

# Virtual Memory: Concepts

15-213: Introduction to Computer Systems

15<sup>th</sup> Lecture, Oct. 14, 2010

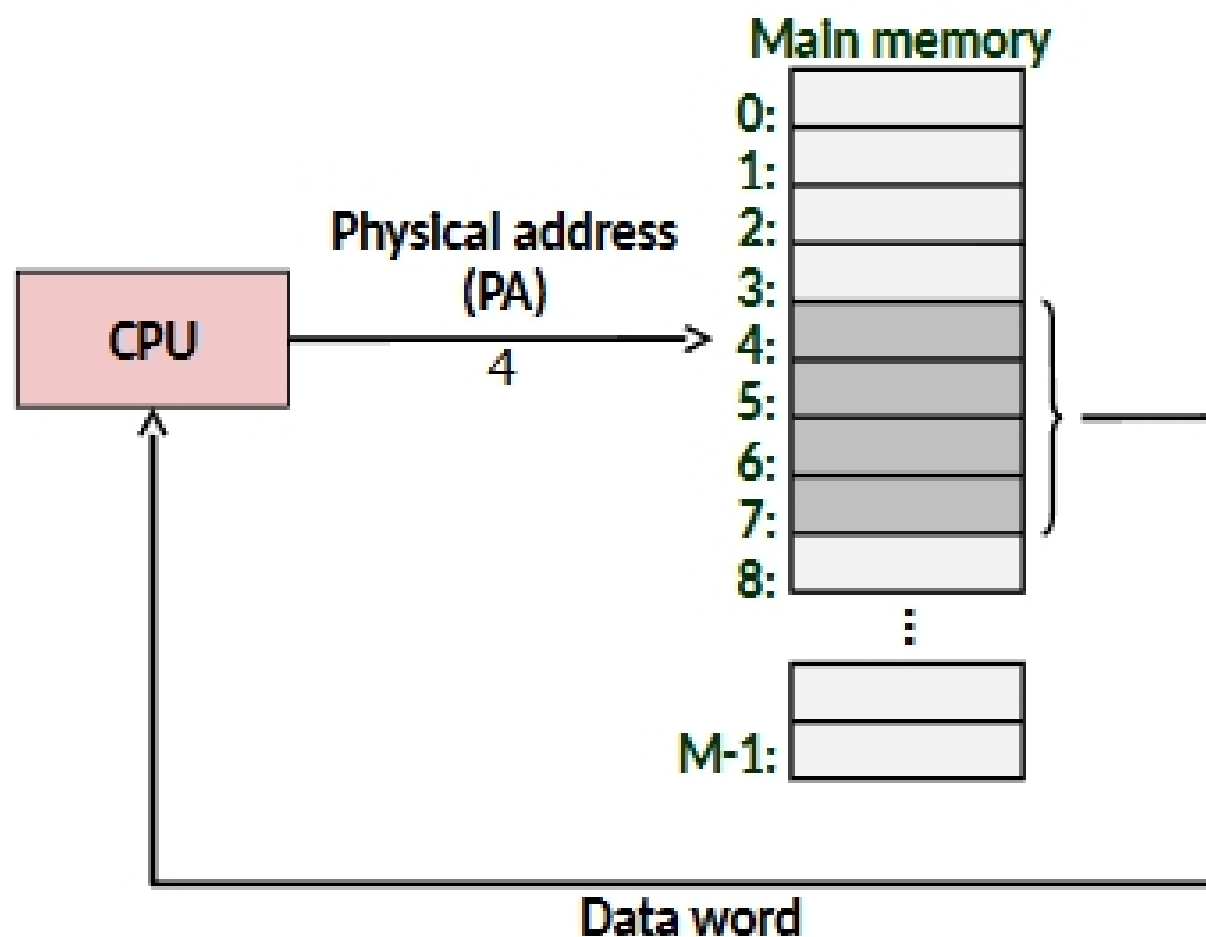
## **Instructors:**

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# Today

- **Address spaces**
- VM as a tool for caching
- VM as a tool for memory management
- VM as a tool for memory protection
- Address translation

# A System Using Physical Addressing



- Used in “simple” systems like embedded microcontrollers in devices like cars, elevators, and digital picture frames