

An impressionist painting of a forest scene. The brushstrokes are thick and visible, creating a sense of movement and light. The colors are vibrant, with a mix of greens, blues, yellows, and pinks. In the upper left quadrant, a bird's nest is visible, containing several small, light-colored eggs. The overall composition is dense and textured, typical of the Impressionist style.

# C07 Threads

Concurrency  
Threads



# Concurrency, processes and threads

- Concurrency
  - Multiple activities (appear to) occur simultaneously.
  - ‘Time slicing’ allows a single execution unit to give the appearance of concurrent execution.
- Process
  - Distinct execution context that (by default) shares nothing.
- Thread
  - Intra-process execution context.
  - Multiple threads can (and do) execute the same methods on the same objects.

# Why threads?

- ‘Concurrency’
  - Separate concerns (e.g. rendering vs. logic)
  - Good for: distinct tasks that naturally occur concurrently
- ‘Parallelism’ (a special case of concurrency)
  - Break task into pieces, exploit parallel hardware
  - Good for: computationally intensive problems that can be readily partitioned