



I'll Get Back to You

Task, Await, and Asynchronous Programming

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Asynchronous Patterns

- Asynchronous Programming Model (APM)
- Event Asynchronous Pattern (EAP)
- Task Asynchronous Pattern (TAP)

Asynchronous Programming Model (APM)

- Method-Based
- Methods
 - BeginGetData()
 - EndGetData()
- IAsyncResult

Event Asynchronous Pattern (EAP)

- Method/Event-Based
- Method
 - GetDataAsync()
- Event
 - GetDataCompleted
 - Results in EventArgs

Task Asynchronous Pattern (TAP)

- Task-Based
- Method Returns a Task
 - `Task<T> GetDataAsync()`
- Task
 - Represents a concurrent operation
 - May or may not operate on a separate thread
 - Can be chained and combined

async & await

- Syntactic Wrapper Around Task
 - “await” pauses the current method until Task is complete.
 - Looks like a blocking operation
 - Does not block current thread
- “async” modifier
 - Tells the compiler to treat “await” as noted above
 - The compiled method is turned into a state machine

Task Properties (.NET 6 / 8)

- Task Properties

- IsFaulted
- IsCanceled
- IsCompleted*
- IsCompletedSuccessfully

IsCompletedSuccessfully

- .NET 6 / 8
- .NET Standard 2.1
- NOT .NET Standard 2.0
- NOT .NET Framework

**Note: Means “no longer running”
not “completed successfully”*

Task Properties (.NET Framework)

- Task Properties

- IsFaulted
- IsCanceled
- IsCompleted*
- **Status**

**Note: Means “no longer running” not “completed successfully”*

- TaskStatus

- **Canceled**
- Created
- **Faulted**
- **RanToCompletion**
- Running
- WaitingForActivation
- WaitingForChildrenToComplete
- WaitingToRun

Exception Handling

- AggregateException
 - Tree structure
- Flatten()
 - Flattens the tree structure to a single level

Cancellation

- CancellationToken is ReadOnly
 - new CancellationToken(true)
 - new CancellationToken(false)
- CancellationTokenSource
 - var cts = new CancellationTokenSource()
 - var token = cts.Token
 - cts.Cancel()



Thank You!

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