操作系统原理

第二章：计算机系统结构

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February 19, 2016

目录

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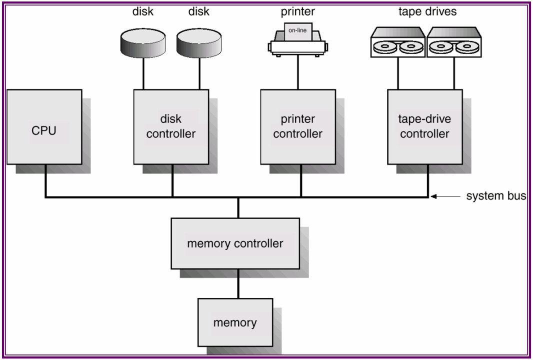

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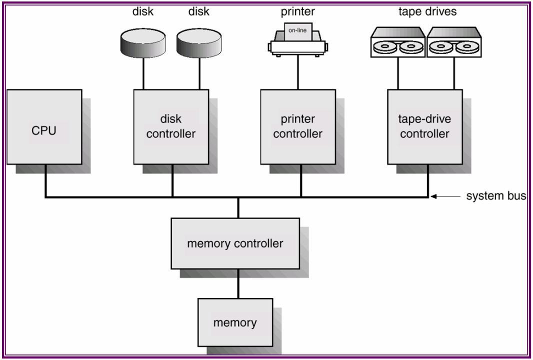

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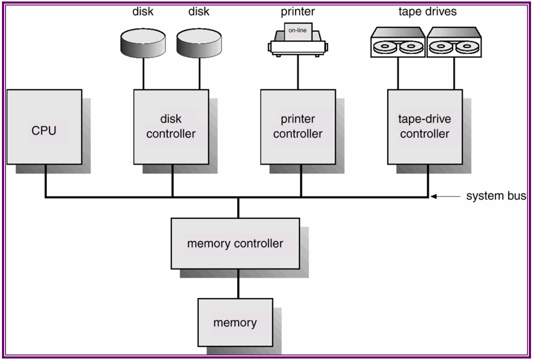

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- To ensure orderly access to the memory, a memory controller is provided to synchronize access to the memory.

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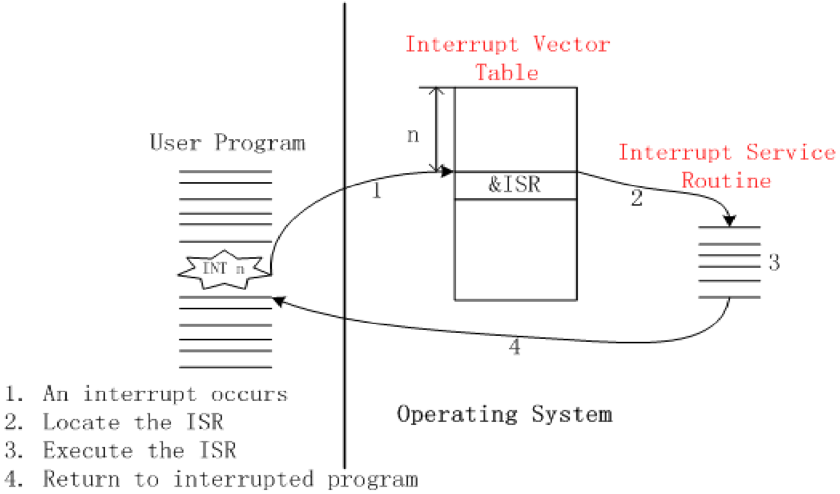

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  - Exception is also known as **software-generated interrupt** or **synchronous interrupt**.

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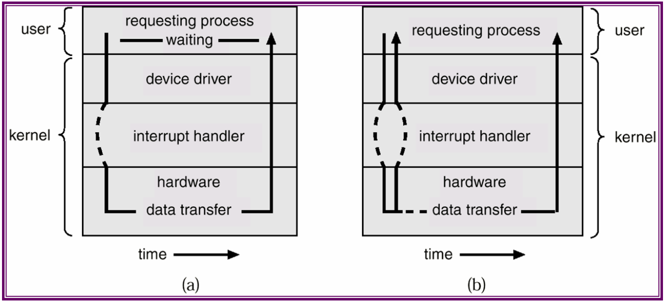

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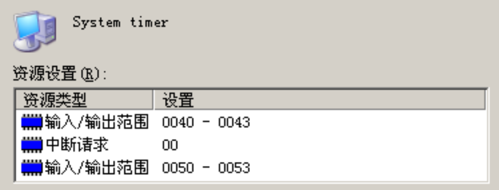

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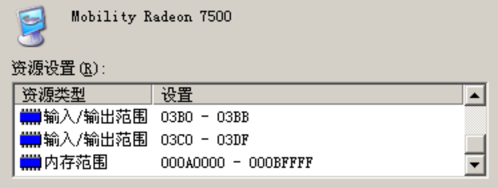

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  - **Privileged instructions** - Prevent user programs disrupting the normal operation of the system by issuing illegal I/O instructions.
  - **Memory protection** - Prevent a user program directly accessing the memory of another user program or even operating system.
  - **CPU protection** - Prevent a user program from getting stuck in an infinite loop and never returning control to the operating system.

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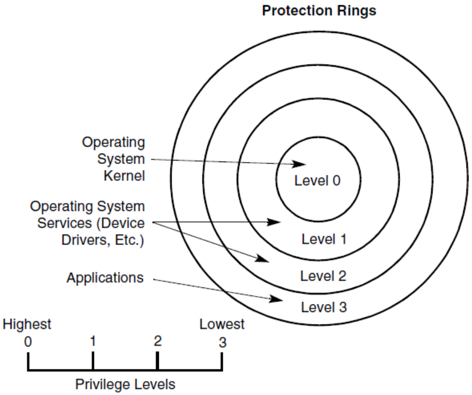

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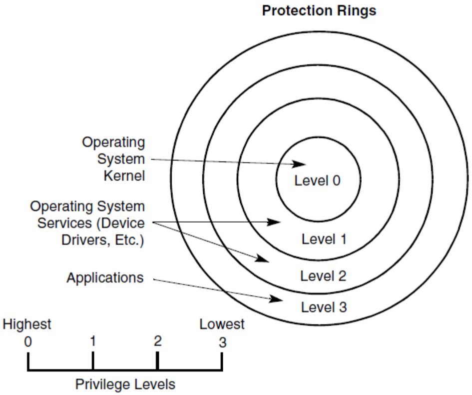

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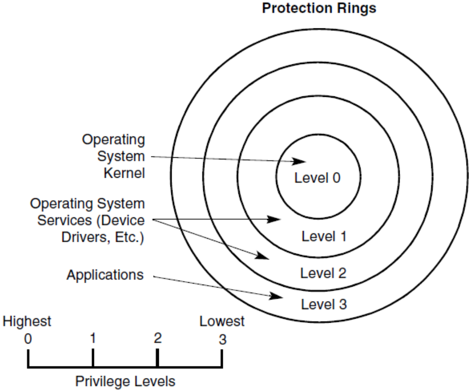

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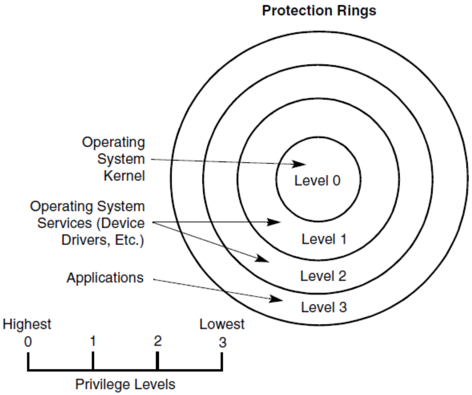

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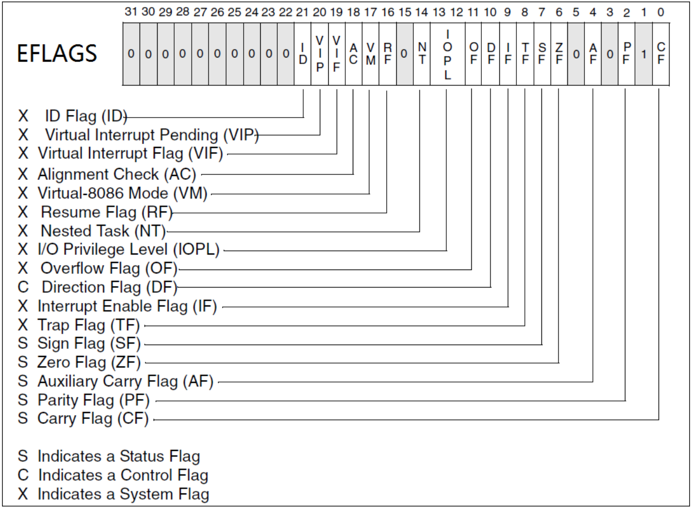

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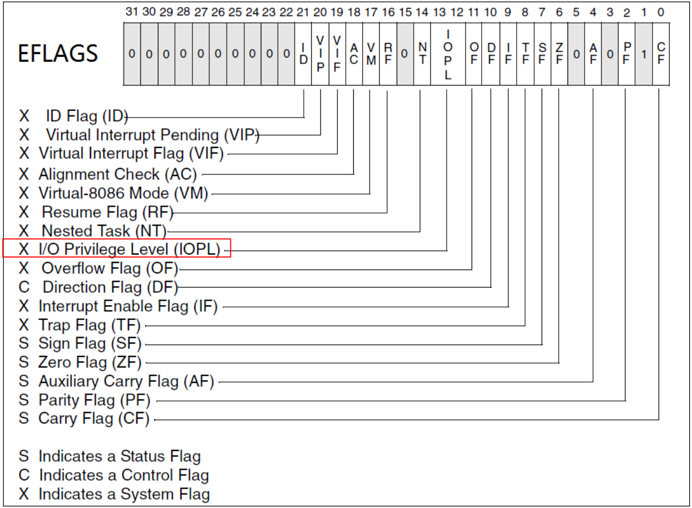

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- Must ensure that a user program could never gain control of the computer in monitor mode.

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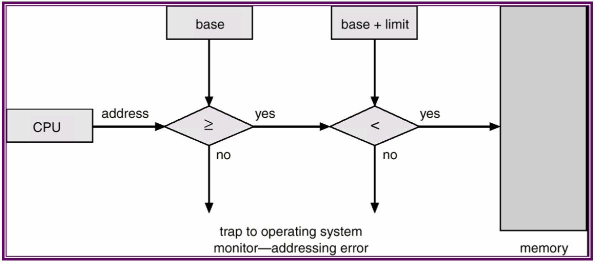

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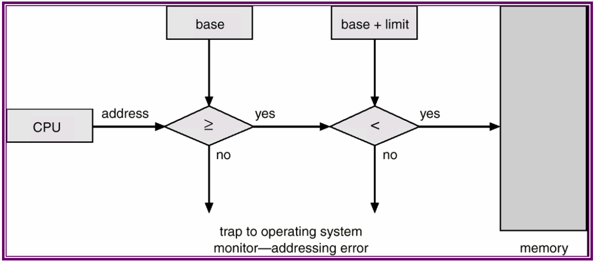

- We will return to this topic when entering *memory management*.

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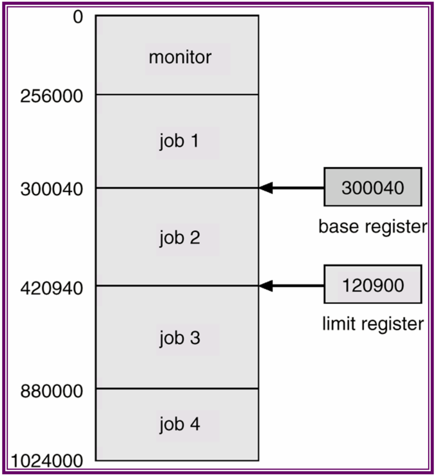

0
monitor
256000
job 1
300040
300040
base register
job 2
420940
120900
limit register
job 3
880000
job 4
1024000

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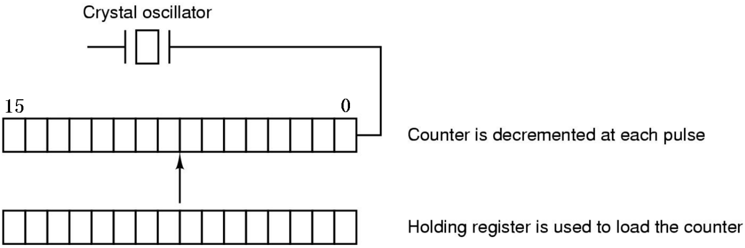
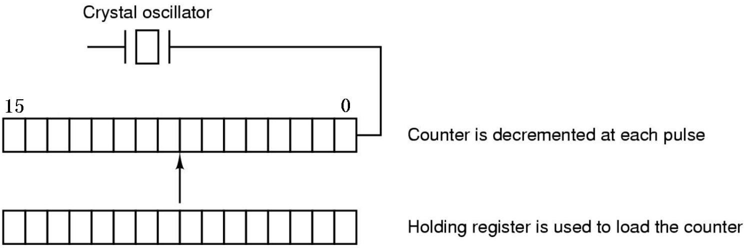

Crystal oscillator
15
0
Counter is decremented at each pulse
Holding register is used to load the counter

Timer



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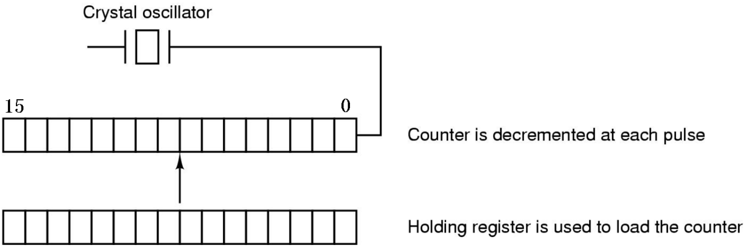

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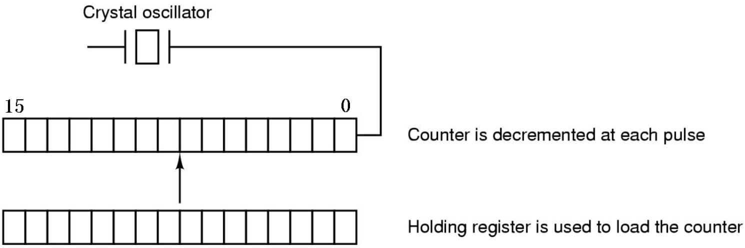

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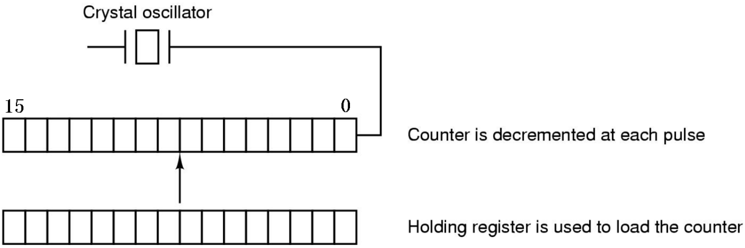

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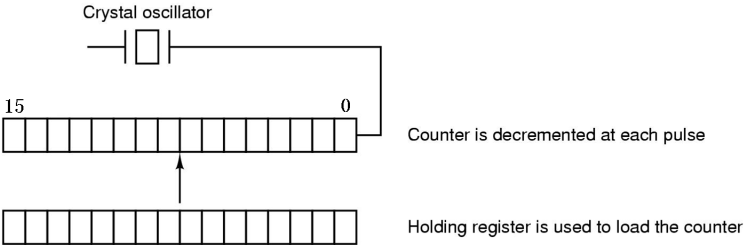

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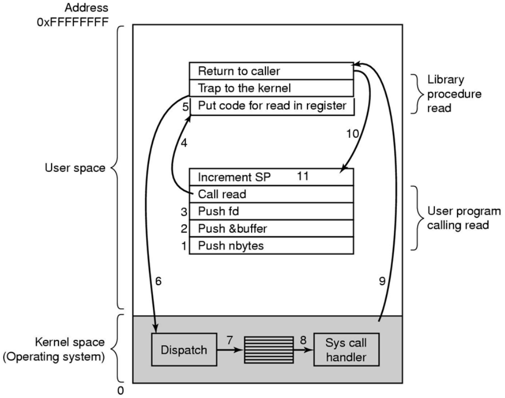

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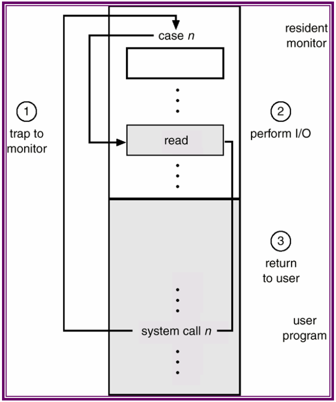

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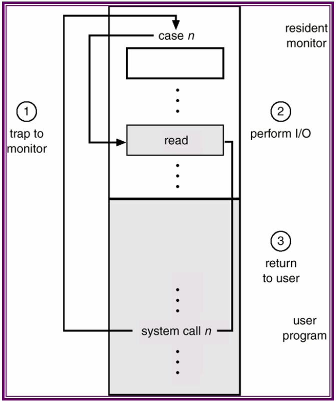

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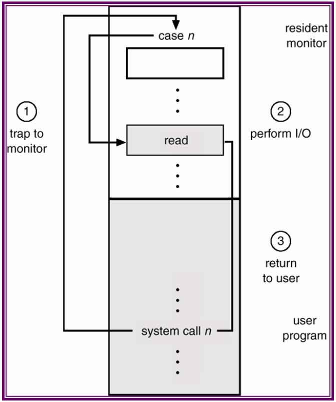

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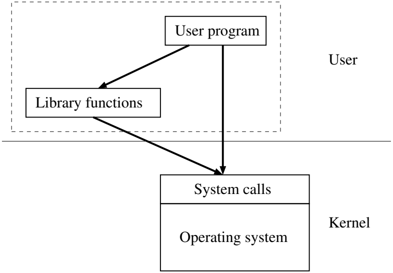

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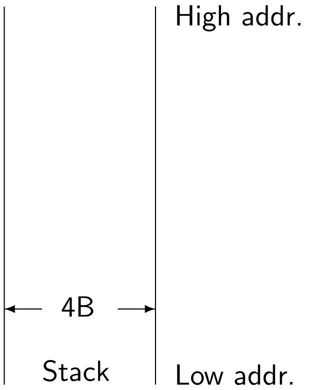

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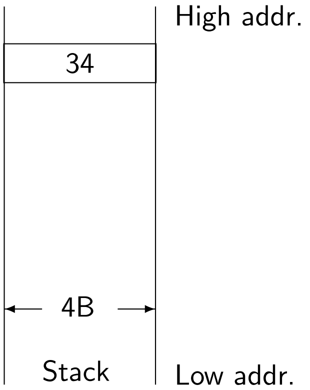

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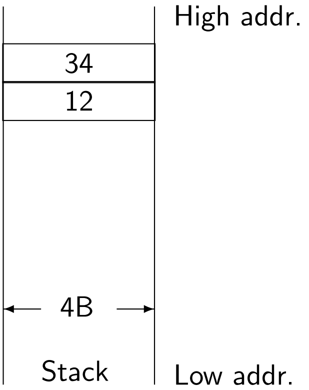

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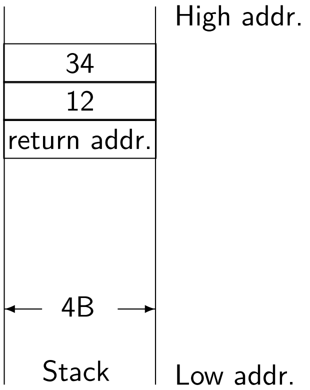

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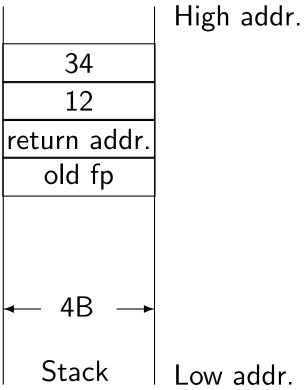

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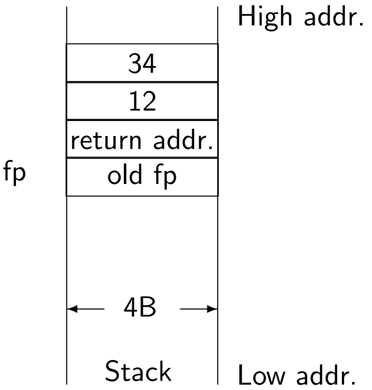

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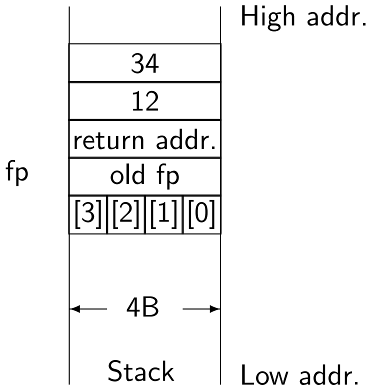

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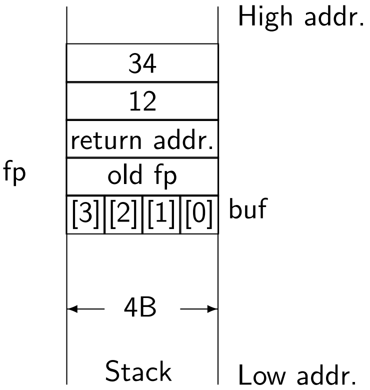

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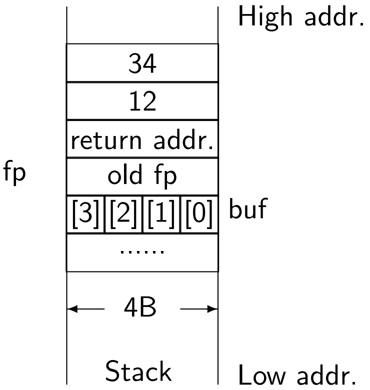

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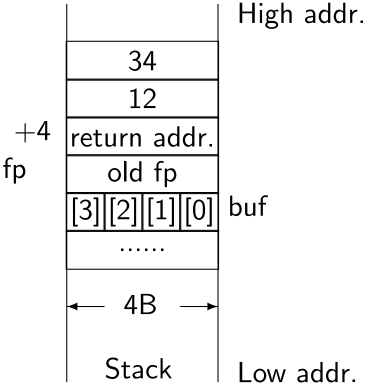

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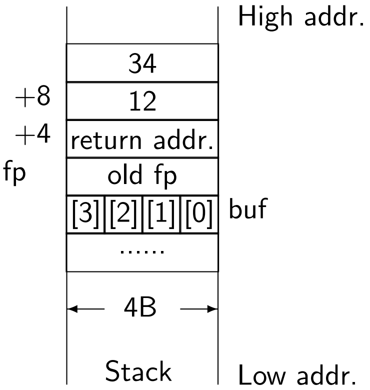

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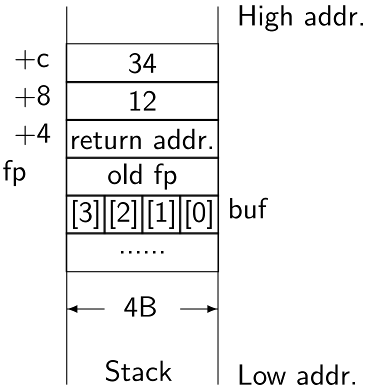

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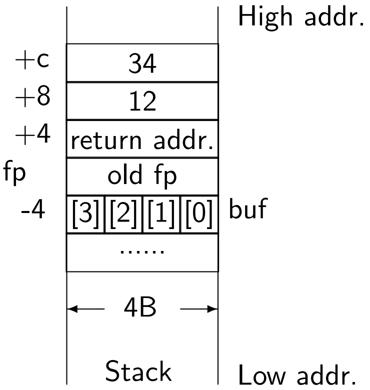

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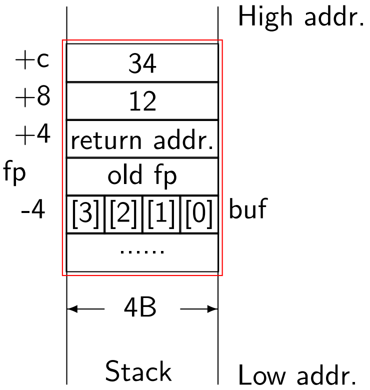

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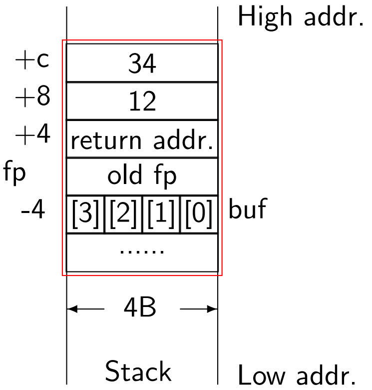

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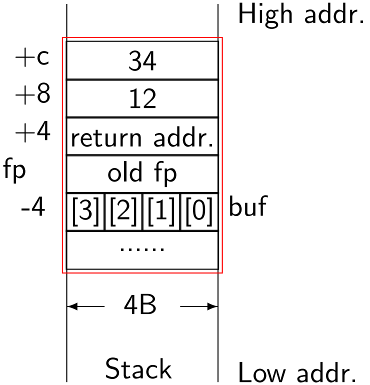

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  - Stack frames are chained into a singly-linked list via **fp** (short for **frame pointer**).

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- It's stored in the **stack** of the running program.

Questions

- Any questions?