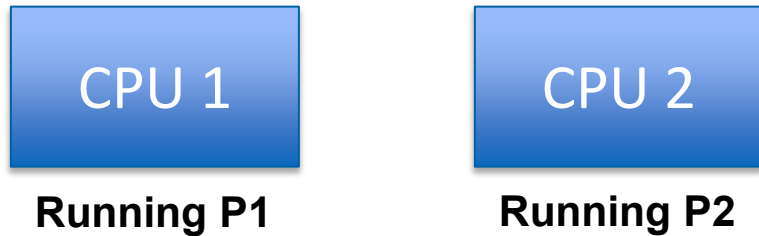


# Module 1: Why Use Concurrency?

## Topic 1.1: Parallel Execution

# Parallel Execution

- Two programs execute in parallel if they **execute at exactly the same time**
- At time  $t$ , an instruction is being performed for both P1 and P2



- Need replicated hardware

# Why Use Parallel Execution

- **Tasks may complete more quickly**
- Example: Two piles of dishes to wash
  - Two dish washers can complete twice as fast as one
- Some tasks must be performed sequentially
- Example: Wash dish, dry dish
  - Must wash before you can dry
- **Some tasks are parallelizable and some are not**