Creating Docker Images

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Overview

Dockerfile basics

Building images
- docker build

Tagging images
- docker tag

Pushing images to a registry
- docker push

Azure CLI
- create an Azure Container Registry

Creating Docker Images with Dockerfiles

Dockerfile

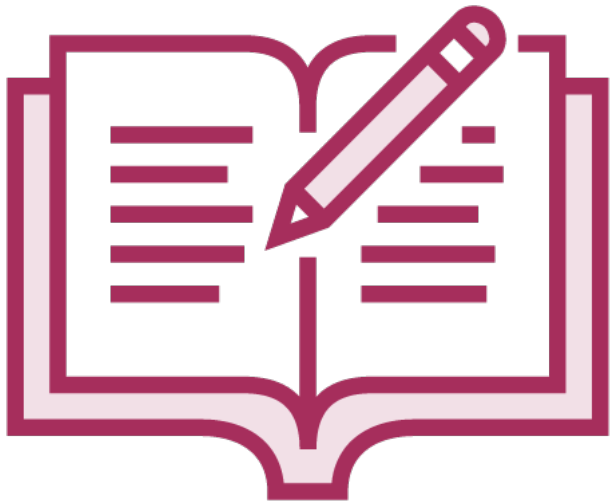Contains instructions for how to create a Docker image

```dockerfile
FROM mcr.microsoft.com/dotnet/aspnet:3.1
WORKDIR /app
COPY ./out .
ENTRYPOINT ["dotnet", "samplewebapp.dll"]
```

```
docker build -t samplewebapp .
```

Creating Dockerfiles

Copy example Dockerfiles
- – e.g. ASP.NET Core

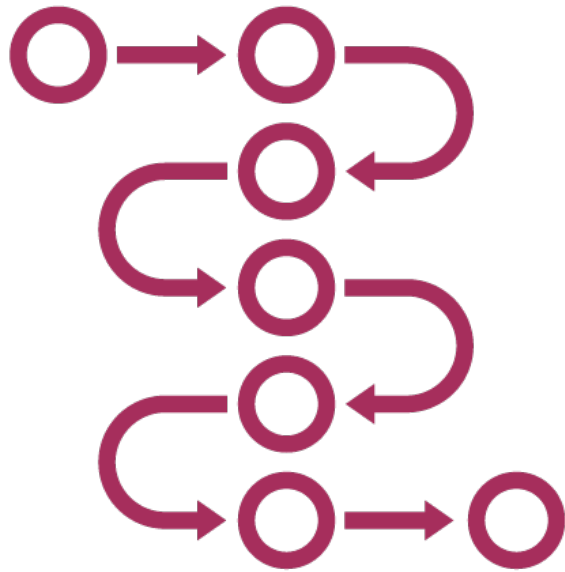**Visual Studio**
- – Right-click project > Add Docker support

Visual Studio Code
- – Docker extension

Azure Functions CLI
- – func init --docker

Multi-stage Dockerfiles

Single stage Dockerfile

– Copies in a pre-built application

Use Docker to build your application

– No developer SDKs needed locally

Multi-stage Dockerfile

– Stage 1: build the application in a container with the SDKs

– Stage 2: copy the published application into a container with the runtime

```dockerfile
FROM mcr.microsoft.com/dotnet/sdk:3.1 AS build-env
WORKDIR /app

# Copy csproj and restore as distinct layers
COPY *.csproj ./
RUN dotnet restore

# Copy everything else and build
COPY . ./
RUN dotnet publish -c Release -o out

# Build runtime image
FROM mcr.microsoft.com/dotnet/aspnet:3.1
WORKDIR /app
COPY --from=build-env /app/out .
ENTRYPOINT ["dotnet", "samplewebapp.dll"]
```
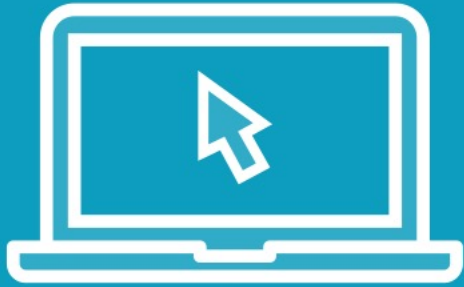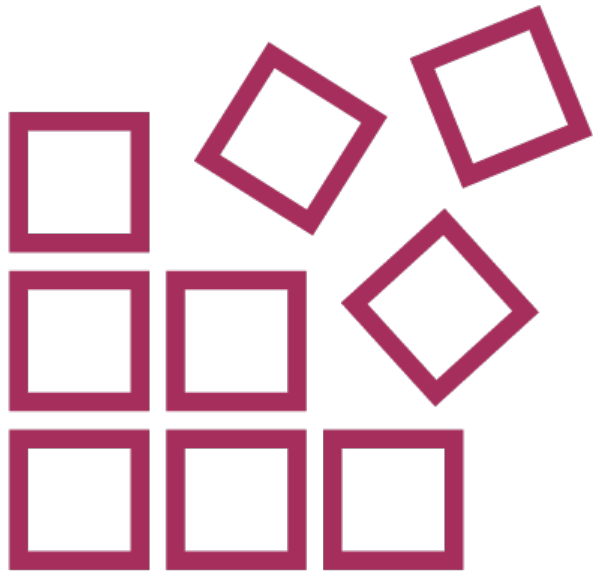
Demo

Build an image with a multi-stage Dockerfile

Container Registries

Docker images can be stored locally
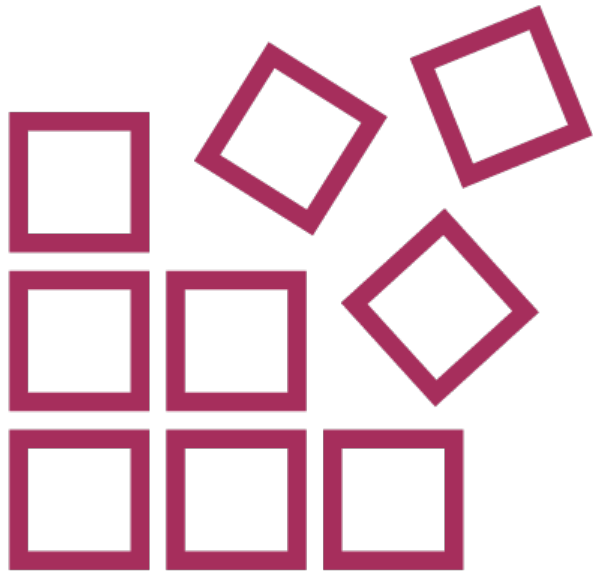
Use container registries to share images

Docker Hub hosts public images
- https://hub.docker.com/
- Also supports private image hosting

Azure Container Registry (ACR)
- Store containers in Azure
- Can build images automatically
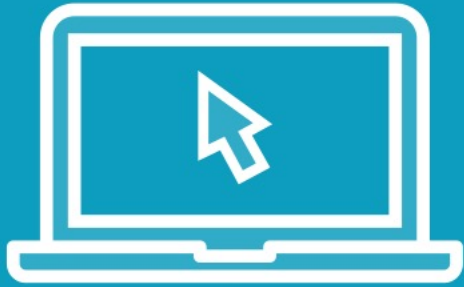
Creating Azure Container Registries

Azure portal

PowerShell

Azure CLI
- Free
- Cross-platform
- Install locally
- Use a "cloud shell" in the Azure portal

Demo

Create an Azure Container Registry
  – Azure CLI

Container Registry Security
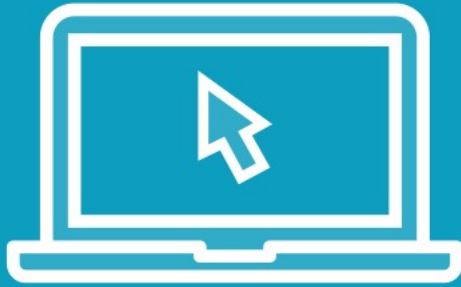
Images not accessible to the public

Can restrict access rights

Only allow trusted images

Automatically update to use latest security updates

Demo

Push a local Docker image to an Azure Container Registry

Summary

Dockerfile syntax
- FROM, WORKINGDIR, COPY, RUN & ENTRYPOINT

Multi-stage builds

Build a Docker image
- docker build

Private container registries
- Azure Container Registry

Azure CLI
- az acr create
- az acr login
- docker tag
- docker push

Up next:
Running Containers on
Azure Container Instances