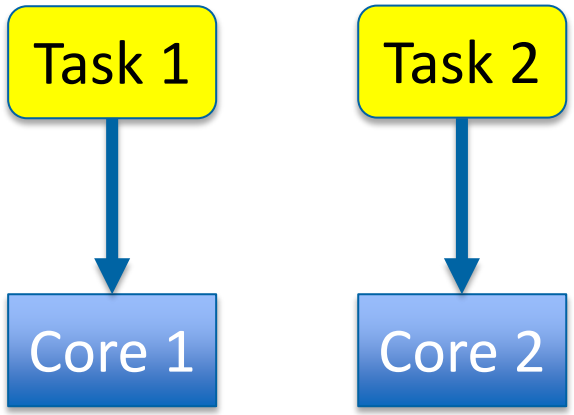
Module 1: Why Use Concurrency
Topic 2.2: Hiding Latency

Hiding Latency

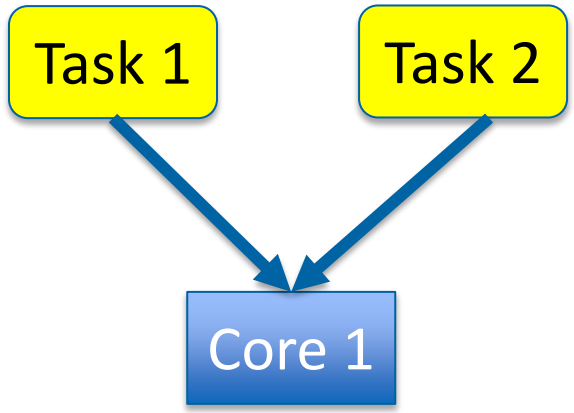
- Concurrency can improve performance, even without parallelism
- Tasks must periodically wait for something
  - i.e. wait for memory
  - `X = Y + Z` read Y, Z from memory
  - May wait 100+ clock cycles
- Other concurrent tasks can operate while one task is waiting

Hardware Mapping

Parallel Execution



Concurrent Execution



Hardware Mapping in Go

- Programmer does not determine the hardware mapping
- Programmer makes parallelism possible
- Hardware mapping depends on many factors
  - Where is the data?
  - What are the communication costs?