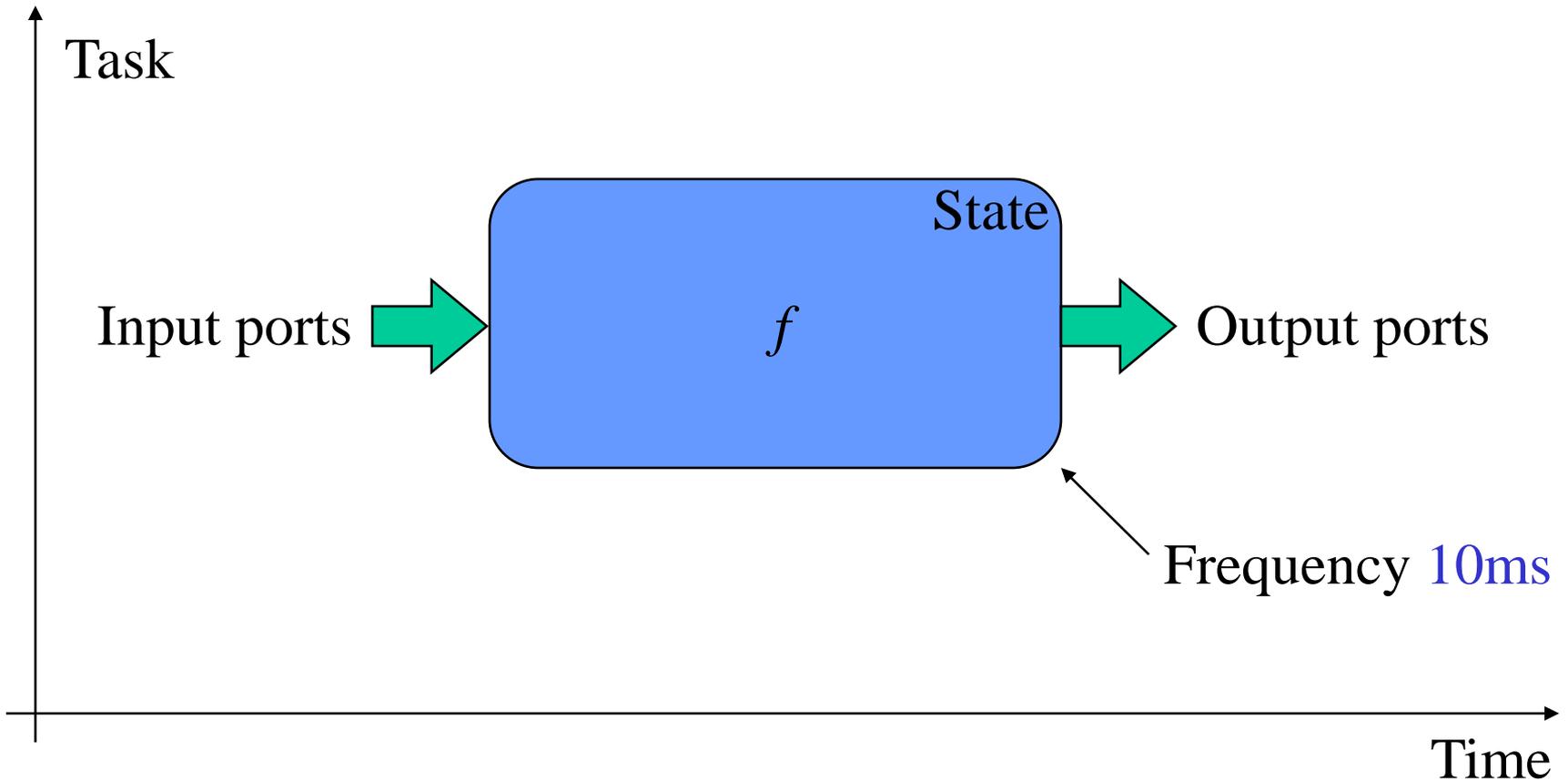
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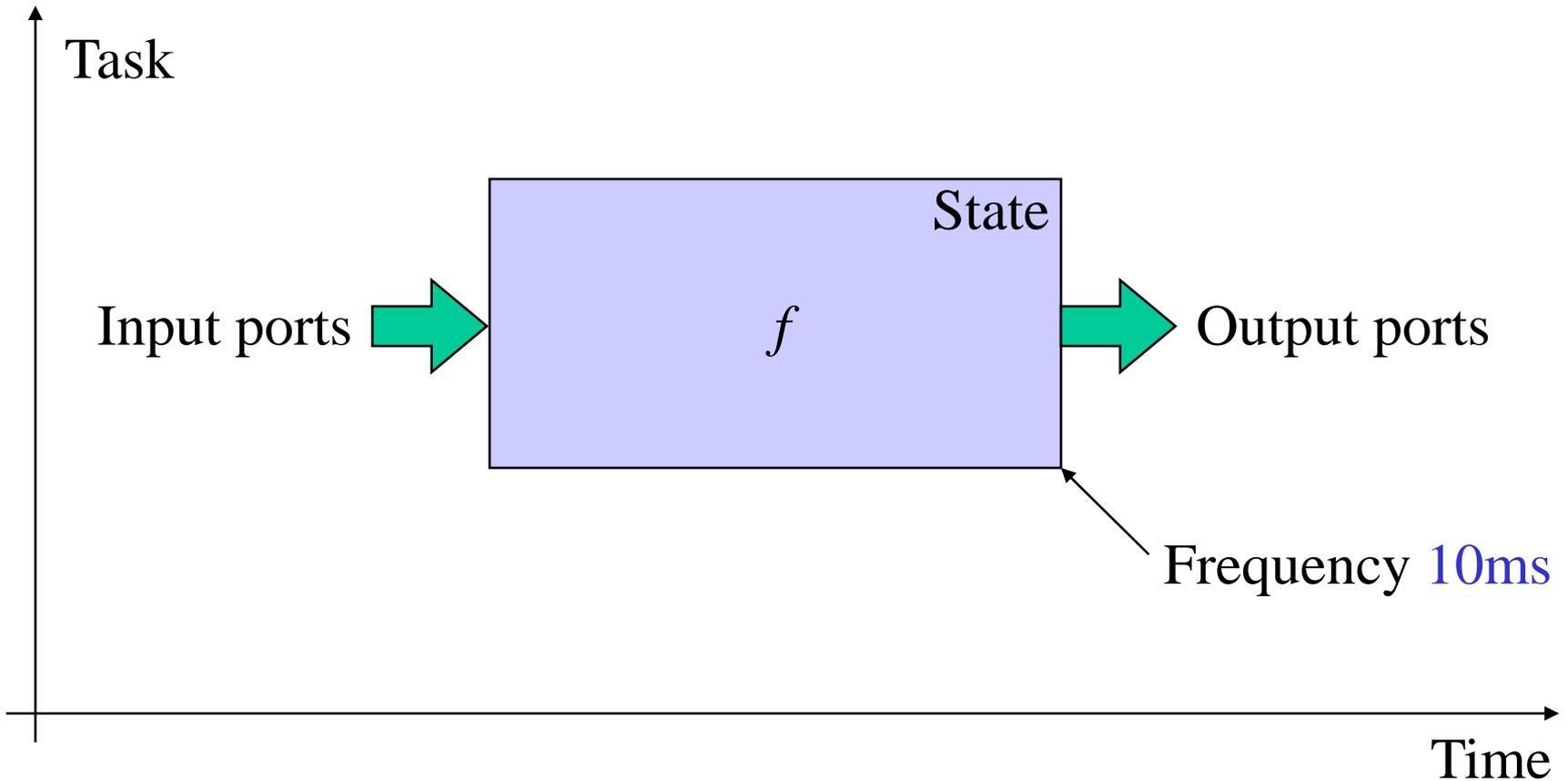
Semantics of a Task



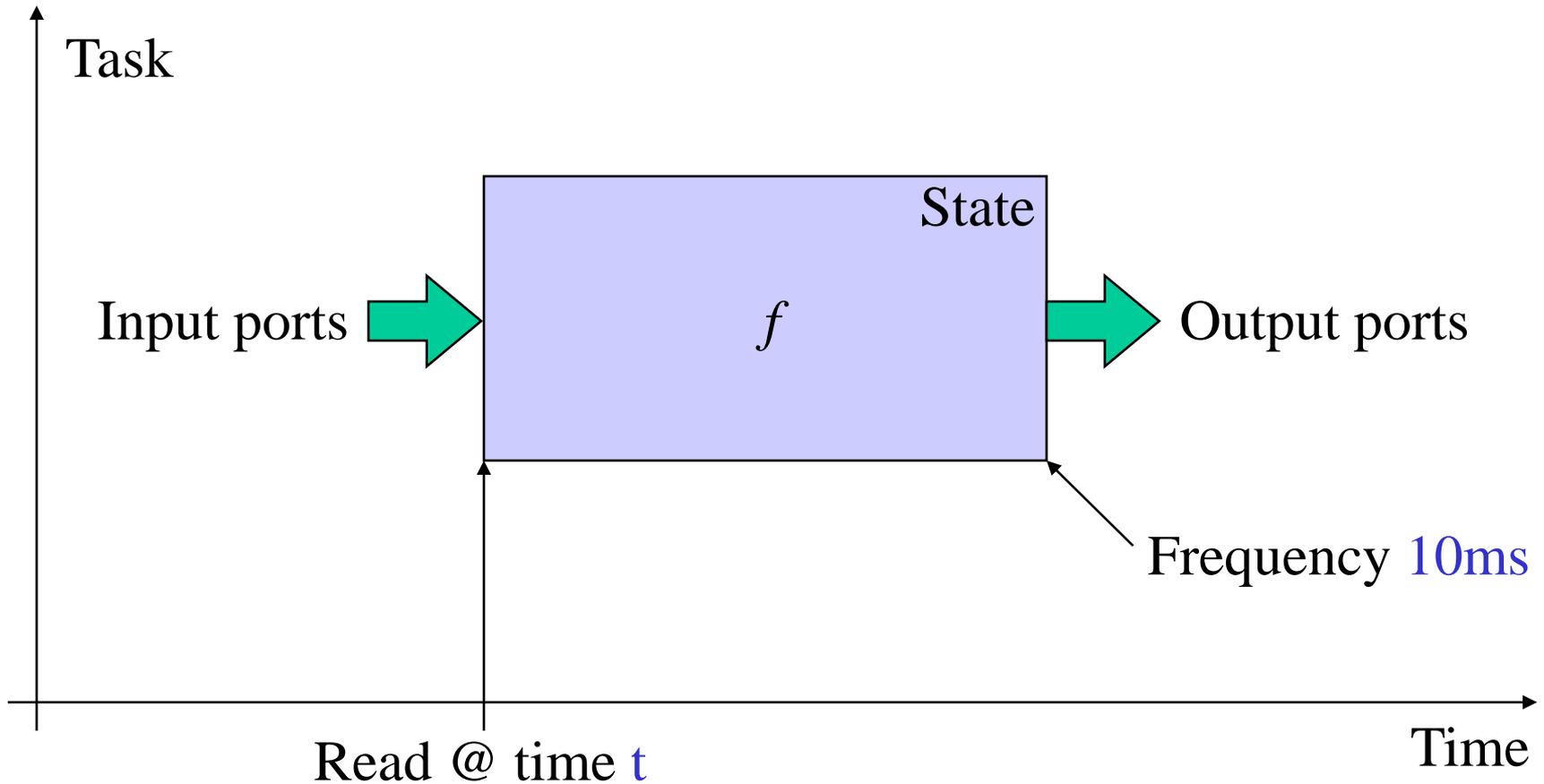
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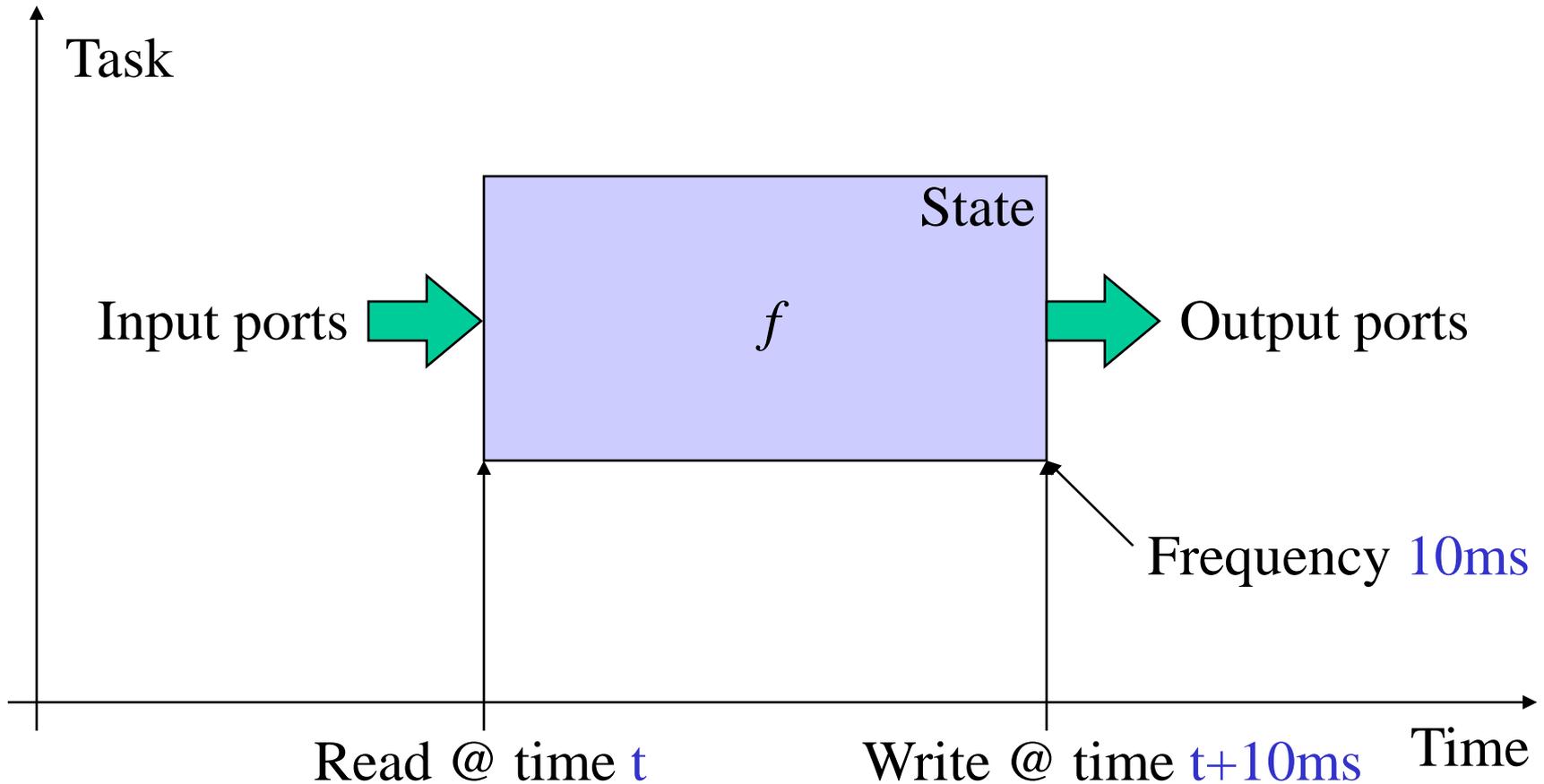
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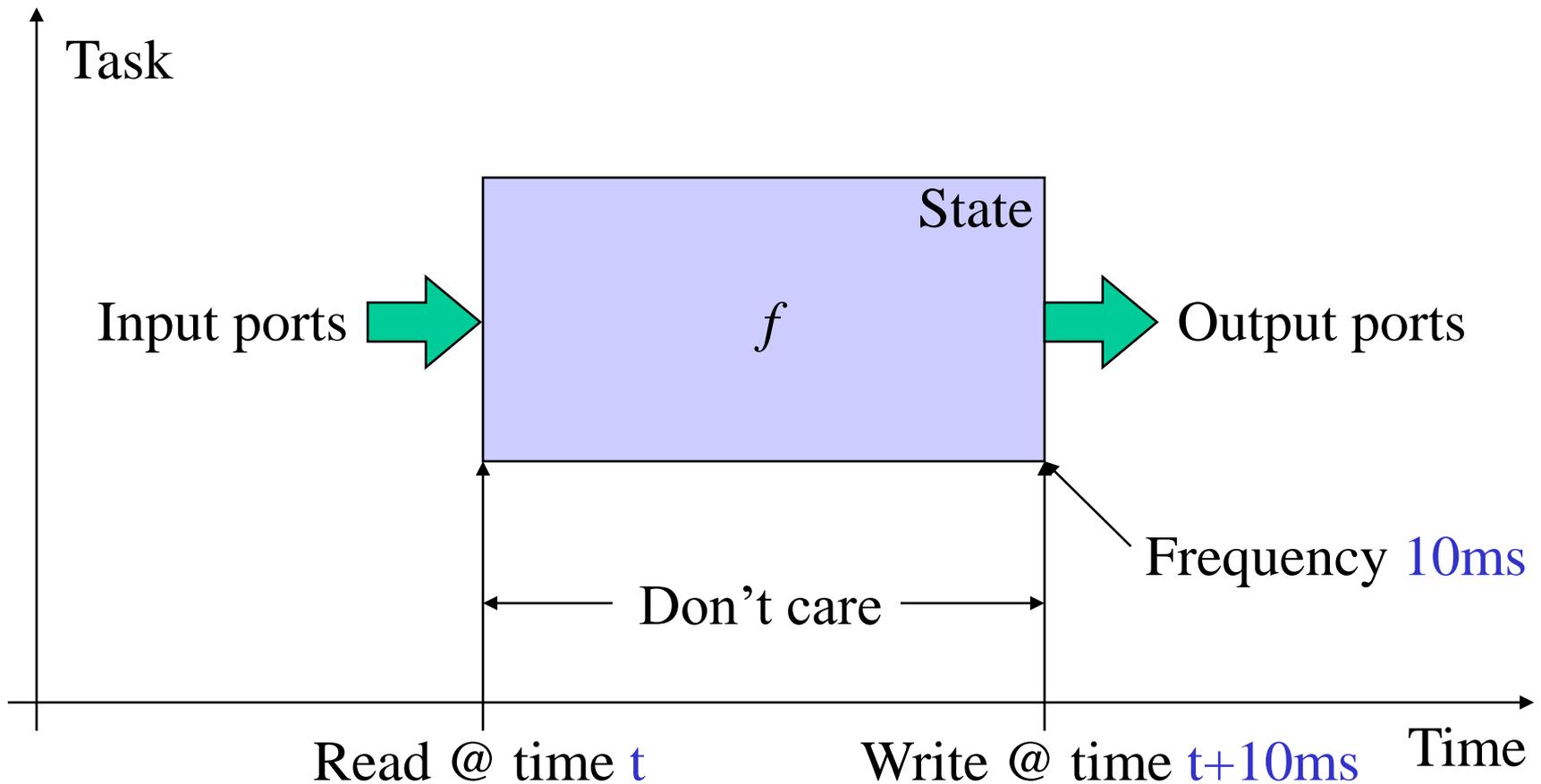
Semantics of a Task



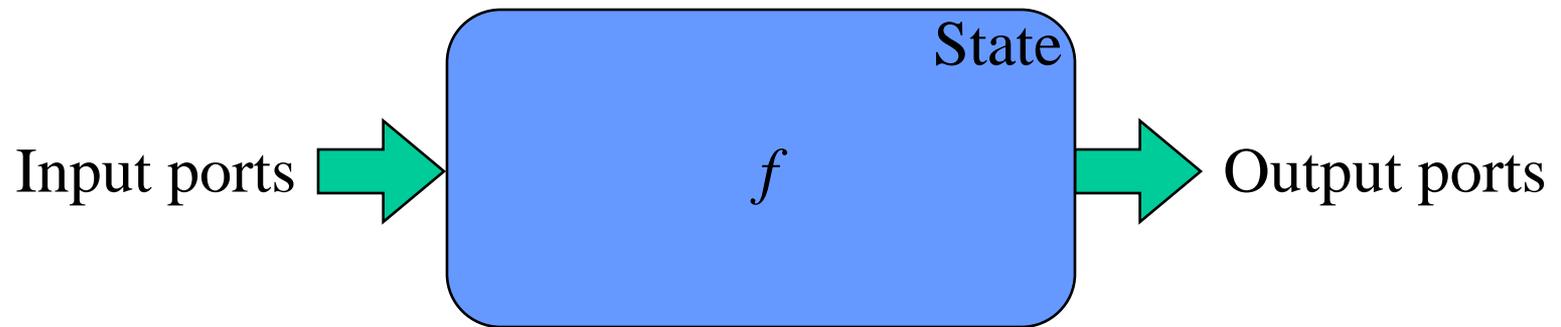
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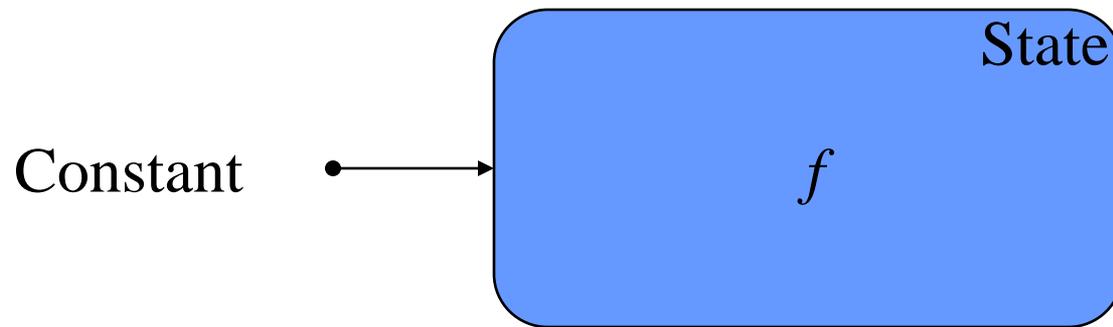
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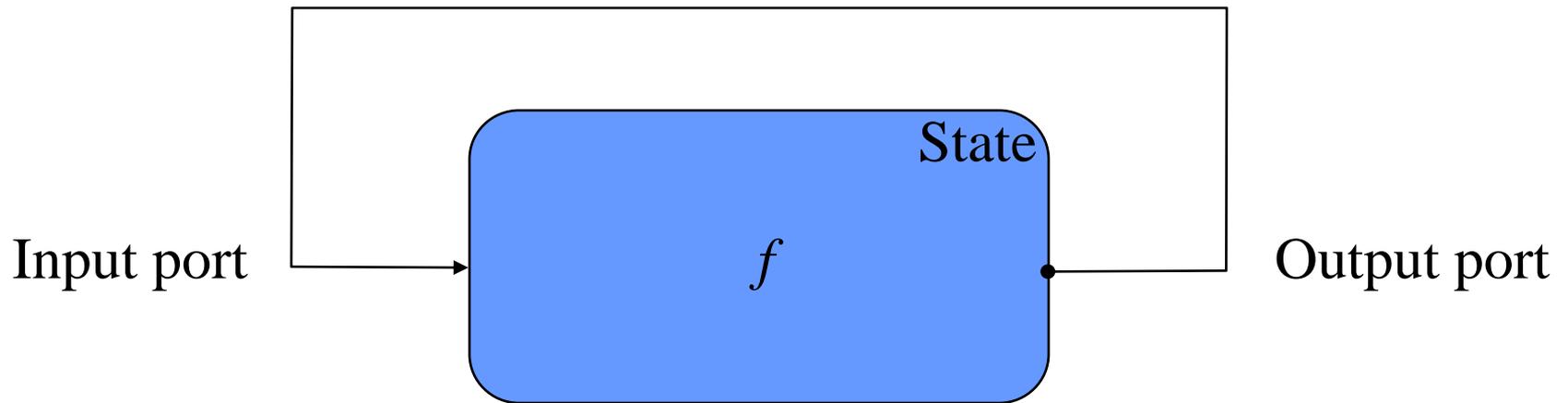
A Connection



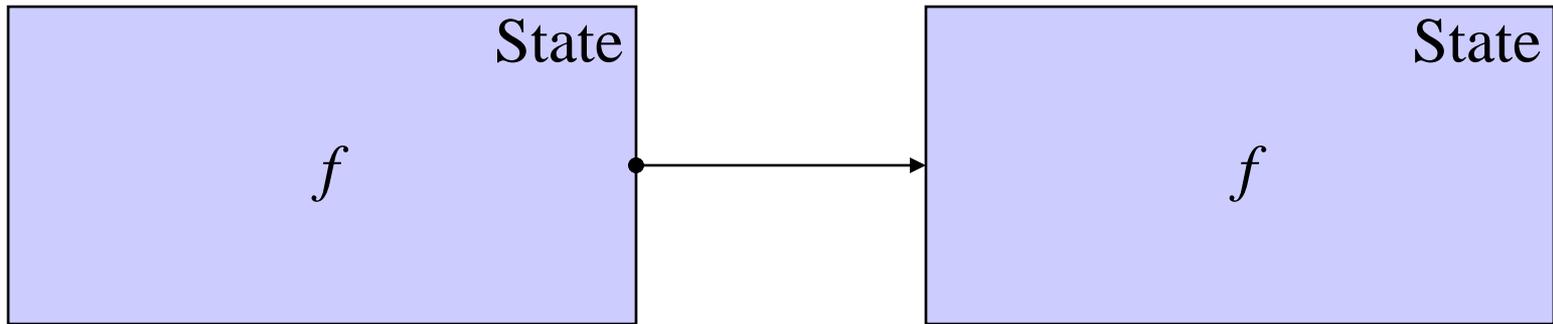
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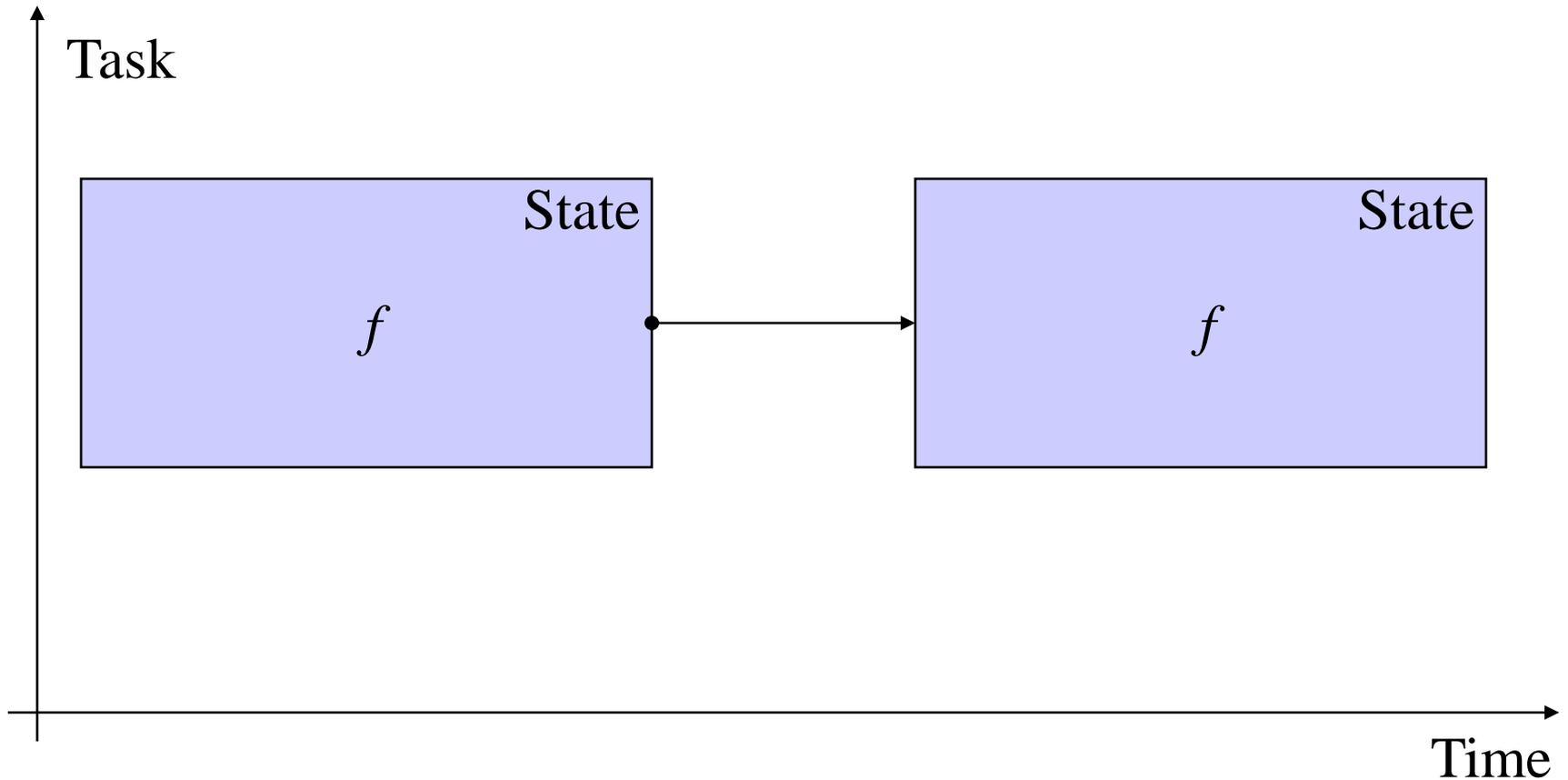
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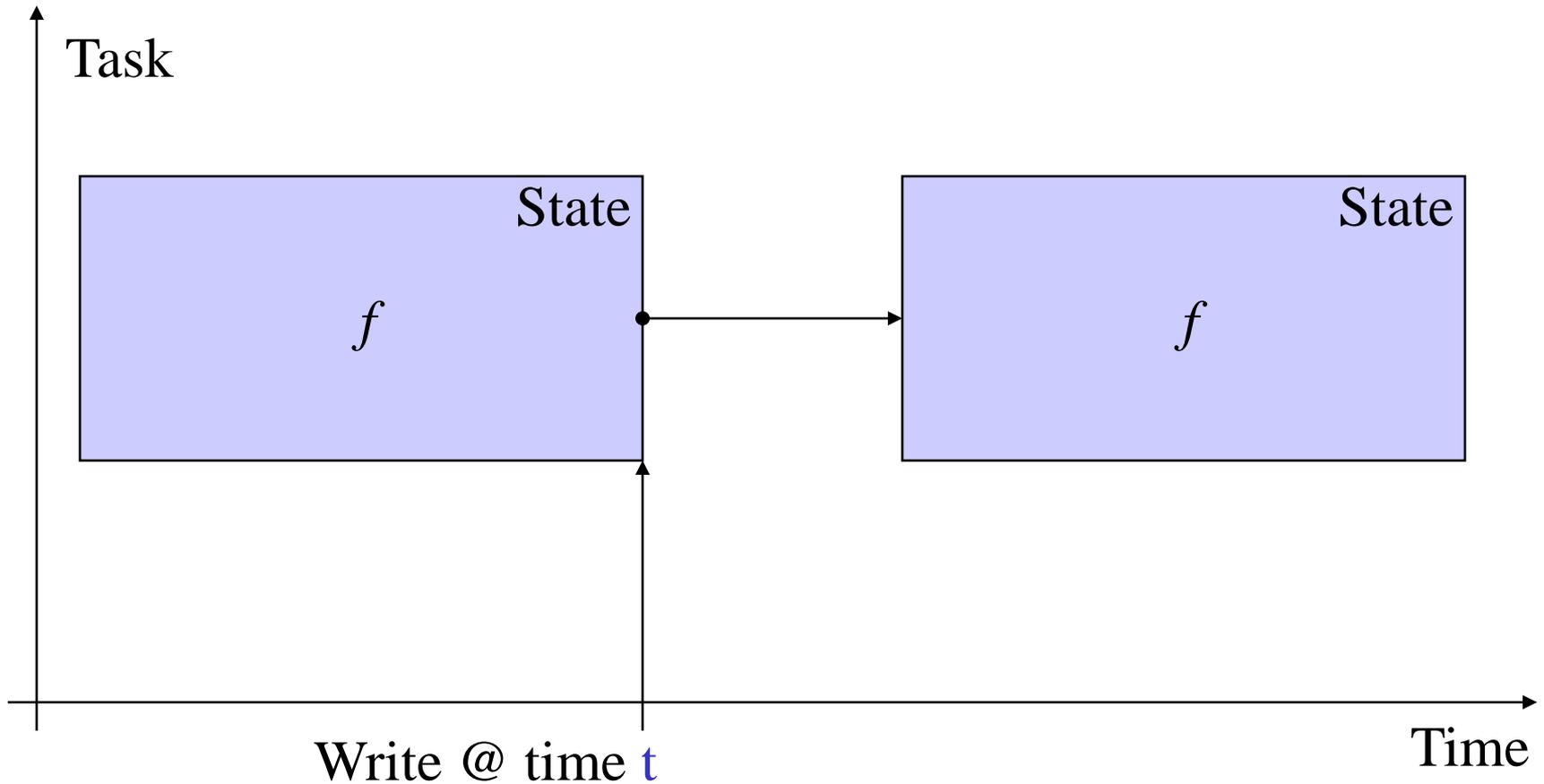
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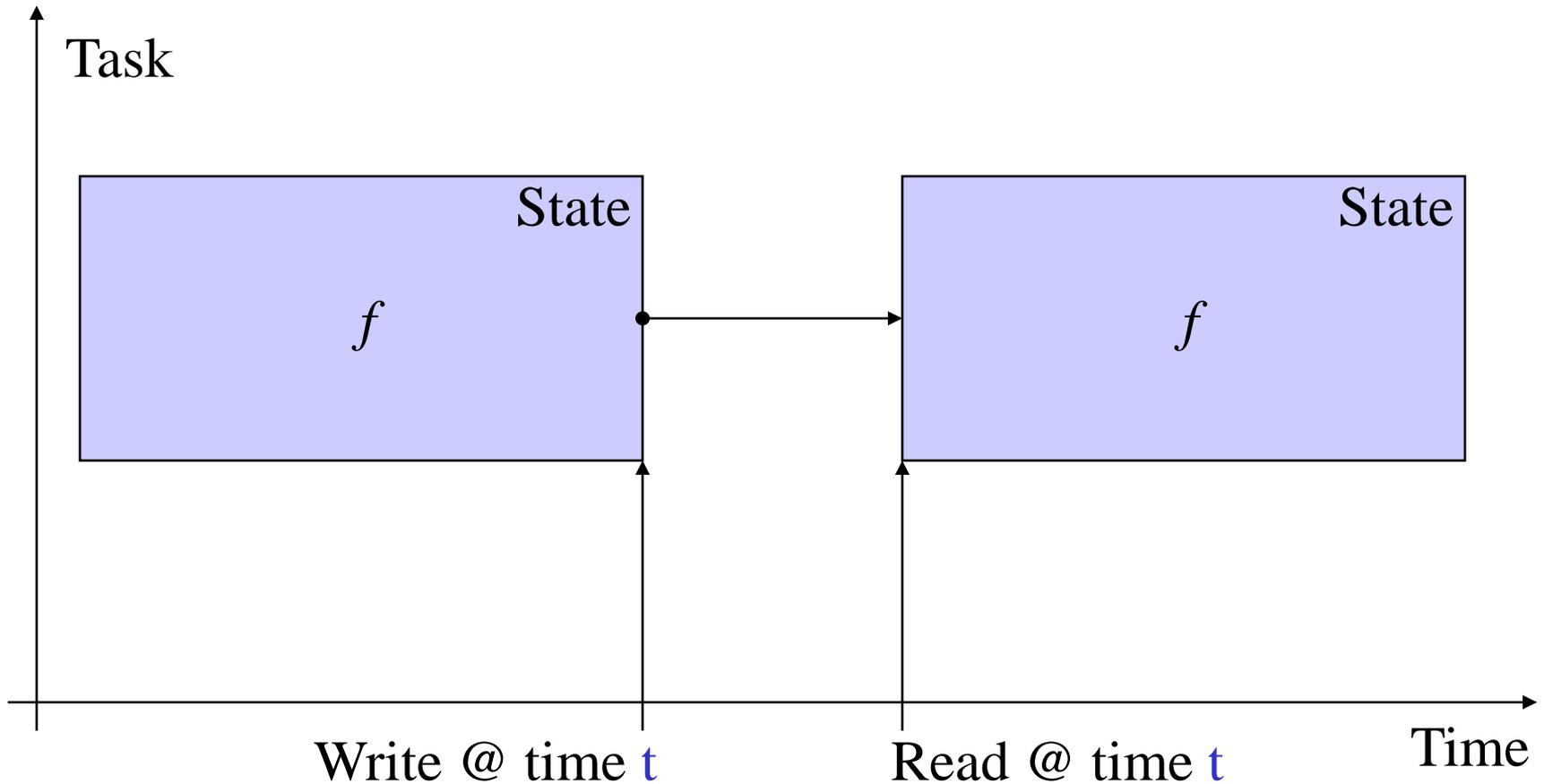
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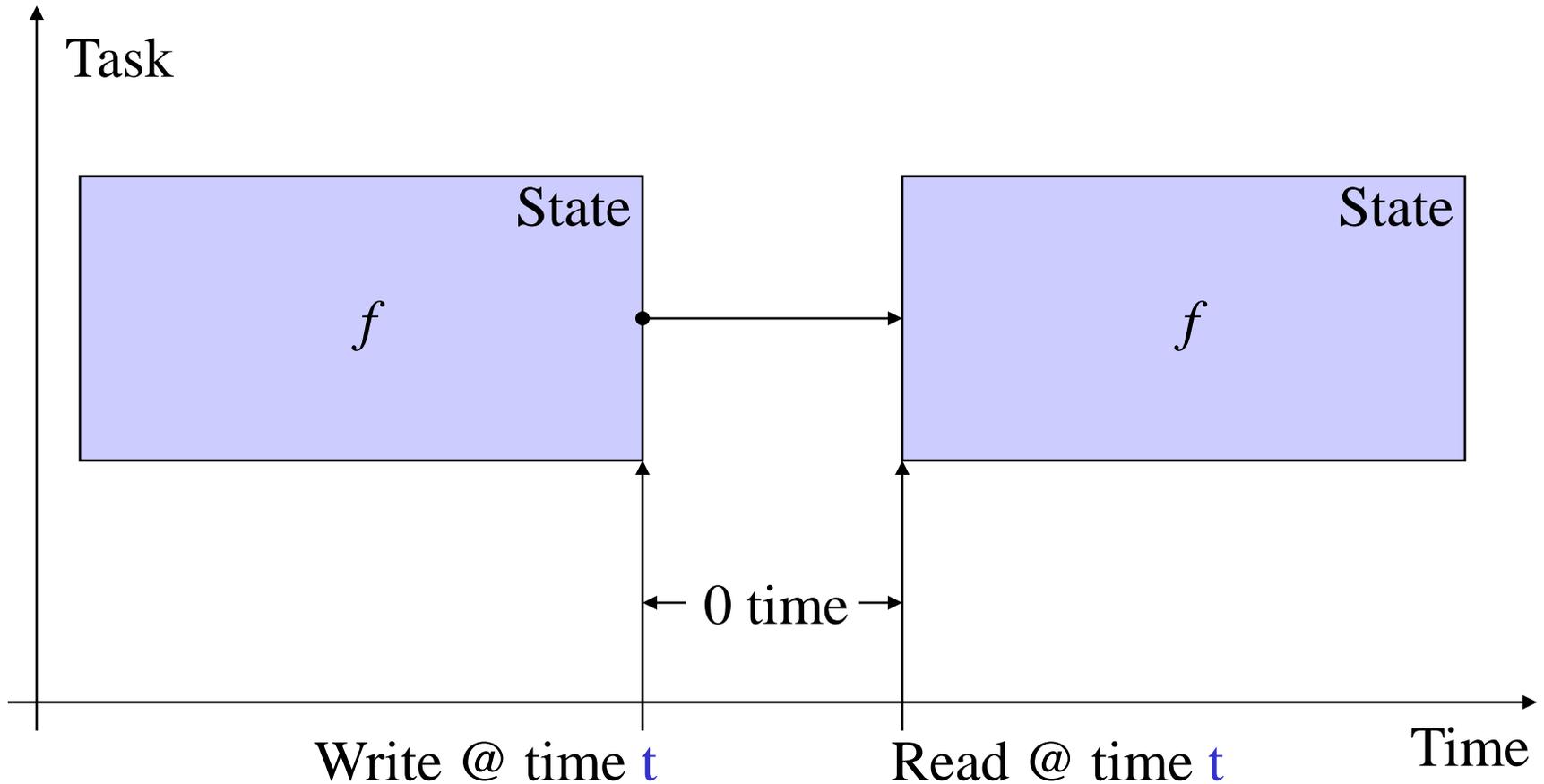
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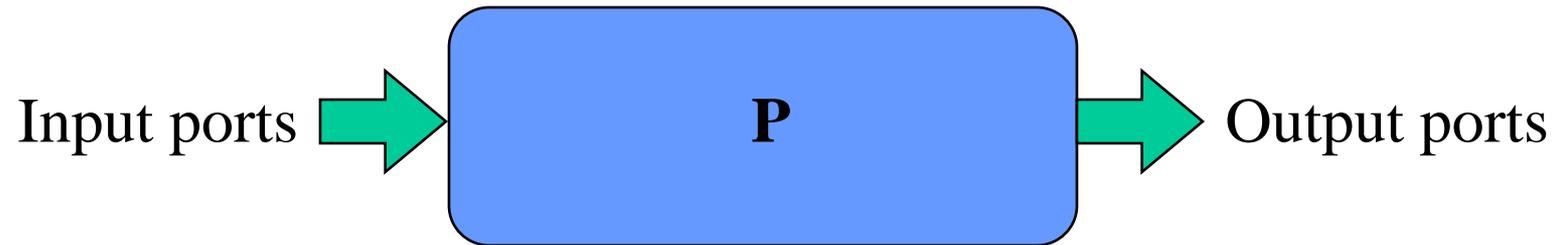
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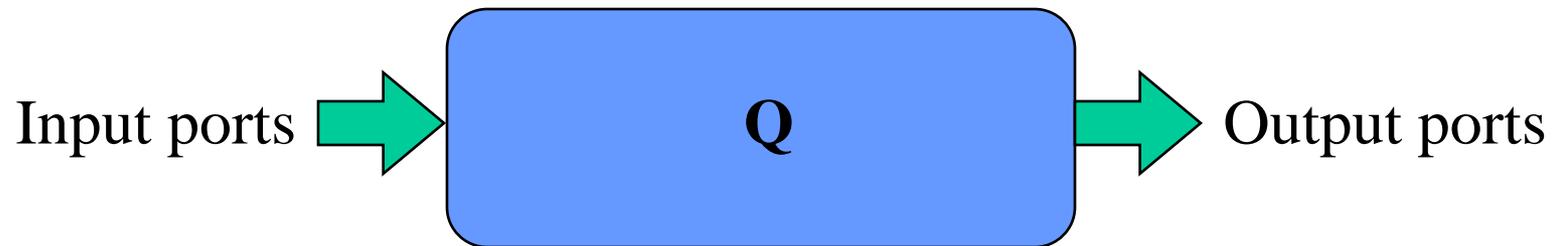
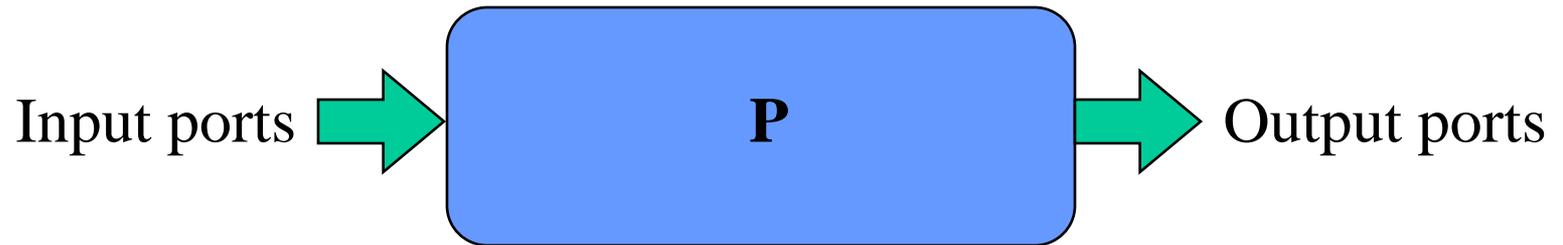
Semantics of a Connection



Two Tasks



Two Tasks

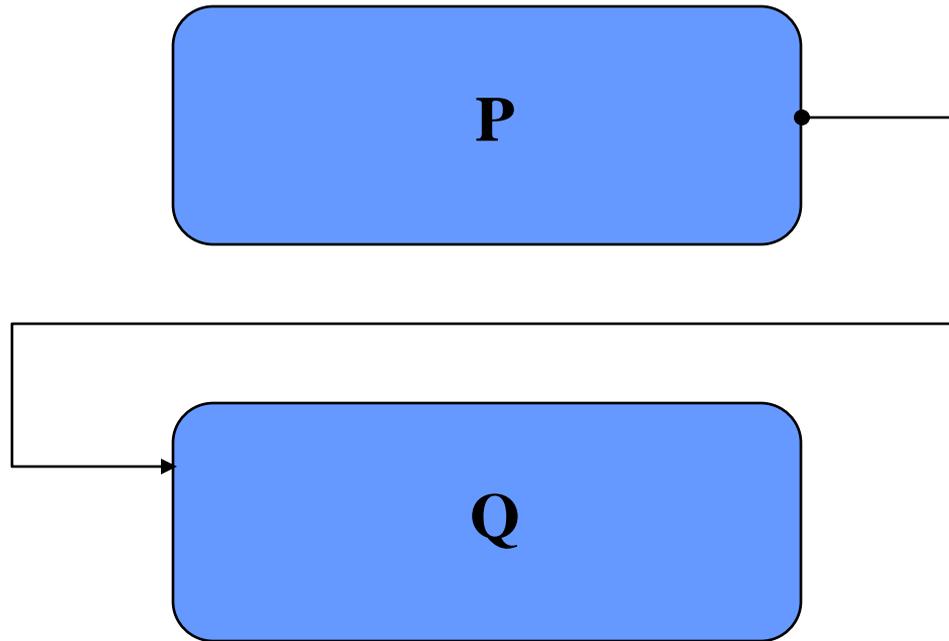


Connections

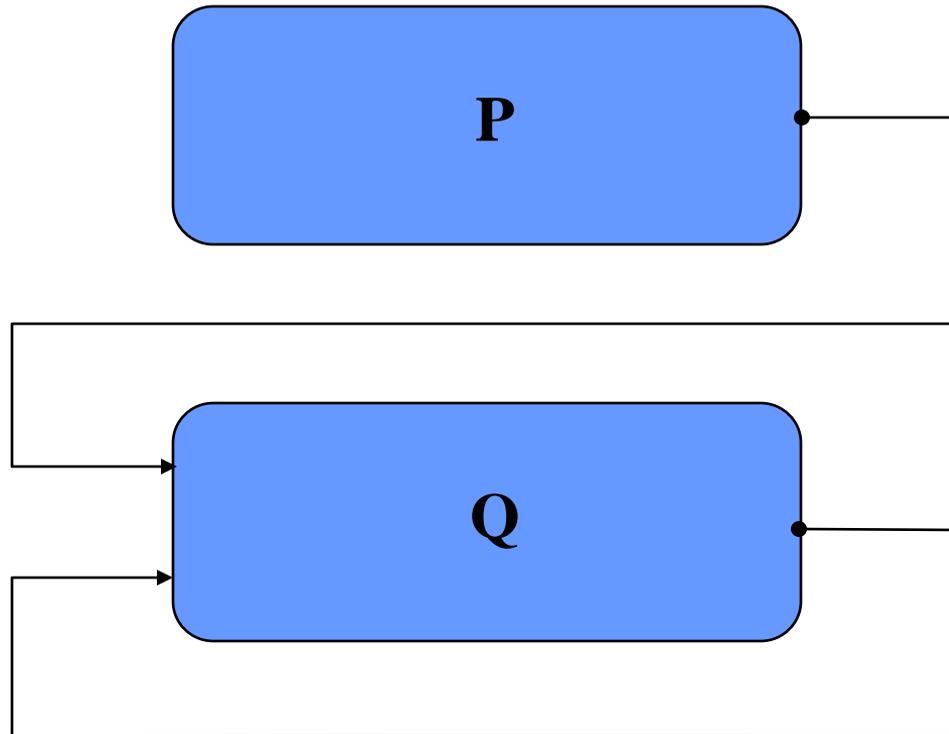
P

Q

Connections



Connections

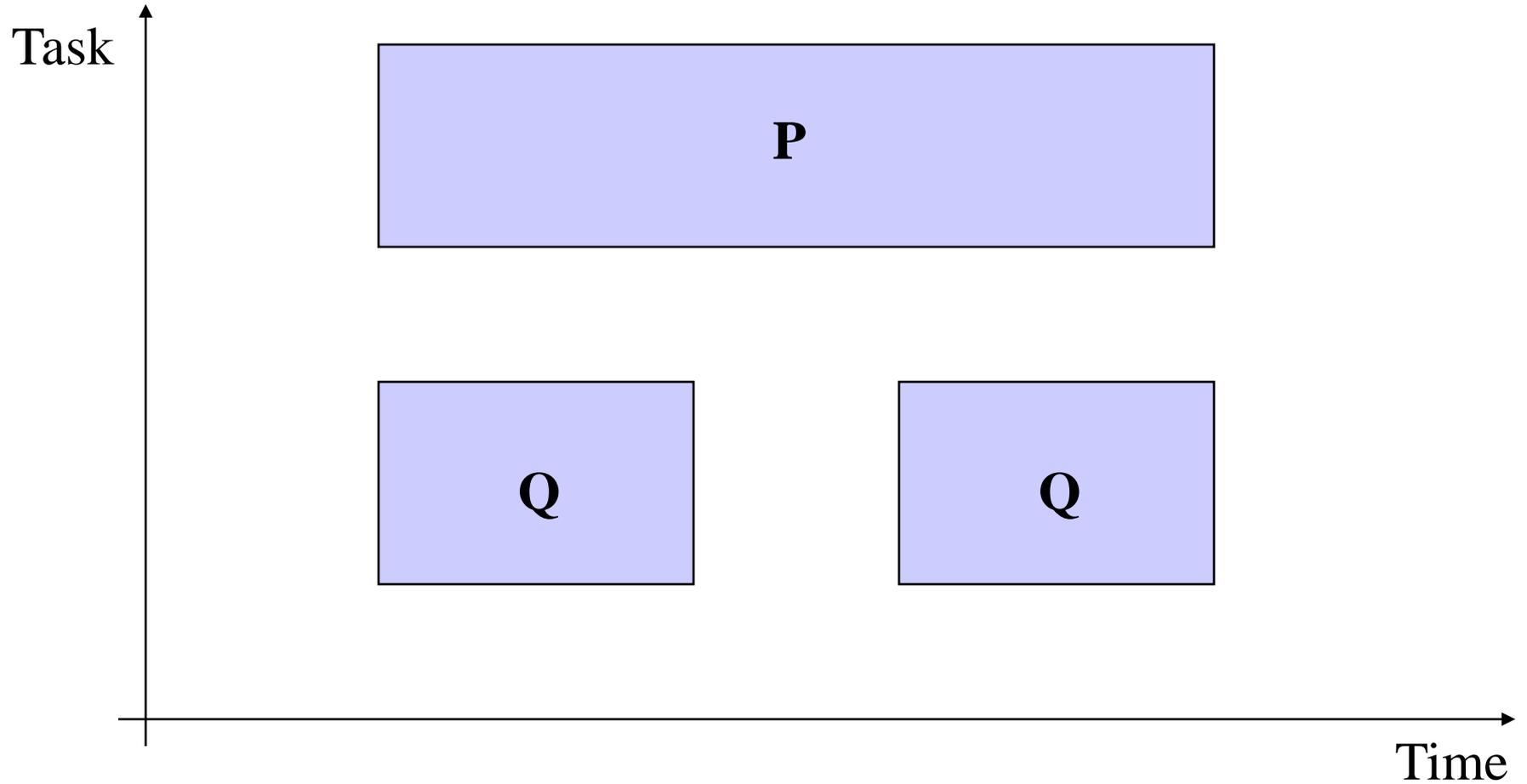


Different Periodicity

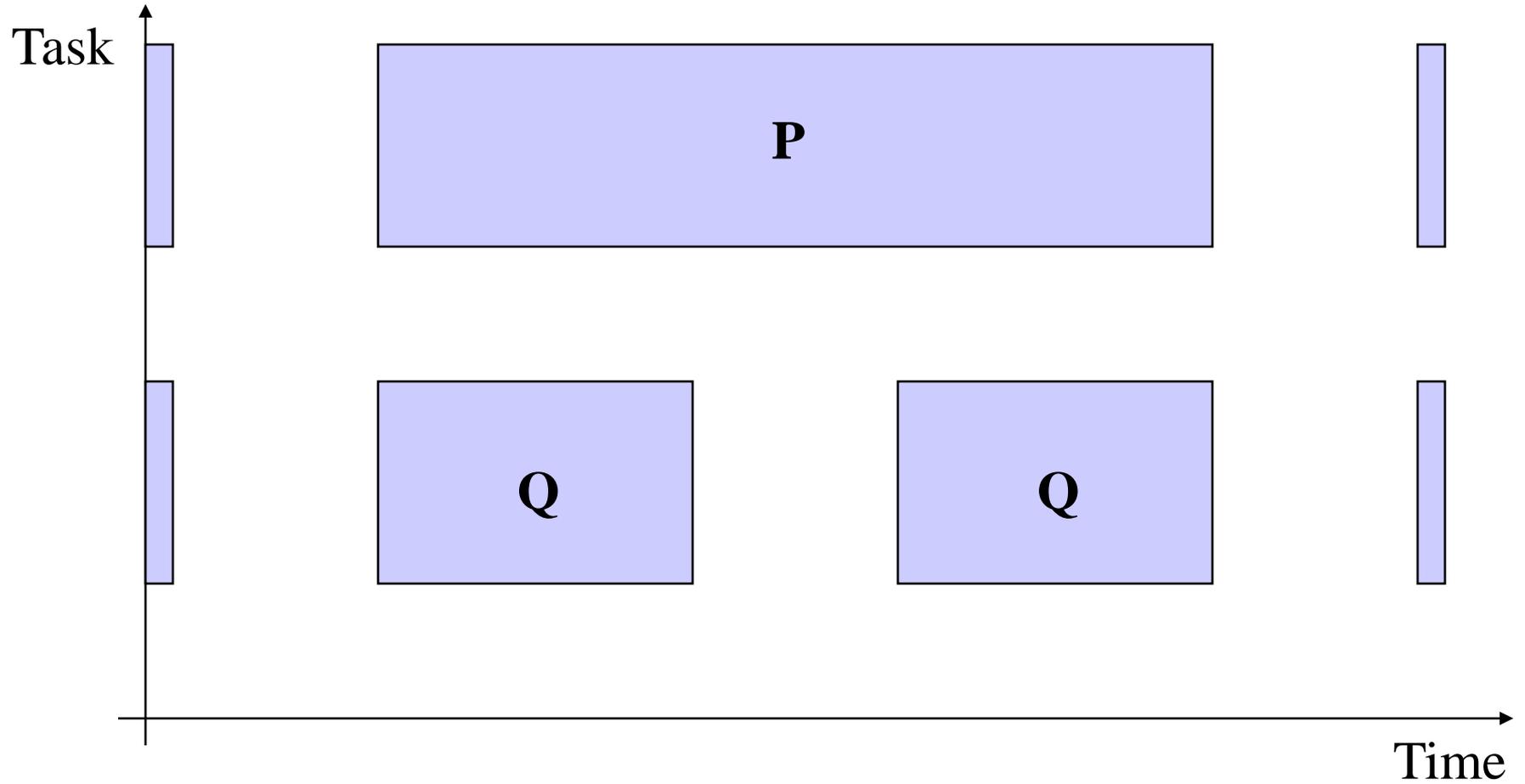
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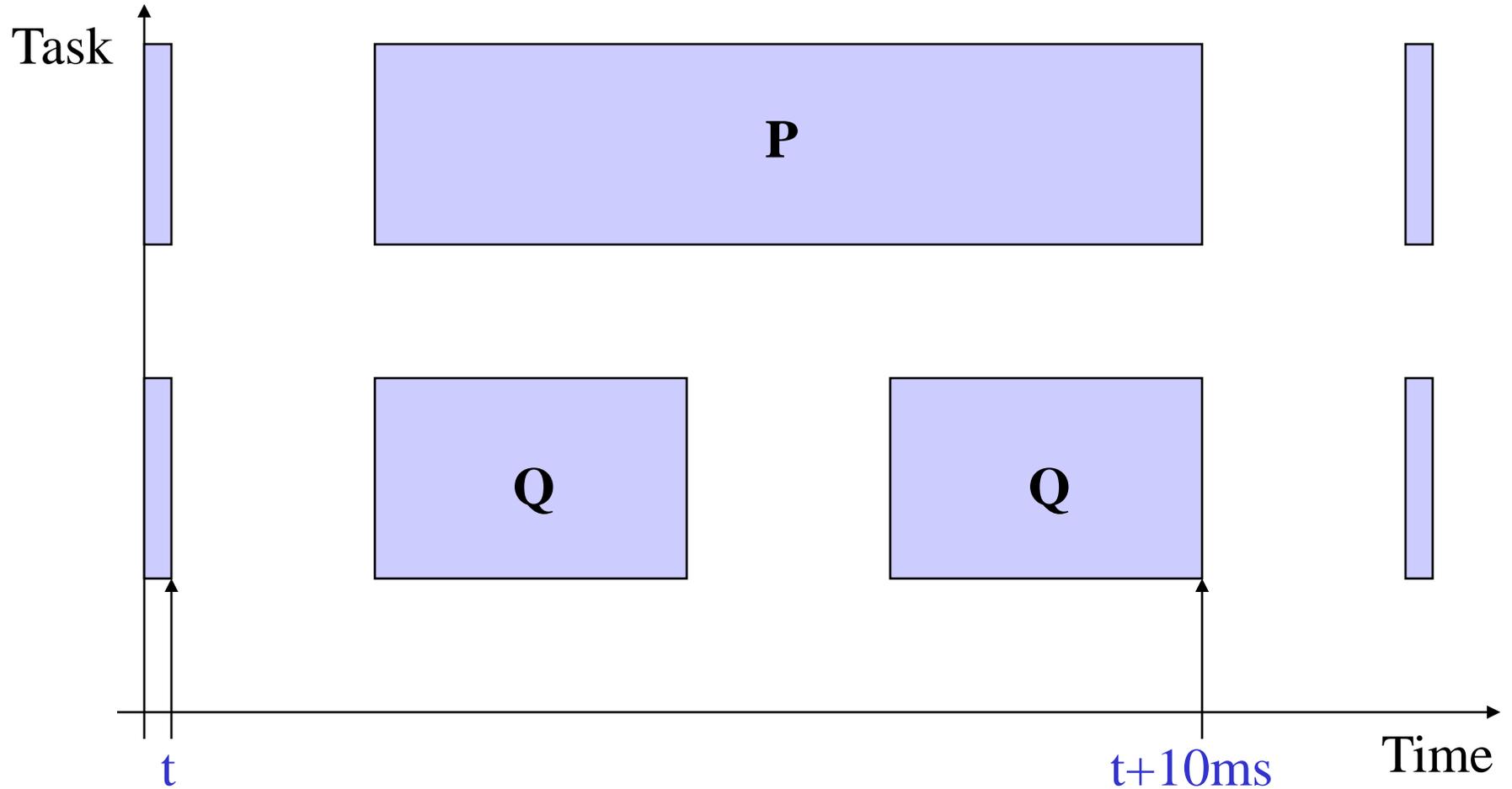
Different Periodicity



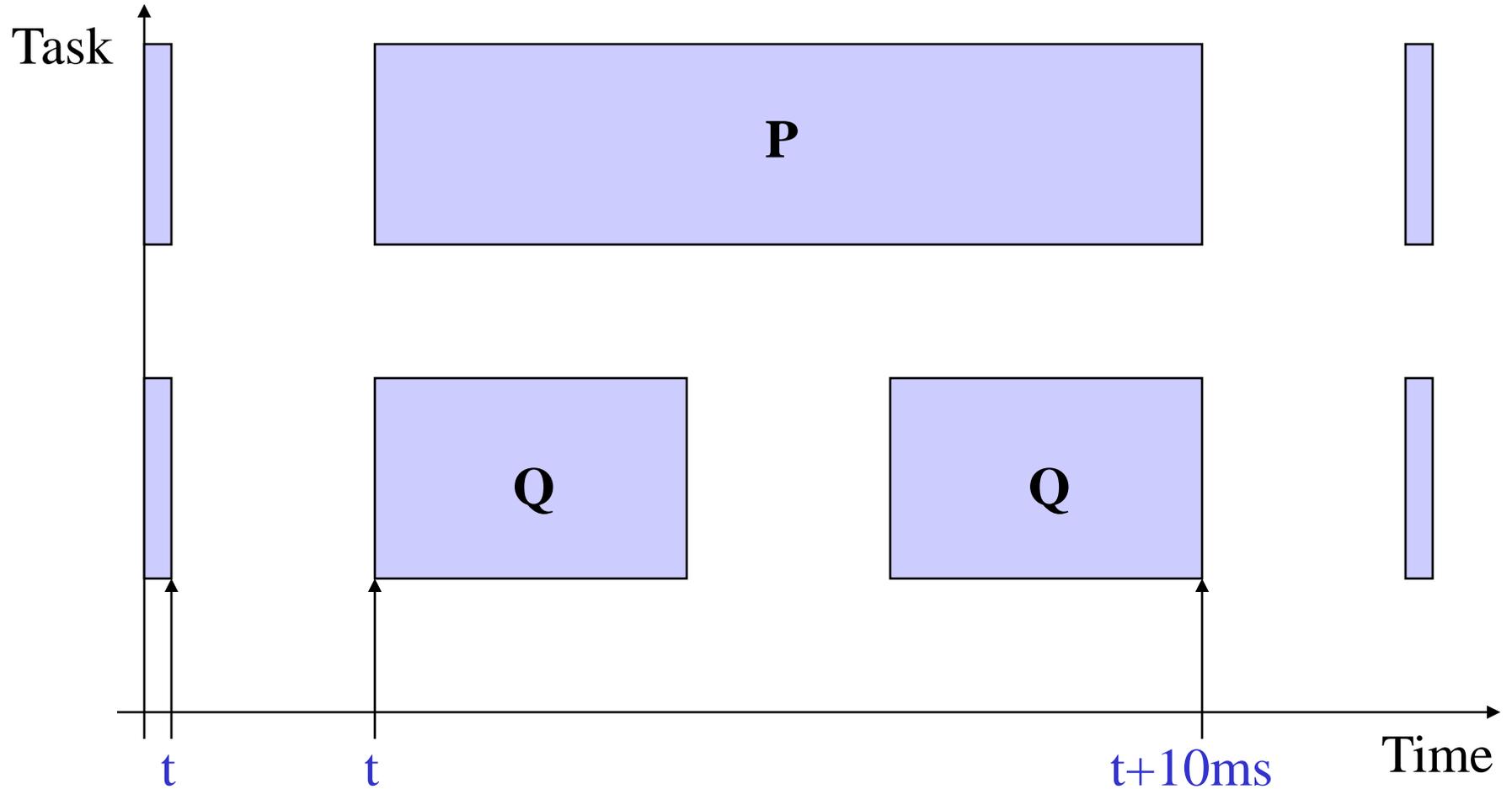
Semantics



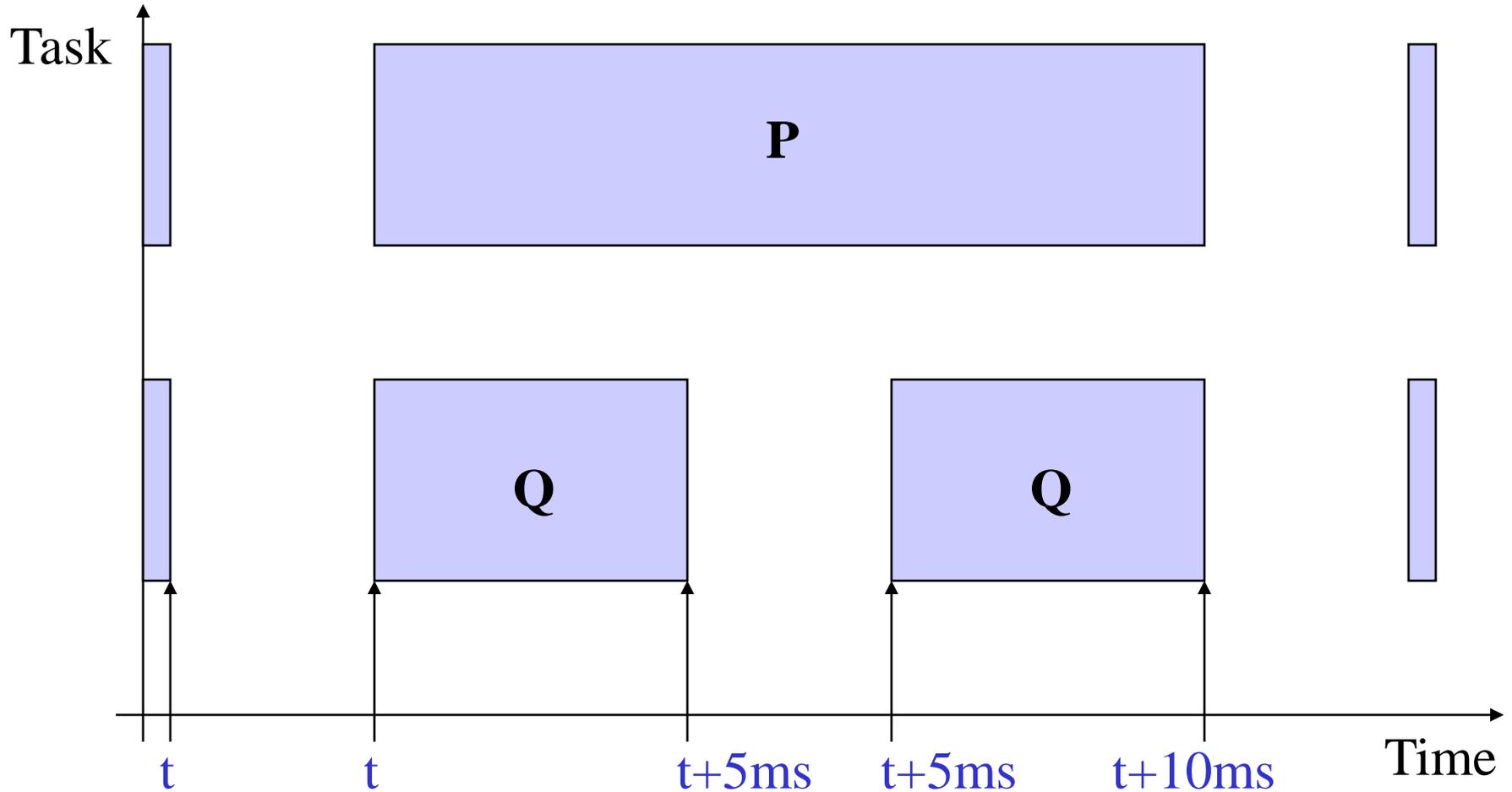
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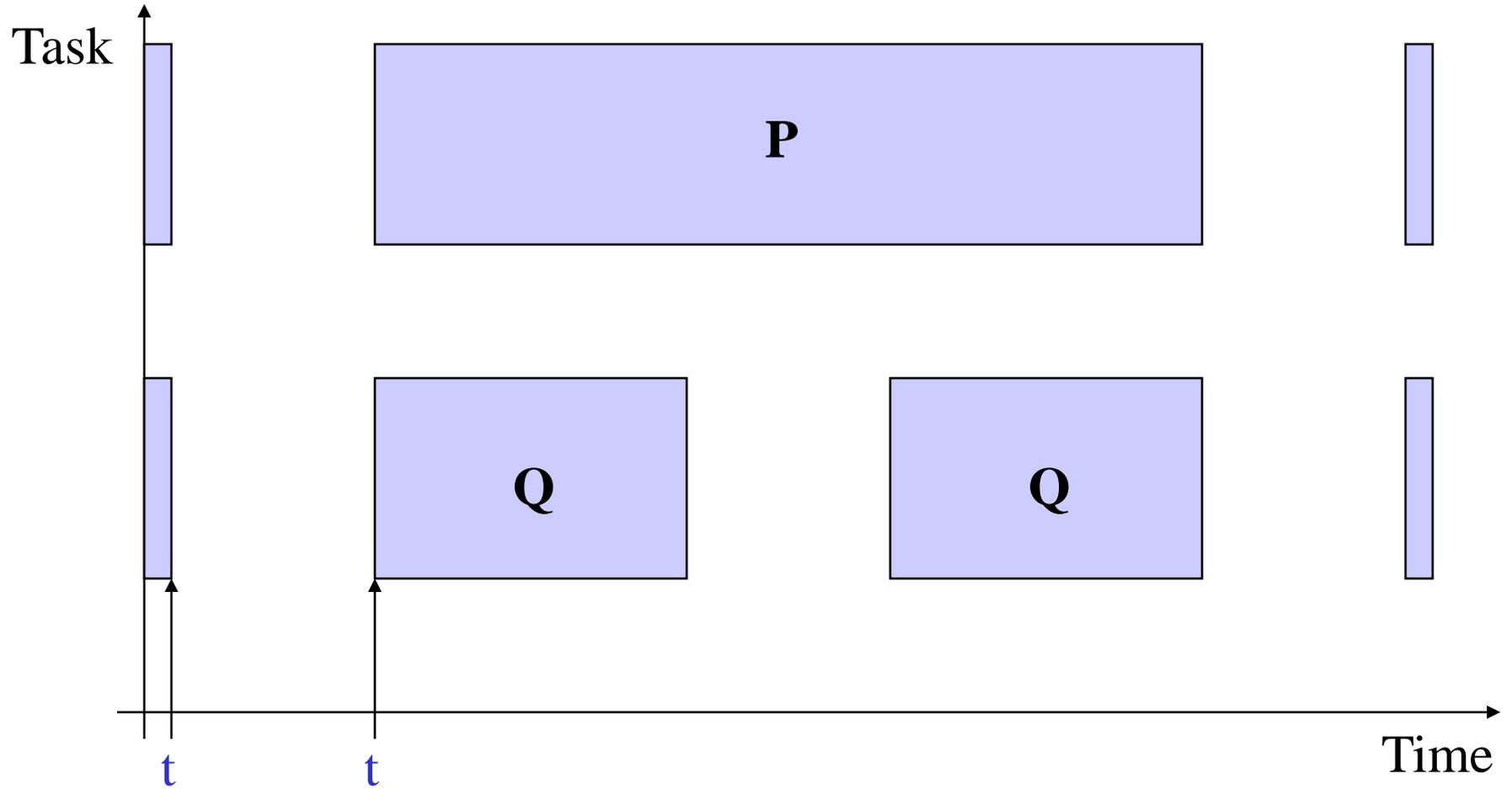
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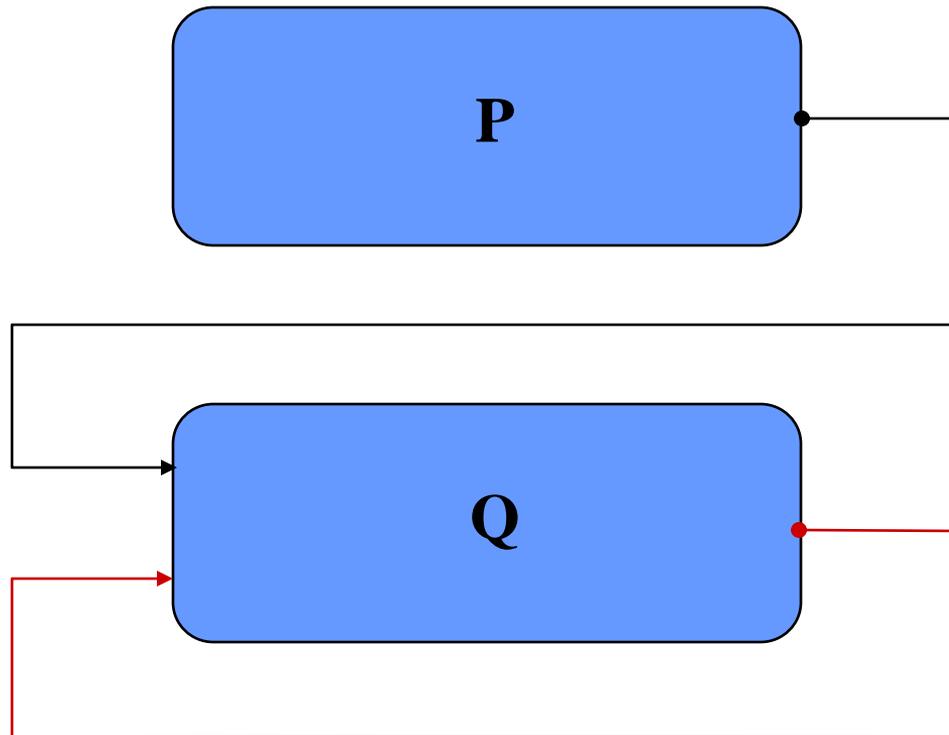
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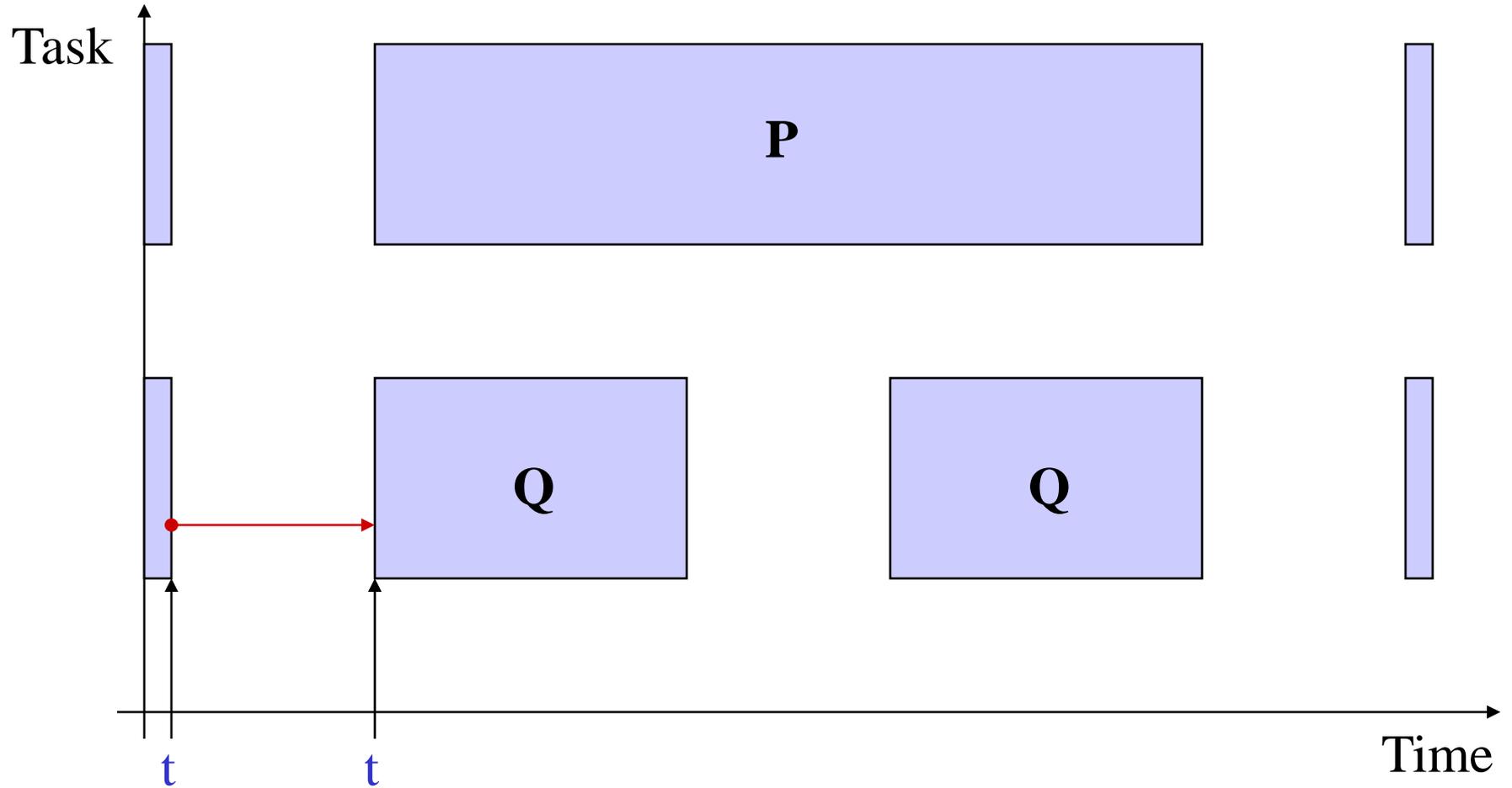
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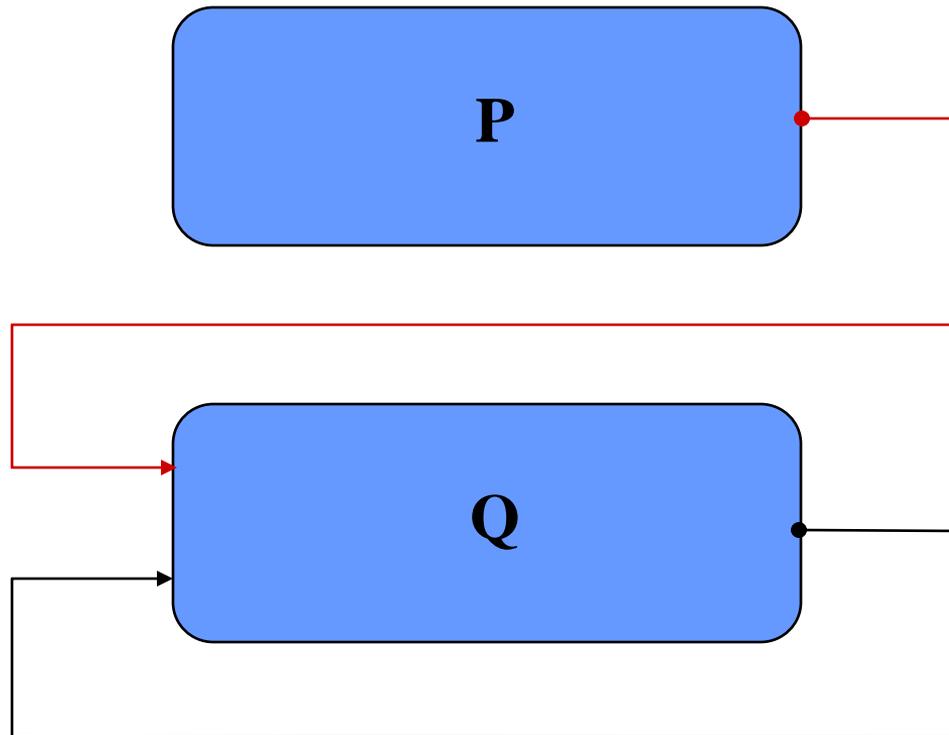
Connections



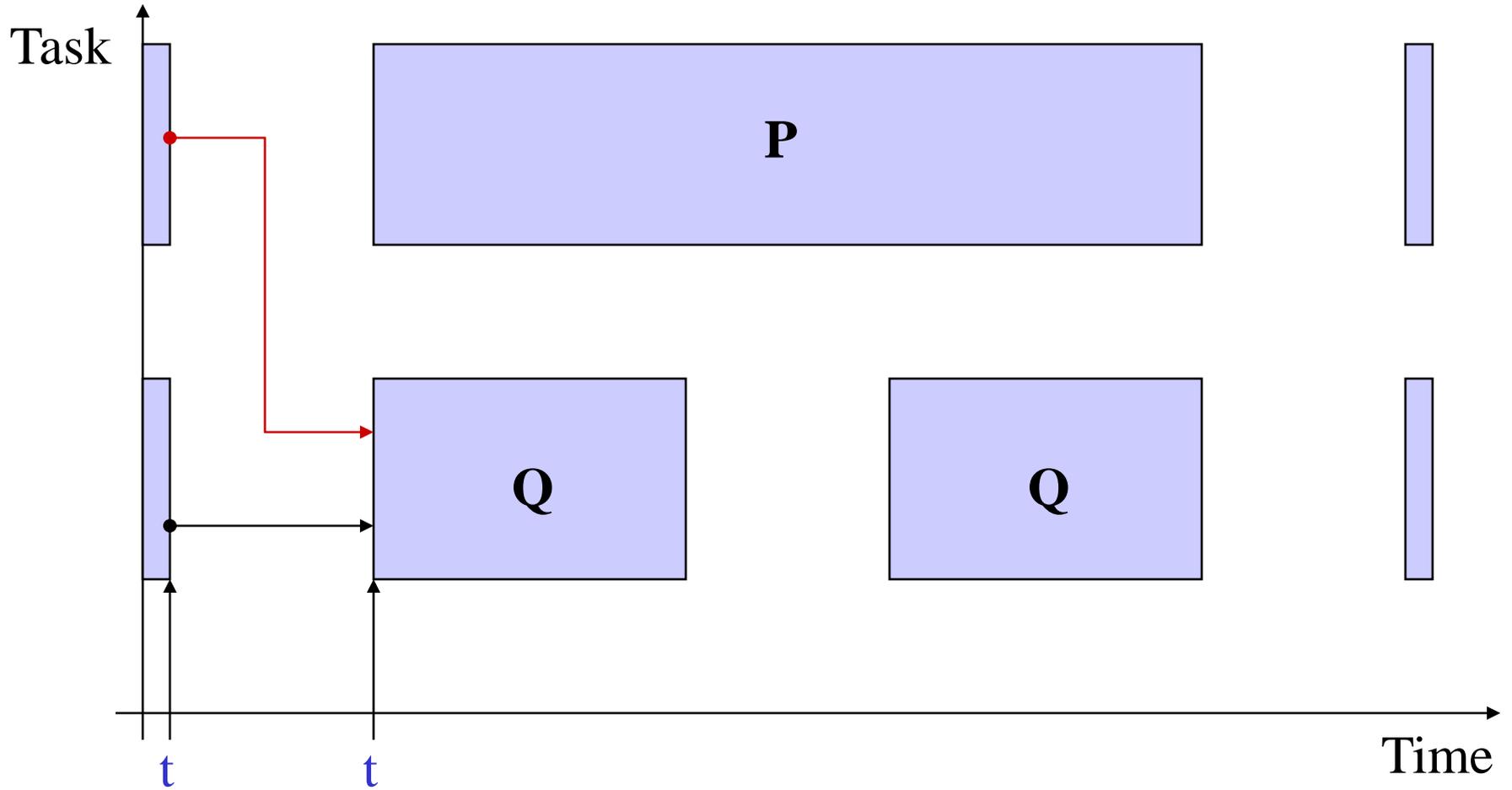
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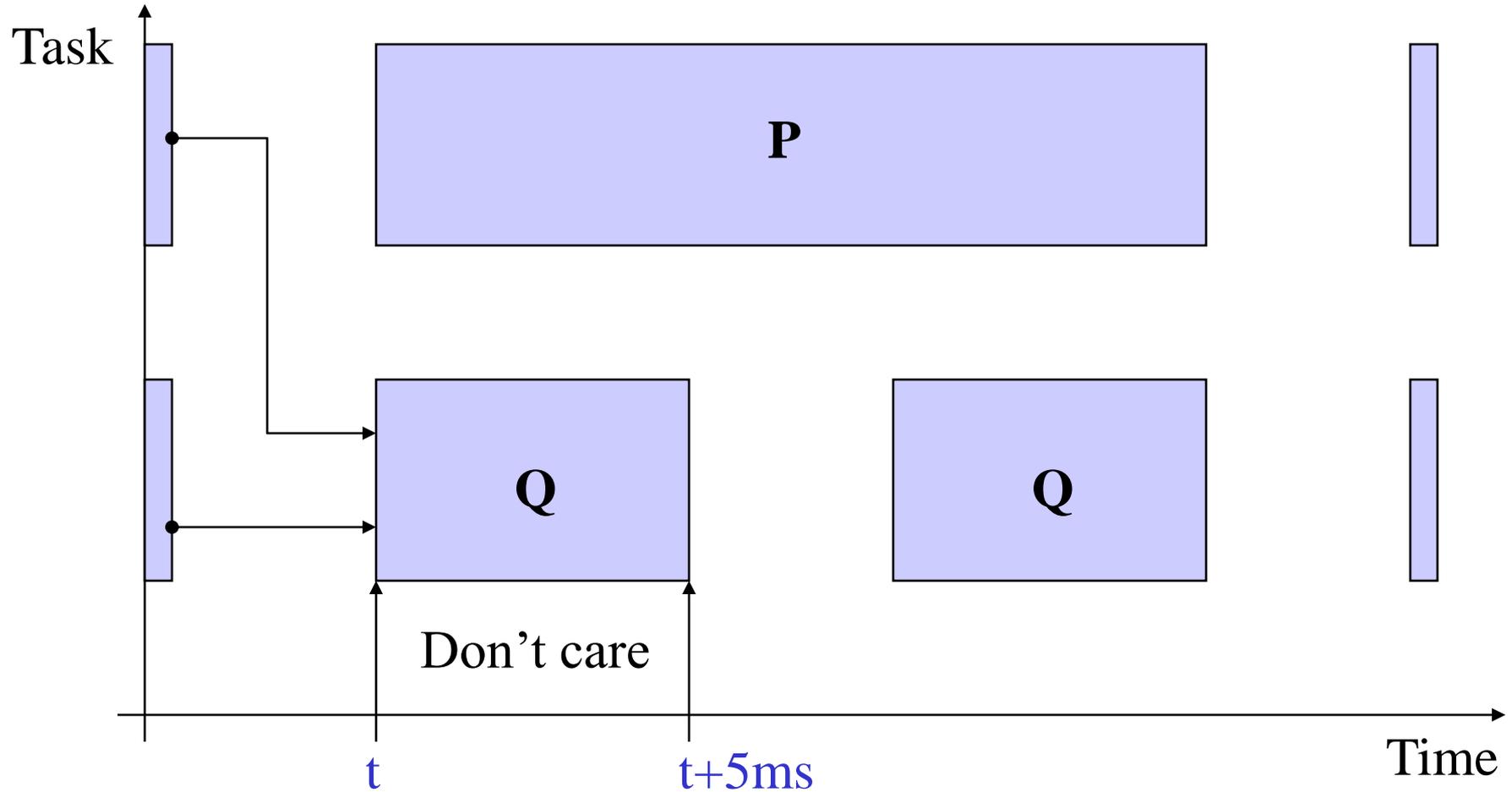
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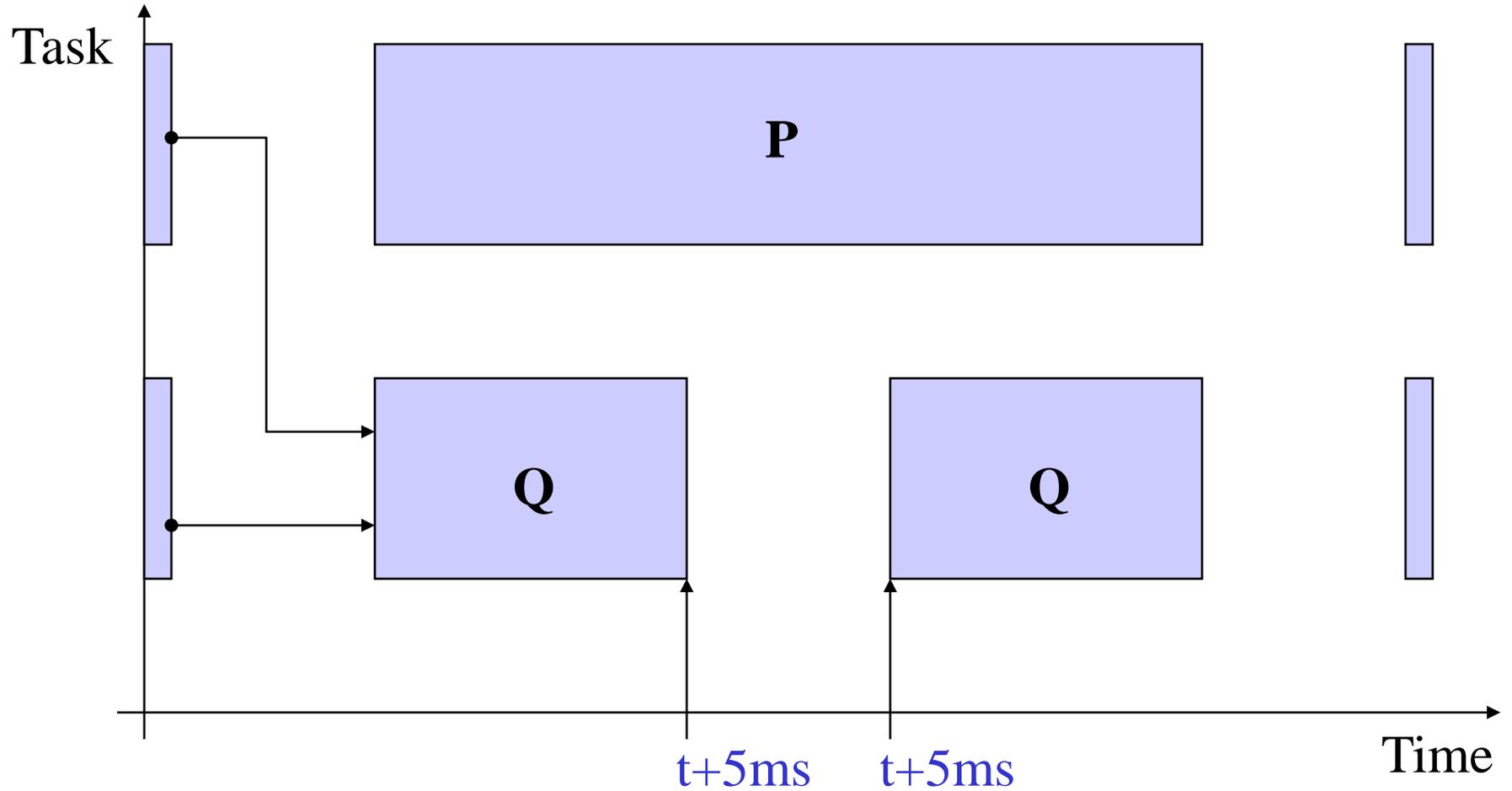
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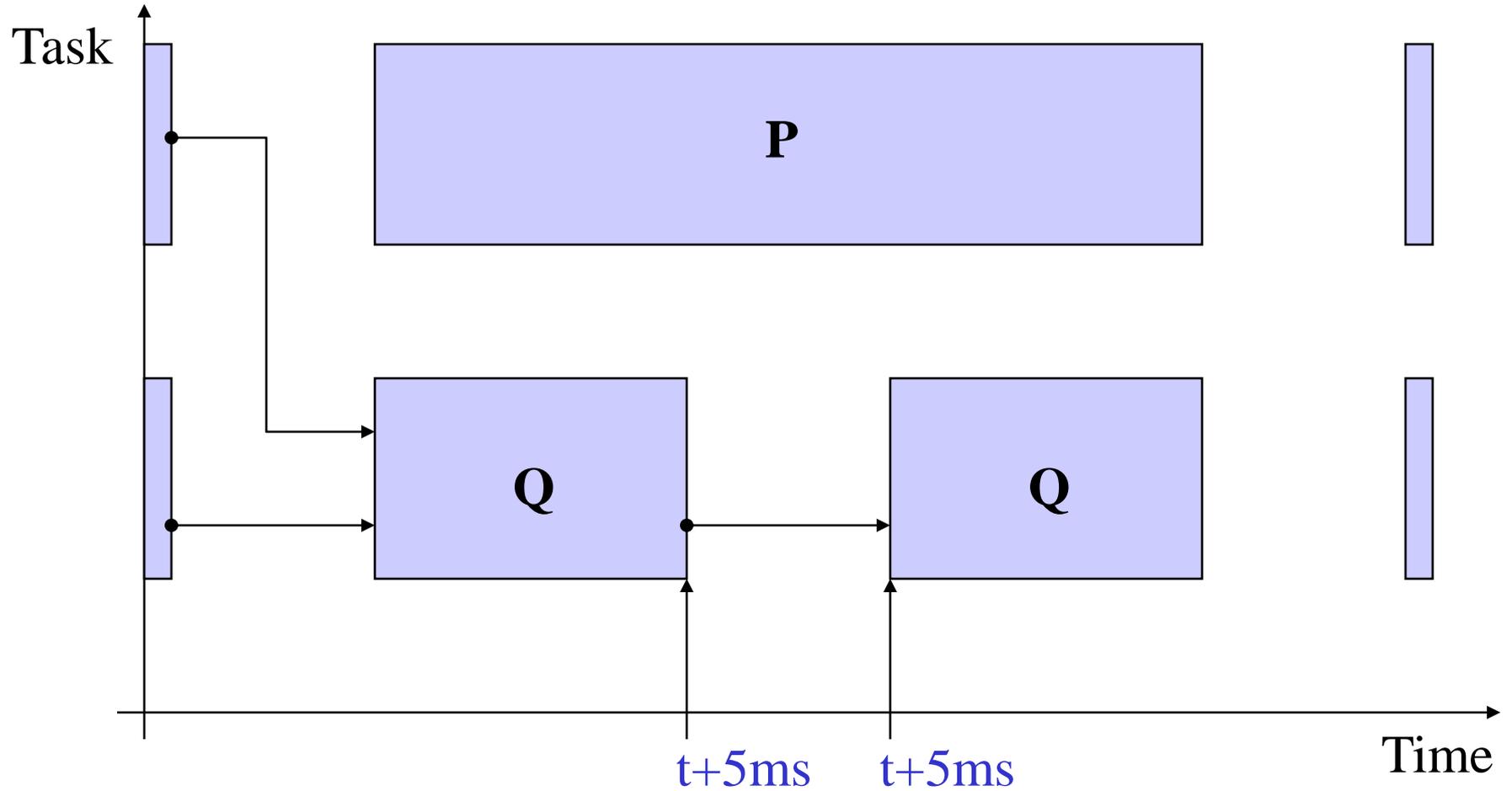
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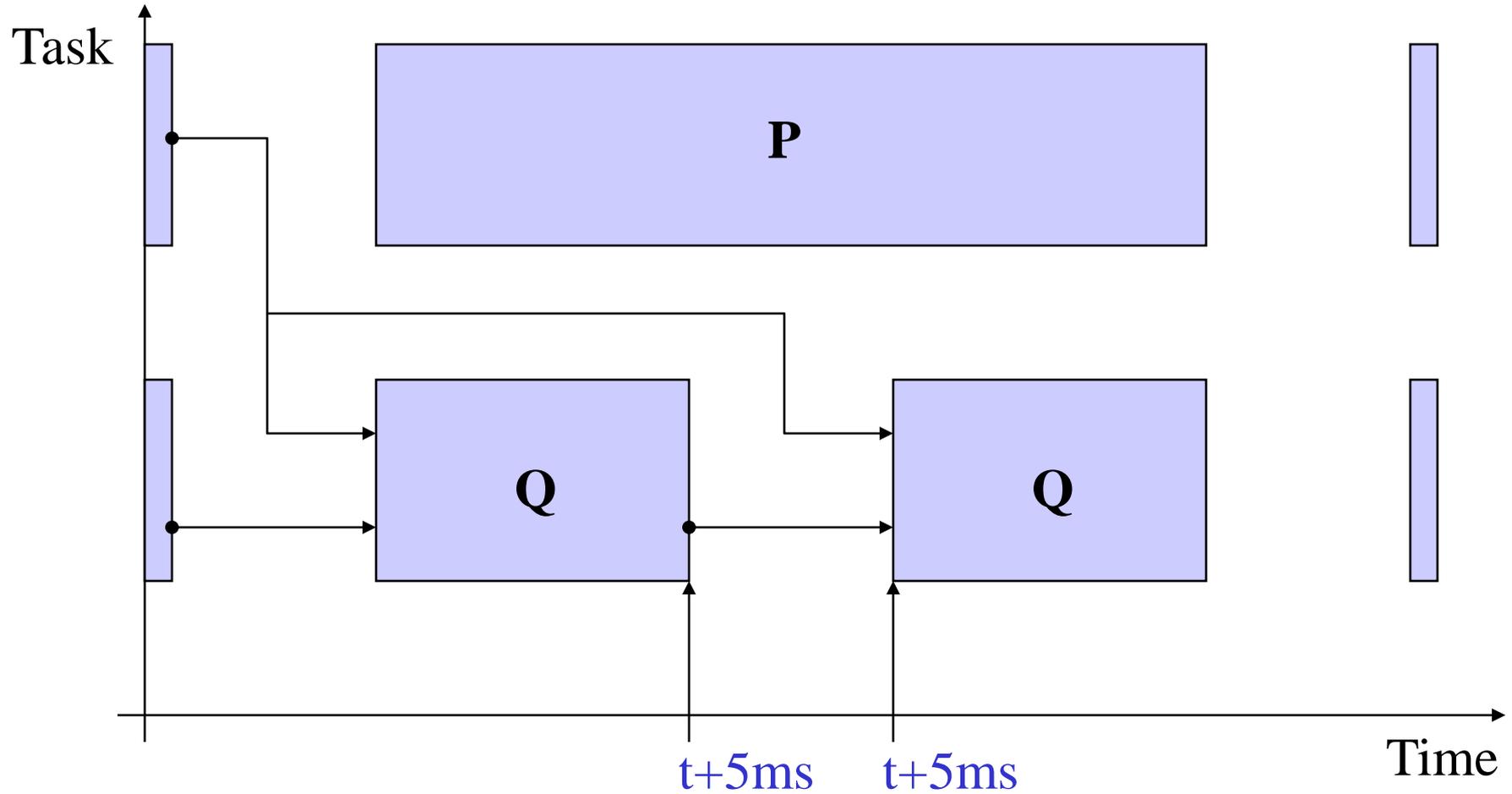
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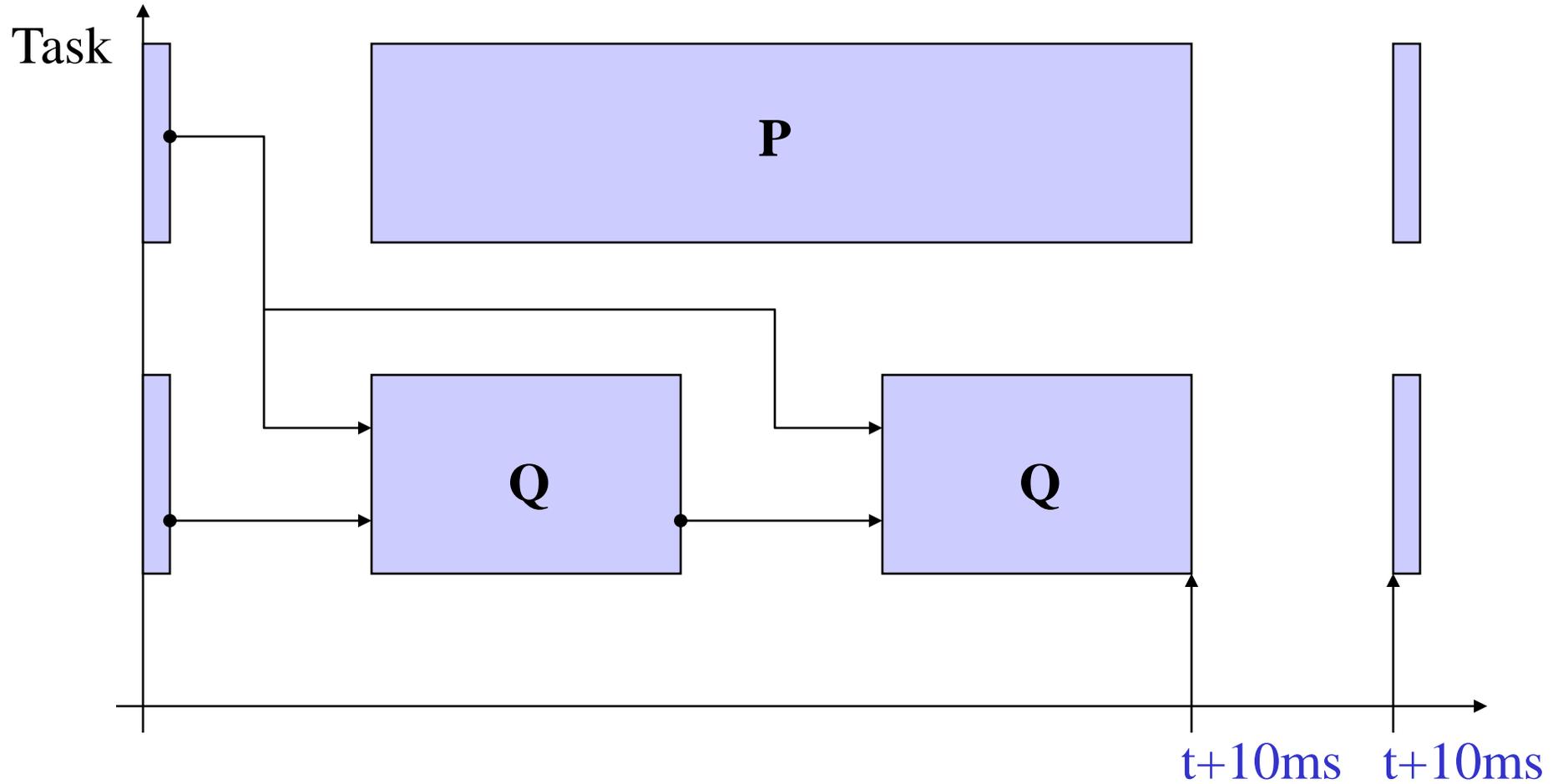
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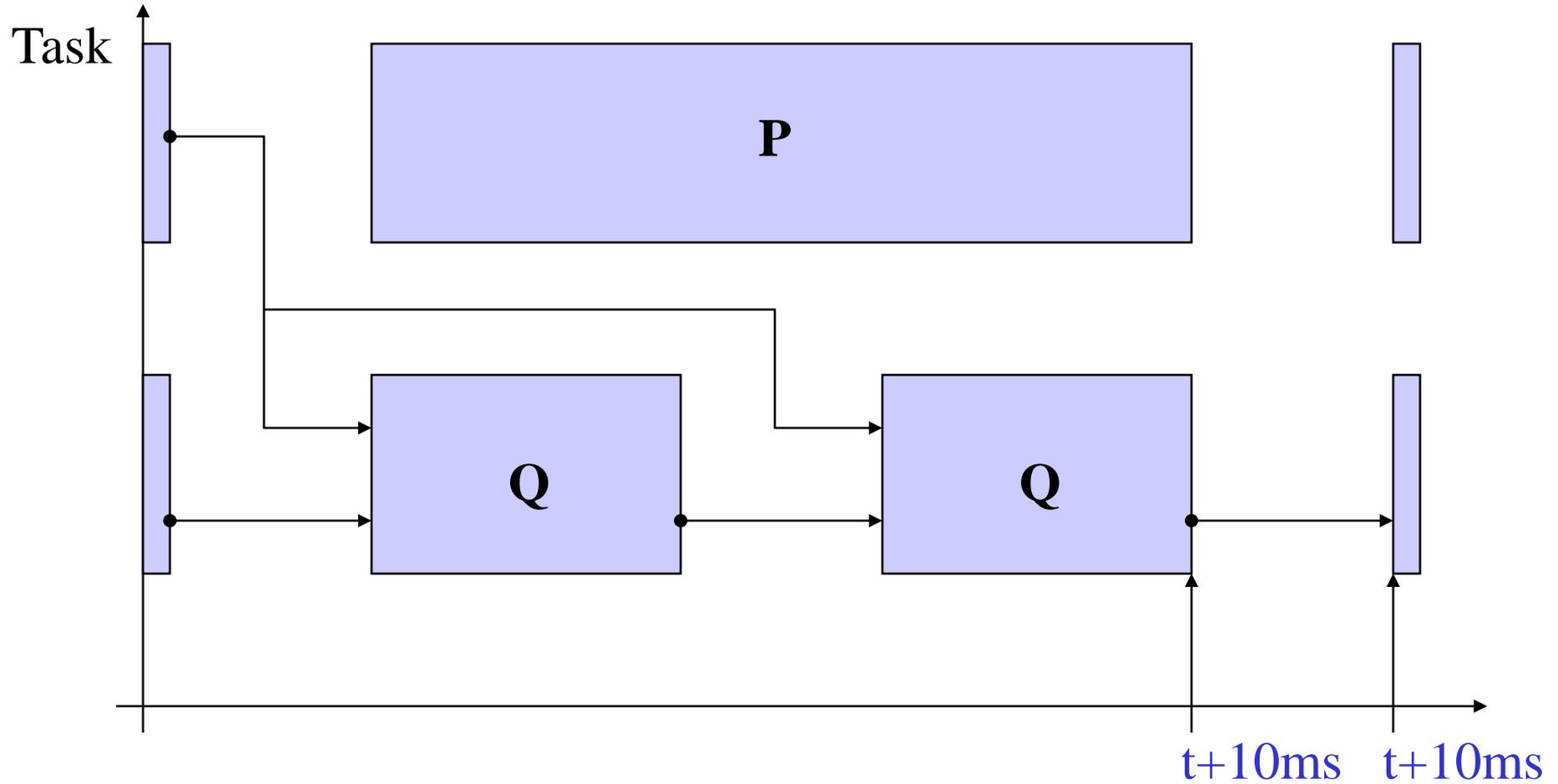
Semantics



Semantics



Semantics



Semantics

