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in association with

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Workshop: Module 07

Continuous Integration

Agenda

1000 **Welcome and Introductions**

Part 1: GitHub Actions

- Recap (5 mins)
- New Stuff (5 mins)
- Exercise – GitHub Actions (110 mins)

1200 **Lunch Break (1 hour)**

1300 **Part 2: Jenkins**

- Recap (5 mins)
- Exercise – Jenkins (150 mins)
- Discussion

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Part 1

GitHub Actions

Recap

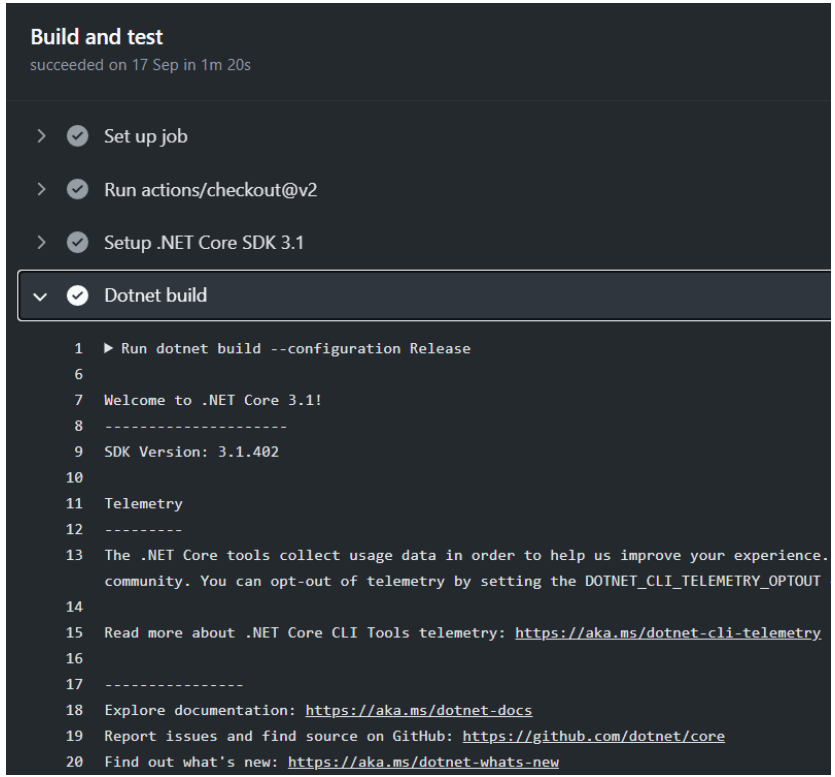
Continuous Integration

- Automated build and test
- Can prevent broken changes from being merged
- Makes it easy to spot when something is broken
- Often integrated with notification systems

New Stuff

GitHub Actions

- Easy to set up
- Used to run actions on *runners* (essentially VMs hosted by GitHub)
- Integrated with GitHub's pull requests
- Free for public repositories
- Workflow made up of terminal commands and actions
- Many official and community-maintained actions are available



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Exercise

GitHub Actions

Exercise – GitHub Actions

In this exercise, we're going to add continuous integration to a small .NET Core application. To do this we'll be using GitHub Actions.

GitHub Repo Link

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Part 2

Jenkins

Recap

Jenkins

- Alternative to GitHub Actions
- Free, however need to provide machines to run builds on (called *agents or nodes*)
  - The Jenkins Controller (i.e. the central machine which manages Jenkins) is an example of an agent
  - Agents can also be separate machines/VMs
  - These agents have multiple *executors,* each of which can run separate Jenkins tasks (often in parallel)
  - Jenkins can create containers inside these “machines” using docker. These containers are also referred to as agents but are run on machine agents and do not have executors
- Works with most code management services, e.g. GitHub, GitLab, BitBucket
- Requires more setup than GitHub Actions

Jenkins

Jenkins

Containerised pipeline

- Can specify docker image for each pipeline step or the whole pipeline
- Pros: fewer system requirements for machine running Jenkins, scalable, portable
- Cons: slightly more complicated to set up and debug, can slow down pipelines

```
pipeline {
    agent any

    stages {
        stage('Checkout') {
            steps {
                checkout scm
            }
        }
        stage('Build') {
            steps {
                sh "npm ci"
                sh "npm run build"
            }
        }
    }
}
```

```
pipeline {
    agent {
        docker { image 'node:14-alpine' }
    }

    stages {
        stage('Checkout') {
            steps {
                checkout scm
            }
        }
        stage('Build') {
            steps {
                sh "npm ci"
                sh "npm run build"
            }
        }
    }
}
```

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Exercise

Jenkins

Exercise – Jenkins

In this exercise, we're going to use Jenkins to set up an alternative continuous integration pipeline for our .NET Core app.

GitHub Repo Link

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Thank You!