

Replace your Github Action YAML with C# using NUKE

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Outline

- What is NUKE?
- Why NUKE?
- Alternatives
- NUKE features
- Installing NUKE
- Setting up a project
- Using and Running NUKE
- A few other cool features



Independent. Innovative. And always open source.

dotnetfoundation.org

.NET Foundation Virtual User Group

Find virtual .NET events happening around the globe!

meetup



Part of **.NET Foundation** – 380 groups ?

.NET Virtual User Group

📍 Seattle, WA

👥 2,710 members · Public group ?





👤 Organized by James Montemagno and 14 others

meetup.com/dotnet-virtual-user-group

Me



<https://leantechniques.com>

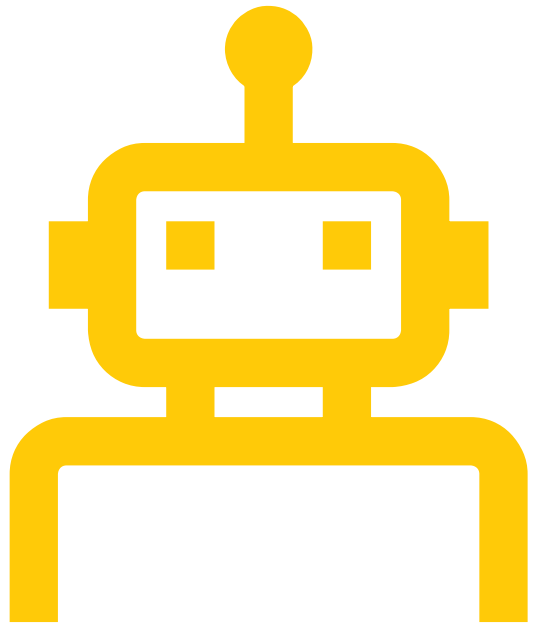
- Software developer, consultant
- Microsoft .NET MVP
- Co-organizer of the San Antonio/Austin .NET User Group
-  daninacan.com
-  @danielwarddev
-  daniel-ward-dev
-  danielwarddev.bsky.social



What is NUKE?

- Matthias Koch, JetBrains
- A build automation tool...
- ...that uses C#!
- Collection of helper classes for common build tasks





Why not use existing tools?

- Alternatives
 - MSBuild
 - psake
 - Fake
 - Cake
- Not extensible enough, unfamiliar language, still scripting and doesn't integrate with existing tooling

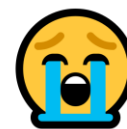
What's wrong with YAML? 🐘

- Nothing!
- But...





```
1 # Editor configuration, see https://editorconfig.org
2 root = true
3
4 [*]
5 charset = utf-8
6 indent_style = space
7 indent_size = 2
8 insert_final_newline = true
9 trim_trailing_whitespace = true
10
11 [*.ts]
12 quote_type = single
13 ij_typescript_use_double_quotes = false
14
15 [*.md]
16 max_line_length = off
17 trim_trailing_whitespace = false
18
```



```
68846 - update
68847 - delete
68848 ---
68849 apiVersion: apps/v1
68850         kind: Deployment
68851         metadata:
68852         labels:
68853         app.kubernetes.io/component: controller
68854         app.kubernetes.io/name: prometheus-operator
68855         app.kubernetes.io/version: 0.81.0
68856         name: prometheus-operator
68857         namespace: default
68858         spec:
68859         replicas: 1
68860         selector:
68861         matchLabels:
68862         app.kubernetes.io/component: controller
68863         app.kubernetes.io/name: prometheus-operator
68864         app.kubernetes.io/version: 0.81.0
68865
68866
68867
68868
68869
68870
68871
```



























GitHub Actions are a Problem

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The Problem

You push (or better, merge) to master, and the deployment happens automatically. No further work required. That's the promise of GitHub-Actions (GHA), and probably every other CI service provider.

1. Can't run them locally
2. Runner is closed-source
 - Have to cross your fingers to some degree
 - Lots of commits, lots of waiting
3. Writing pipelines in YAML is painful
 - Very verbose, lots of duplication

 no way this will work build #8: Commit 87a8dd6 pushed by danielwarddev	main	 1 hour ago  1m 47s	...
 test 2 build #7: Commit 8479008 pushed by danielwarddev	main	 1 hour ago  38s	...
 test build #6: Commit db3b87c pushed by danielwarddev	main	 1 hour ago  40s	...
 please work build #5: Commit 1231866 pushed by danielwarddev	main	 1 hour ago  43s	...
 actual actual fix build #4: Commit d0b8bfb pushed by danielwarddev	main	 1 hour ago  34s	...
 actual fix build #3: Commit 5a09a08 pushed by danielwarddev	main	 2 hours ago  40s	...
 fix build #2: Commit 35c7533 pushed by danielwarddev	main	 2 hours ago  11s	...
 ci stuff build #1: Commit 005b57d pushed by danielwarddev	main	 2 hours ago  11s	...

A short list of things I have actually looked up

How to concatenate string variables in Bash

Asked 14 years, 5 months ago Modified 7 months ago Viewed 5.3m times

How to make "if not true condition"?

Asked 12 years, 11 months ago Modified 2 years, 2 months ago Viewed 927k times

How do I check if a directory exists or not in a Bash shell script?

Asked 16 years, 7 months ago Modified 1 year, 3 months ago Viewed 3.4m times

Find and Replace Inside a Text File from a Bash Command

Asked 16 years, 2 months ago Modified 1 year, 3 months ago Viewed 1.0m times

An "and" operator for an "if" statement in Bash

Asked 12 years, 5 months ago Modified 9 months ago Viewed 959k times

How to get arguments with flags in Bash

Asked 13 years, 8 months ago Modified 2 months ago Viewed 457k times

3 other cons

Sometimes you call
down to
Bash/Typescript/etc
anyway

Vendor lock-in

Security issues

So... Why use NUKE?

- It's just C#!
- Native tool integration
- Quick feedback, can run locally
- Runs on any of the supported platforms






CI/CD Support


- AppVeyor
- Azure Pipelines
- Bitbucket
- GitHub Actions
- GitLab
- Jenkins
- JetBrains Space Automation
- TeamCity

NUKE in the wild

Avalonia (27.3k )

FluentAssertions/AwesomeAssertions (3.8k )

HotChocolate (5.4k )

Nswag (7k )

Quartz.NET (6.7k )

Installing NUKE

- NUKE CLI is a .NET tool
- `dotnet tool install --global Nuke.GlobalTool`
- If on Linux-based systems:
- `echo 'export PATH=$HOME/.dotnet/tools:$PATH' >> ~/.zshrc`

Coding Demo

```
// using static Nuke.Common.Tools.Slack.SlackTasks;

[Parameter] [Secret] readonly string SlackWebhook;

Target Send => _ => _
    .Executes(async () =>
    {
        await SendSlackMessageAsync(_ => _
            .SetText("Hello from NUKE!"),
            SlackWebhook);
    });
```

Other cool stuff

- Build sharing through Nuget package or global builds
- Remote debugging using SSH
- Social integrations
 - Slack, Teams, Twitter, Gitter

Cons

- GitHub Actions is more popular
- If your org is not just C#, can't share as much knowledge
- GitHub Actions/others are good to learn if you don't know them yet



Resources to learn more

- <https://nuke.build/resources/>
- <https://github.com/AvaloniaUI/Avalonia>
- <https://github.com/fluentassertions/fluentassertions>
- <https://github.com/ChilliCream/graphql-platform>
- <https://github.com/RicoSuter/NSwag>
- <https://github.com/quartznet/quartznet>



Recap

- What NUKE is
- Why to use it compared to alternatives
- Installing NUKE
- Setting up a project
- Using and Running NUKE
- Sharing builds, remote debugging, social integrations

Thank you!

