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# Resources

## Required

Website: [Docker Docs](https://docs.docker.com/)

Docker Docs is the go-to source for Docker documentation.

* [Dockerfile Reference](https://docs.docker.com/engine/reference/builder/) - Learn how to automate steps using a DSL.
* [Best Practices for Writing Dockerfiles](https://docs.docker.com/develop/develop-images/dockerfile_best-practices/) - Here you will find guidelines and tips for writing Dockerfiles.
* [Build and Run your Image](https://docs.docker.com/get-started/part2/) - This page explains how to write a Dockerfile to create a Docker image that can be used to run a container.

Website: [Dockerfile Cheat Sheet](https://kapeli.com/cheat_sheets/Dockerfile.docset/Contents/Resources/Documents/index)

A list of syntax usage explanations and coding best practices.

Reading: [A Docker Tutorial for Beginners](https://docker-curriculum.com/#getting-started)

This tutorial enables you to see the potential for using containers in the cloud. While this course focuses on building in the cloud, the first two modules provide the container alternative. You will go through the process of creating containers, and this tutorial will show you what can be done with them should you decide to use container architecture to run a web application in the cloud.

Video: [Introduction to Docker and Docker Containers](https://youtu.be/JSLpG_spOBM)

Watch this video to gain insight into containerization. The video uses some different procedures than this course, so do not plan to follow it step by step. Always refer to the assignment guides for the actual steps used in this course. Specifically, this video covers the problems containers solve in developing a web application.

Reading: [Use Docker Compose](https://code.visualstudio.com/docs/containers/docker-compose)

Read about the Docker extension for VS Code to understand the integration efficiencies it provides.

Video: [Container Orchestration Explained](https://www.youtube.com/watch?v=kBF6Bvth0zw)

Watch this clear explanation of container orchestration as it applies to software developers.

Reading: [CS 470 Module Three Handout - Key AWS Concepts](https://learn.snhu.edu/content/enforced/1698634-CS-470-12538.202481-1/course_documents/CS%20470%20Module%20Three%20Handout%20-%20Key%20AWS%20Concepts.pptx?ou=1698634)

This document explains key concepts and descriptions around AWS identifiers and core services that will be used in Projects One and Two.

Video: [Introduction to Amazon Simple Storage Service (S3) - Cloud Storage on AWS](https://www.youtube.com/watch?v=77lMCiiMilo)

A brief introduction to S3, its interface, and ease of use. As you watch, consider the following:

* How is S3 different from typical file systems?
* Why is it called “serverless”?
* Pay attention to the relationship between buckets and objects.

Website: [Getting Started with Amazon Simple Storage Service](https://docs.aws.amazon.com/AmazonS3/latest/gsg/GetStartedWithS3.html)

AWS documentation is an extensive library of AWS software documentation. There is a section for every product and service with a variety of reading formats. This site offers an S3 guide for developers. It contains complete documentation as well as additional articles.

Video: [AWS S3 Tutorial for Beginners](https://www.youtube.com/watch?v=LfBn5Y1X0vE)

Watch this video to learn how to create an AWS S3 bucket. Amazon S3 is a simple storage service for the internet, offering software developers scalable, reliable, and low-latency data storage at a relatively low cost.

## Optional

Reading: [What are Application Containers and What Problems do They Solve?](https://nodramadevops.com/2019/06/what-are-application-containers-and-what-problems-do-they-solve/)

Read this article to gain a clear understanding of how containers work and when to use them. The website includes helpful diagrams.

Reading: [What Are Containers and Why Do You Need Them?](https://www.cio.com/article/2924995/what-are-containers-and-why-do-you-need-them.html)

This article will help you understand when and how to use a container. It is one method of lifting and shifting a MEAN stack, so you need to learn about the other options and when to choose containerization as your solution.

The following resources will provide you with an introduction to cloud computing using AWS, which will encompass Modules Three through Six.

* Website: [AWS Cloud Computing opens in new window](https://sway.office.com/UPuRI3xSglnu7VW2?ref=Link&loc=play)
  + What are the benefits of cloud computing? Use this introduction to cloud computing to begin considering the advantages and disadvantages of deploying an application to the cloud.
* Video: [AWS in 10 Minutes](https://www.youtube.com/watch?v=r4YIdn2eTm4&feature=youtu.be)
  + Watch this video to begin learning about AWS and cloud services. In Module Three, you will begin to build a web application in the cloud. This video will help you gain perspective on how Amazon manages cloud services.

Reading: [Virtualization vs. Containerization](https://www.liquidweb.com/kb/virtualization-vs-containerization/)

It’s important to understand why containerization is just one of the methods for placing your application in the cloud. Another alternative is using a virtual machine. This article compares the pros and cons of each method.

The following articles will broaden your understanding of the AWS ecosystem. You will gain specific insights into S3, and aspects and advantages of cloud computing. “Microservices” refers to a type of architecture that allows for elasticity and scalability.

* [Introduction to Amazon S3](https://docs.aws.amazon.com/AmazonS3/latest/dev/Introduction.html)
* [What is Cloud Computing? Overview of Amazon Web Services](https://docs.aws.amazon.com/whitepapers/latest/aws-overview/what-is-cloud-computing.html)
* [Six Advantages of Cloud Computing](https://docs.aws.amazon.com/whitepapers/latest/aws-overview/six-advantages-of-cloud-computing.html)
* [Microservice Architectures: What They Are and Why You Should Use Them](https://blog.newrelic.com/technology/microservices-what-they-are-why-to-use-them/)
* [Microservice Architecture: A Brief Overview and Why You Should Use it in Your Next Project](https://towardsdatascience.com/microservice-architecture-a-brief-overview-and-why-you-should-use-it-in-your-next-project-a17b6e19adfd)

Video: [Getting Started With Serverless Computing using AWS Lambda](https://www.youtube.com/watch?v=IrRMEclU8kU)

AWS Online Tech Talks is a great resource for in-depth coverage of any AWS service. You only need to watch this video to the timestamp of 31:16.