POWERSHELL CONFERENCE EUROPE 2020

INTERNET, WORLD

JUNE 2-3, 2020

BRINGING CLASSES AND RUNSPACES TOGETHER – ASYNC LOGGING IN POWERSHELL

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PSCONF.EU 2020 WOULDN'T BE POSSIBLE WITHOUT OUR AWESOME SPONSORS

@JanDamaschke

AGENDA

WORKING WITH POWERSHELL CLASSES

POWERSHELL CONCURRENCY

CROSS PLATFORM CAPABILITY

BRINGING IT TOGETHER

QUESTIONS

```
Class Calculator
{
  [double]$operand

  Calculator([int]$operand)
  {
    $this.operand = $operand
  }

  [double]Add([int]$operand)
  {
    Write-Host "Increasing $($this.operand) by $($operand)"
    $this.operand = $this.operand + $operand
    return $this.operand
  }
...
```

CLASS BASICS - CLASS KEYWORD

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```
Class Calculator
{
  hidden [double]$operand = 0

  Calculator([int]$operand)
  {
    $tmpValue = 0
    [double]::TryParse($operand, [ref]$tmpValue)
    $this._operand = $tmpValue
  }

  Calculator() {}
...
```

CLASS BASICS - OVERLOADS

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```
Class Calculator
{
  hidden [double]$operand = 0
  static $history = @()
...
  [void]Add([int]$operand)
  {
    $message = "Increasing $($this.operand) by $($operand)"
    $this.operand = $this.operand + $operand
    $this._WriteHistory($message)
  }

  hidden [void]_WriteHistory($entry)
  {
    $entry = "$entry : $($this.operand)"
    Write-Host $entry
    [Calculator]::history += $entry
  }
```

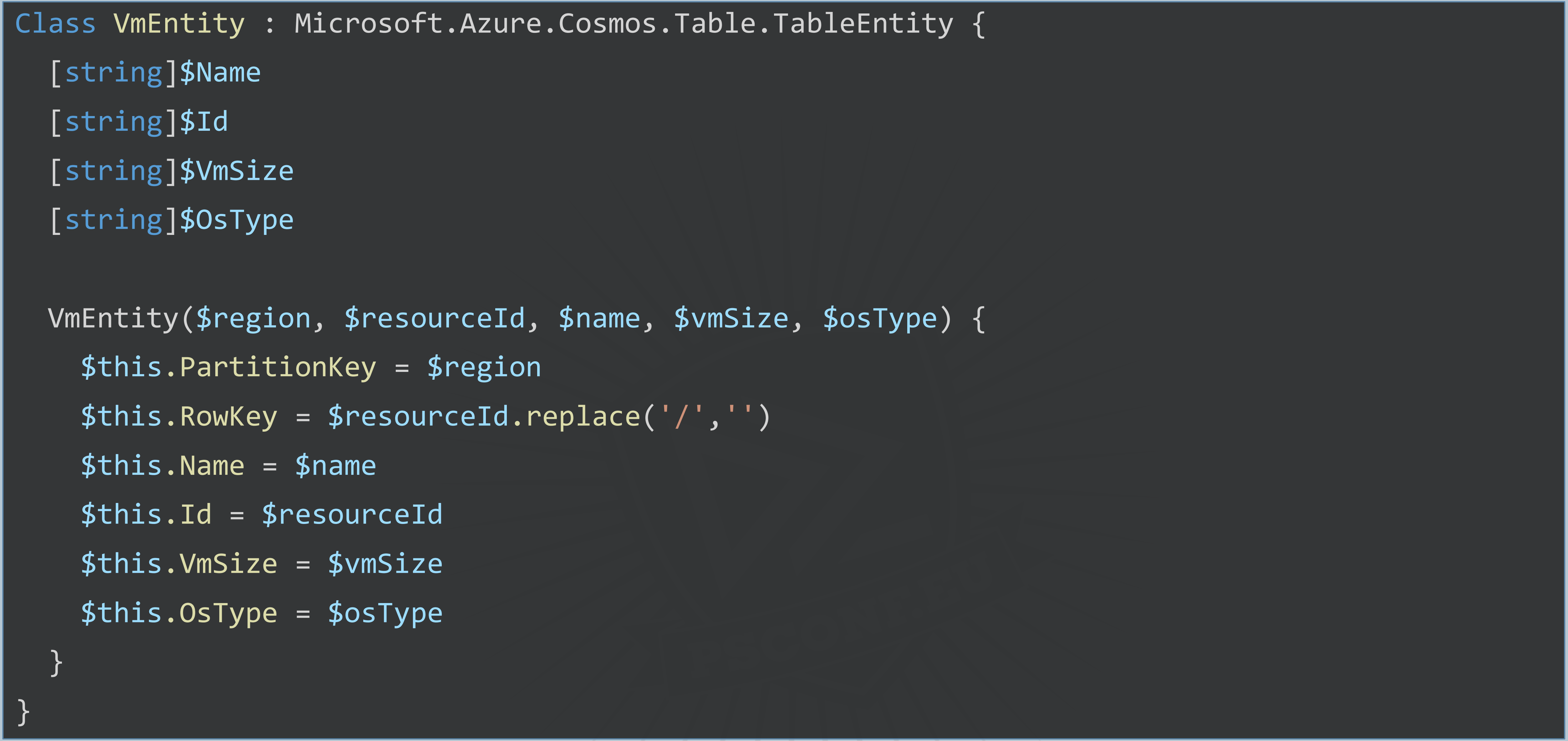
CLASS BASICS – CLASS METHODS

DEMO

CALCULATOR CLASS

```
class MyComparable : system.IComparable
{
    [int] CompareTo([object] $obj)
    {
        return 0;
    }
}
```

CLASS BASICS - INTERFACES



```
Class VmEntity : Microsoft.Azure.Cosmos.Table.TableEntity {
  [string]$Name
  [string]$Id
  [string]$VmSize
  [string]$OsType

  VmEntity($region, $resourceId, $name, $vmSize, $osType) {
    $this.PartitionKey = $region
    $this.RowKey = $resourceId.replace('/','')
    $this.Name = $name
    $this.Id = $resourceId
    $this.VmSize = $vmSize
    $this.OsType = $osType
  }
}
```

CLASS BASICS - INHERITANCE

CONCURRENCY

JOBS (-ASJOB, NEW-JOB, START-JOB, ETC.) (>=PS 5)

START-PROCESS

POWERSHELL WORKFLOWS (PS 5)

FOREACH-OBJECT -PARALLEL (PS 7)

TIMER/REGISTER-OBJECTEVENT

RUNSPACES

```
function Start-PlLogging {
  $loggingTimer = new-object Timers.Timer
  $action = { loggingLocal }
  $loggingTimer.Interval = 1000
  $null = Register-ObjectEvent -InputObject $loggingTimer -EventName elapsed -
       Sourceidentifier loggingTimer -Action $action
  $loggingTimer.start()
}



function loggingLocal {
  $sw = $logFile.AppendText()
  $entry = [DateTime]::UtcNow
  $sw.WriteLine($entry)
  $sw.Flush()
  $sw.Close()
}
```

TIMER

DEMO

CONCURRENCY

CROSS PLATFORM

BASED ON .NET (CORE)

POWERSHELL >= 5 COMPATIBLE

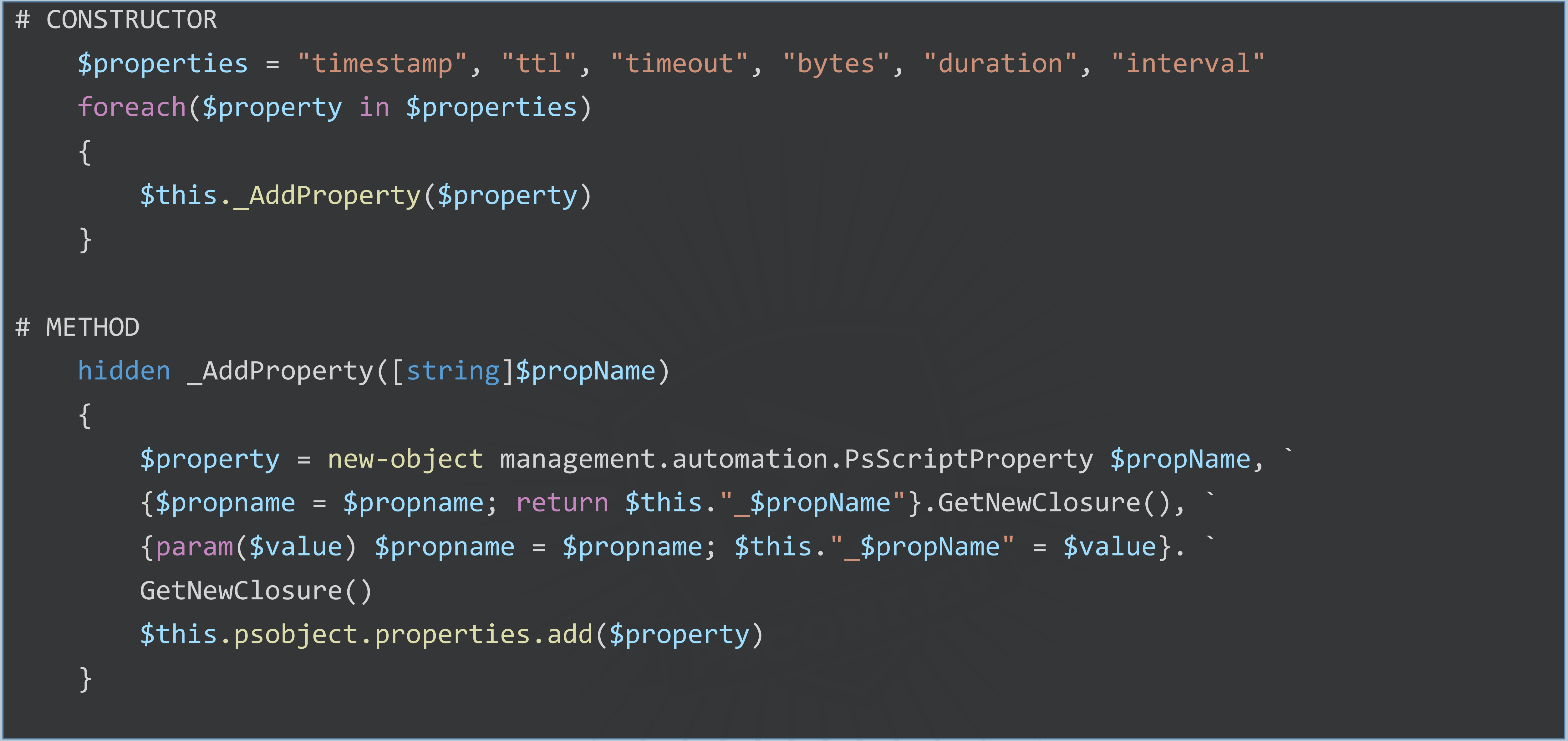
CROSS PLATFORM POWERSHELL 6/7

COM/WIN32 APIS NOT AVAILABLE

DEBUGGING WITH VSCODE/WSL

DEMO

ASYNC LOGGING



```
# CONSTRUCTOR
    $properties = "timestamp", "ttl", "timeout", "bytes", "duration", "interval"
    foreach($property in $properties)
    {
        $this._AddProperty($property)
    }

# METHOD
    hidden _AddProperty([string]$propName)
    {
        $property = new-object management.automation.PsScriptProperty $propName, `
        {$propname = $propname; return $this."_$propName"}.GetNewClosure(), `
        {param($value) $propname = $propname; $this."_$propName" = $value}. `
        GetNewClosure()
        $this.psobject.properties.add($property)
    }
```

DETAILS - CREATE SETTER/GETTER

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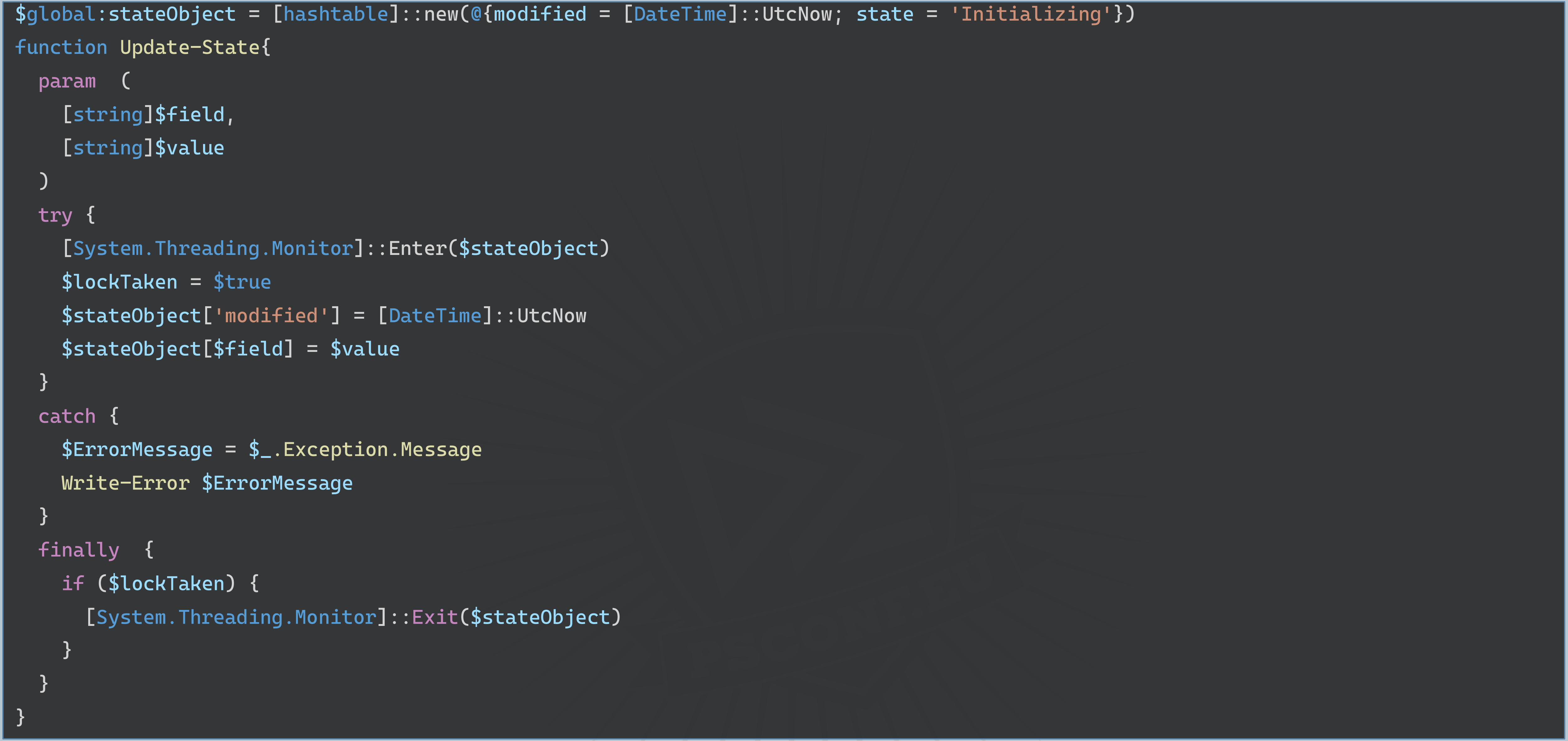

```
$global:stateObject = [hashtable]::new(@{modified = [DateTime]::UtcNow; state = 'Initializing'})
function Update-State{
  param  (
    [string]$field,
    [string]$value
  )
  try {
    [System.Threading.Monitor]::Enter($stateObject)
    $lockTaken = $true
    $stateObject['modified'] = [DateTime]::UtcNow
    $stateObject[$field] = $value
  }
  catch {
    $ErrorMessage = $_.Exception.Message
    Write-Error $ErrorMessage
  }
  finally  {
    if ($lockTaken) {
      [System.Threading.Monitor]::Exit($stateObject)
    }
  }
}
```

DETAILS - THREAD HANDLING

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SUMMARY

- USE RUNSPACES FOR SIMPLE MULTITHREADING
- USE RUNSPACEFACTORY FOR PARALLELISM AND CONTROL
- USE THREAD SAFE OBJECTS
- USE UI AND WORKER THREAD
- DISPOSE!

SLIDES + DEMO CODE

```
Start-Process -FilePath https://github.com/psconfeu/2020
```

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ABOUT_SPEAKER

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NEXT!

PowerShell Conference Europe 2021
Hannover, Germany
June 1-4, 2021

DELEGATE SIGN-UP OPENS NOVEMBER 2020 AT HTTPS://PSCONF.EU