# 1. Overview

For docker we need docker image. Images are obtained from Docker repository which is similar to a GIT repository. It has same concepts of local repo and global repo. So one is comfortable with GIT, they will be comfortable with Docker repo concepts too.

We can use a readymade docker image or else build our own, from scratch or else from other images (Note: Even to build from scratch we can use a docker image called "scratch" !). To build a docker image,

1. Create a docker file (Docker defaults the filename of same to *Dockerfile*)
2. Build a docker image with aforementioned docker file. Docker shall automatically pull dependent images from remote global repo if it is not found in local repo.
3. Once built the image is pushed to the local repo.
4. Optionally publish the image to Docker central repo (docker hub) using docker account.
5. If pushed to global repository (Using one's docker account) it can be pulled from anywhere into local repo.
6. To run the image, instruct docker to run specific image from local repo. The image is not found in local repo, it will pull the image from central repo.

# 2. Docker Image

## 2.1. Build a docker image

We can build docker image from a docker file. A simple docker file looks as below

```
FROM alpine

RUN apk add –no-cache openjdk8

COPY hello.sh /hello.sh

ENTRYPOINT ["/usr/bin/java", "-version"]
```

The explanation of above docker file is as below

- **FROM alpine** : Build custom image from base image alpine
- **RUN apk…** : Run a built-in command called apk. apk command is used to install packages in alpine linux. Here we are using the same to install JDK
- **COPY** : We can copy files from host file system into docker image
- **ENTRYPOINT** : Instructs the built image to execute a command at startup.

Assuming that Dockerfile is in current directory (.),

```
docker build –t <tagname>

E.g. docker build -t MyDockerImage
```

## 2.2. Tag a Docker image

One can optionally tag existing docker images with another tag name. This is useful if we are to have a simple tag name for local image and proper repo tag name (reponame/tagname) for the image to be published to our repo.

```
docker tag <existing_tag_in_repo> <repo/tagname>
```

```
E.g. docker tag MyDockerImage mydockerrepo/MyDockerImage
```

In the above example, mydockerrepo is the name of docker account we are to create with docker hub.

## 2.3. Push local image to central repo

One can optionally push the docker image to central repository so that it can be accessed from anywhere. Docker offers 1 private repo and unlimited public repos.

To push the docker image from local repo to central repo

```
docker push <repo-name/image-name>

E.g. docker push mydockerrepo/MyDockerImage
```

The docker image once pushed can be pulled to local repository using docker pull.

```
docker push mydockerrepo/MyDockerImage
```

The image is also automatically pulled when we use docker run command to run an image.

# 3. Docker Container

The docker container is used to run a docker image.

```
docker run mydockerrepo/MyDockerImage
```