Xerris Bootcamp Series

# AWS Lambda Workshop

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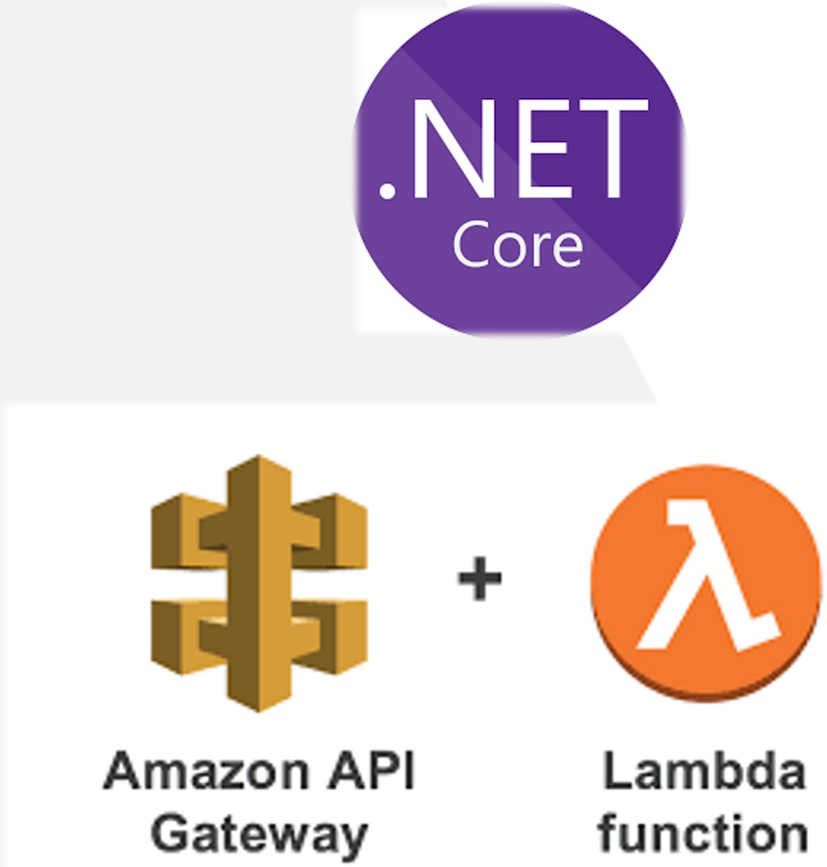
# Workshop Objectives

This workshop provides hands-on experience with the following:

- Install DotNet Core
- Install Amazon Lambda Tools & Templates for DotNet
- Introduction to the DotNet Core CLI
- Introduction to the AWS CLI
- Create and deploy an AWS Lambda
- Connect the AWS API Gateway to your Lambda

Based on the following link:
https://aws.amazon.com/premiumsupport/knowledge-center/build-lambda-deployment-dotnet/



# Install DotNet Core

- Ensure we have the latest version of the DotNet Core framework.

- From the terminal window or PowerShell console, enter:
  **dotnet --version**

Download/install the latest
https://dotnet.microsoft.com/download

# Amazon Lambda Tools

Amazon has created AWS Lambda Tools for DotNet Core.

https://github.com/aws/aws-lambda-dotnet

**Installing Amazon.Lambda.Tools**

- From the command line enter:
  **dotnet tool install -g Amazon.Lambda.Tools**

**Updating Amazon.Lambda.Tools**

- From the command line enter:
  **dotnet tool update -g Amazon.Lambda.Tools**

# Amazon Lambda Tools

Amazon has created AWS Lambda Templates for DotNet Core.

https://github.com/aws/aws-lambda-dotnet

**Installing Amazon.Lamda.Templates**

- From the command line, enter:

  dotnet new install **Amazon.Lambda.Templates**

- After the installation is complete, enter the following:

  dotnet new **lambda.EmptyFunction** -h

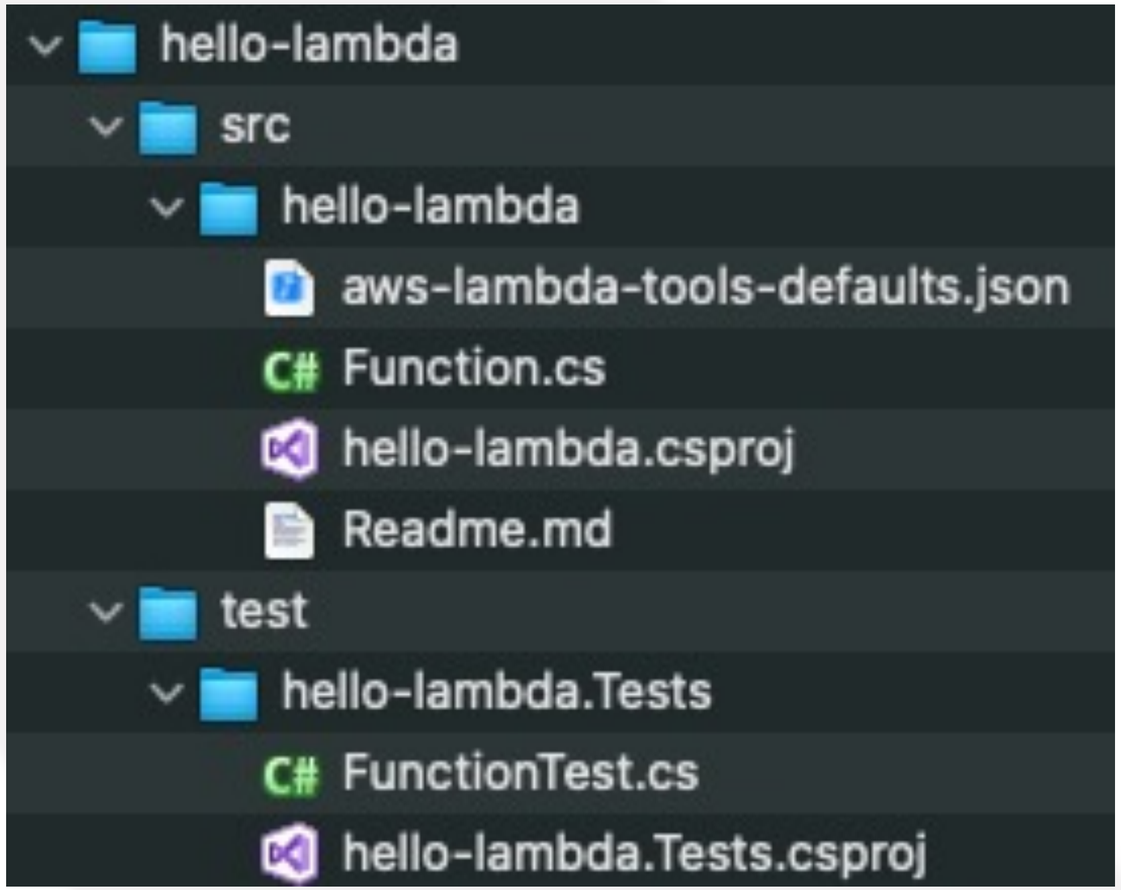
# Amazon Lambda Templates

- From the command line enter dotnet lambda
- You will be shown a summary of this command

```
Project Home: https://github.com/aws/aws-extensions-for-dotnet-cli, https://github.com/aws/aws-lambda-dotnet



Commands to deploy and manage AWS Lambda functions:

        deploy-function         Command to deploy the project to AWS Lambda
        invoke-function         Command to invoke a function in Lambda with an optional input
        list-functions          Command to list all your Lambda functions
        delete-function         Command to delete a Lambda function
        get-function-config     Command to get the current runtime configuration for a Lambda function
        update-function-config  Command to update the runtime configuration for a Lambda function

Commands to deploy and manage AWS Serverless applications using AWS CloudFormation:

        deploy-serverless       Command to deploy an AWS Serverless application
        list-serverless         Command to list all your AWS Serverless applications
        delete-serverless       Command to delete an AWS Serverless application

Commands to publish and manage AWS Lambda Layers:

        publish-layer           Command to publish a Layer that can be associated with a Lambda function
        list-layers             Command to list Layers
        list-layer-versions     Command to list versions for a Layer
        get-layer-version       Command to get the details of a Layer version
        delete-layer-version    Command to delete a version of a Layer

Other Commands:

        package                 Command to package a Lambda project either into a zip file or docker image if
ith either deploy-function command or with another tool.
        package-ci              Command to use as part of a continuous integration system.
        push-image              Build Lambda Docker image and push the image to Amazon ECR.

To get help on individual commands execute:
        dotnet lambda help <command>
```

# Creating a DotNet Lambda

- From the command line enter
  dotnet new lambda list
- Scroll up and notice the Lambda templates available
- From the command line enter
  dotnet new lambda **--help**
- Create a Lambda using the **EmptyFunction** template
  dotnet new lambda.**EmptyFunction**
  –n <name-your-lambda> \
  --profile <profile-name> \
  --region <region>



# Creating a DotNet Lambda

aws-lambda-tools-defaults.json

- Your lambda settings

- A profile is used when setting up multiple profiles with aws-configure.
- The region identifies which aws region for your Lambda.
- The function-runtime identifies the platform for the Lambda (Java, JavaScript, dotnet, etc.)
- The function-handler locates where in the packaged .zip file and internal DotNet dll where the lambda function is.

```
{
  "Information": [
    "This file provides default values for the deployment wizard inside Vi
    "To learn more about the Lambda commands with the .NET Core CLI execut
    "dotnet lambda help",
    "All the command line options for the Lambda command can be specified
  ],
  "profile": "bootcamp",
  "region": "us-west-1",
  "configuration": "Release",
  "function-architecture": "x86_64",
  "function-runtime": "dotnet6",
  "function-memory-size": 256,
  "function-timeout": 30,
  "function-handler": "HelloLambda::HelloLambda.Function::FunctionHandler"
}
```

# Creating a DotNet Solution

- In the root folder, create a DotNet Solution
  dotnet new sln
- Add the Lambda and Test DotNet Projects
- Create a folder called src
- Within the src folder, create a hello-lambda folder
- Create a class library project
  dotnet new classlib –f net6.0
- Within the src folder, create a hello-lambda-test folder
- Create a class library project
  dotnet new classlib –f net6.0

- Add these projects to your solution from your project root folder
  dotnet sln hello-lambda.sln add -s .
  src/hello-lambda/hello-lambda.csproj

  dotnet sln hello-lambda.sln add -s .
  src/hello-lambda-tests/hello-lambda-tests.csproj

# Solution Explorer for VS Code

- In VS Code, go to the extensions tab and search for dotnet solution.
- Install the vscode-solution-explorer by **Fernando Escolar**.
- Locate the Solution Explorer icon in the menu bar and open it.
- Spend a bit of time navigating around the solution explorer and see what features it provides.
- Right-click on the hello-lambda-tests projects and run the tests.

# Using the DotNet CLI

- From the command-line console, try to build the solution
  dotnet **build**

- Try running the tests
  dotnet **test**

- Play around with the Lambda code
- Update the test to it fails
- See the output from the command-line console

# Deploying your Lambda

- Navigate to the src/hello-lambda

  dotnet lambda deploy-function
- Choose to create a new role when promoted.
- Go to the AWS Management Console to the Lambda section.
- Find your newly deployed lambda and run it.

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# Connect your Lambda to the AWS API Gateway

- Log into the AWS Management Console
  - Select REST API -> BUILD
  - Choose NEW API
  - Provide a name and description
  - Action -> Create Method
    - Hook the POST method to your Lambda
  - Action -> Deploy API
    - Choose [New Stage] and name it **DEV**
  - Get the **URL** from the deployed Lambda and try it out in **Postman**.

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# LAB: Create your own AWS Lambda

- Objectives
  - Practical experience using the dotnet CLI
  - Practical experience using the Amazon DotNet Templates
  - Practical experience using the Amazon DotNet tools

  Create your own Lambda
  - Using the Amazon DotNet templates, create a basic Lambda project
  - Create a solution and add the projects to the solution.
  - Update your Lambda to return your name
  - Using Amazon DotNet Tools, deploy your Lambda

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