**Who can learn Docker?**

* Developer
* Software engineer
* Data scientist
* ML/AI engineer
* Web developer…

**What is the use of Docker?**

Everyone who is a developer would have faced a problem that, the code which was running fine in the developer environment may not be working fine in the tester or real world.

This problem will be solved by Docker.

* There are different phases in the software development lifecycle:

1. Design
2. Develop
3. Deploy
4. Testing/release

* So where does Docker come in to picture?
* Yes, Docker basically comes into picture in “deployment” phase.
* Docker helps in deploying the applications easily and efficiently and will resolve all the issues that occur while deploying the applications.

**What is Docker?**

Docker is the world’s leading software container platform.

* Docker is a tool which is designed to make it easier to deploy and run applications by using containers.
* Container allows the developer to package up an application with all of the parts such as the libraries and other dependencies, and then ship it all out as one package.
* Once the package is done inside the container, then rest all things will be managed by the Docker, i.e. it will ship the container to all the possible platforms where the application needs to run.
* So this s how Docker will ensure the safety deployment.

**How Docker works?**

Docker workflow:

* First the developer will define all the application, libraries, dependencies, and requirements in a single file named **Dockerfile**.
* Dockerfile – it describes the steps to create a Docker image.
* Dockerfile contains all the necessary things for an application and will also defines the steps to make the Docker image.
* So using this Dockerfile we can create a Docker image, where the Docker image contains again the application, libraries and dependencies, which when it is runned we get the container.
* Docker containers are the run time instances of the Docker image.
* This Docker image created using the DockerFile can be stored in the place called Docker Hub.
* This is a public place that contain different Docker images that we can pull image and when we run we get the Docker container.
* **Docker is a container platform.**

**Containerization vs Virtualization:**

**Virtualization** concept:

* We have the Host OS, upon which there is a hypervisor [Hypervisors is a software used to create and run virtual machines.]
* Using hypervisor we can create multiple virtual machines on the Host OS.
* The main disadvantage in this is, we need to allocate fixed amount of memory to each and every machine. So we face waste of memory.

**Containerization** concept:

* We have the Host OS, upon which instead of the software hypervisor, we have the container engine, which allows us to add multiple containers.
* Remember we don’t have OS for each container, instead we just have the libraries and dependencies that are necessary for the application.
* And coming to memory, it will be used based upon the application needs.
* So in Docker the container engine is the Docker engine.

**Advantages of using Docker:**

* Build app only once:

The meaning of it is, the application with in the container can run on any system that has Docked installed.

So there is no need to build or configure application multiple times on different platform.

* More sleep and less worry:

The meaning of it is, with Docker you test your application inside a container and ship it inside a container. So the environment you test the application is identical to the one on which the app will run.

* Portability:

Docker container can run on any platform.

Say I have created the container in one machine and I need it in other machine of different system, so the prerequisite for this is you need to have a Docker installed. And you can just pull the image from the hub and run it get the container and use it.

* Isolation:

This basically mean that, the application running on one container do not interfere the application running on other container on same system.

[Note: we can also work with Docker in a website named “play with Docker”.]

**Installing Docker:**