Docker:  
  
What is Container?

A container is a way to package application with all necessary dependencies and configuration

Portable artifact, easily shared and moved around.

Makes development and deployment more efficient.

Where do Containers live?  
Containers live in Container repository.  
They are stored in Private repositories, and public repository.

Application Development

Before Containers:

1.Requires software, configuration

2.Installation process is different for each OS environment.

2.Many Steps where something could go wrong

With Containers:  
1. Own isolated environment, with linux based images.

2.Packaged with all needed configuration.

3.One command to install the app.

4.Run same app with 2 version without conflict.

Application Deployment:

Before containers:

2. Developers provide artificats and instructions like Jar file, database service , Developers transfer this to operations time.  
Operations team will handle setting up env to deploy the application.  
In the this case we need to install all the services in OS.

Configuration is need on the server needed.

Dependency version conflicts

Textual guide for deployment, misunderstanding.

With Containers.

Developers and operations work together to package the application container.

No environment configuration needed on server, except Docker runtime.

What is a Container.

Layers of images.

Mostly linux Base image, because small size (mostly alpine)

Application image on top.

Docker Image:  
The actual package, the artificat that can be moved around

Docker Container:  
When image is downloaded, and running the it is container. Container environment is command

Docker Vs Virtual Machine.

Operating systems has two layers . 1.Applications, 2.OS kernel.

Kernel talks with hardware and applications run kernel.

Docker virtualizes Applications layer,It uses underlying Os Kernel.

Whereas VM it virtualizes Applicatioons and Os kernel.

Docker image size in MB

VM image size in GB

Dockers run and fast.(As VM have to boost os and kernel)

VM of any OS can run on any OS host.

Docker can run whether image is compatiable with kernel.  
  
Docker toolbox which abstract kernel , so that host can run other images.

Multiple containers can run on your host machine

Laptop has certain ports available

Conflict when same port on host machine.

# docker compose

#Docker compose will take care of creating common network

# It will take commands and mapped into a file,

# then they can be run in single strutcute

# latest version of compose

# version:'3'

# #services

# services:

# #container Name:

# # image:imageName

# mongodb:

# image:mongodb

# ports:

# - 27017:27017 #hostport(our system):Container Port

# environment:

# - MONGO-INITDB\_ROOT\_USERNAME=admin

# - MONGO-INITDB\_ROOT\_PASSWORD=password

# mongo-express:

# image:mongo-express

# ports:

# - 8080:8081

# envirnoment:

# - ME\_CONFIG\_MONGOFB\_ADMINUSERNAME = admin

# - ME\_CONFIG\_MONGOFB\_ADMINPASSWORD = password

# - ME\_CONFIG\_MONGOFB\_SERVER=mongodb

# #Docker compose will take care of creating common network