



Parallel Programming

Professional C# 2021

Chapter 17

Parallel Programming APIs

- Thread
- ThreadPool
- Task
- Parallel
- Channels

Thread

- Foreground / Background
- Priority
- Apartment

ThreadPool

- Background Threads
- Worker Threads
- Completion Threads

Task

- Abstraction to threads
- Returning values
- Continuation tasks
- Task hierarchies
- ValueTask vs Task

Cancellation Framework

- CancellationTokenSource
- CancellationToken

Parallel Class

- Data Parallelization
- Task Parallelization
- Parallel.For
- Parallel.ForEach
- Parallel.Invoke

Channels

- Producer/consumer scenario
- Channel stores data written from a producer
- Allows reading from consumer
- Unbounded channel
 - grows dynamically as needed
- Bounded channel
 - fixed size

Synchronization Objects

- Interlocked
- C# lock keyword
- Monitor
- WaitHandle
- Mutex
- Semaphore
- Event Types
- Barrier



Summary

- Parallel Programming APIs
- Synchronization Objects