**Course End Project: Creating a Docker Image and Deploying It on a Swarm Cluster**

[**https://github.com/paglipay/paglipay-dca-end-course-1**](https://github.com/paglipay/paglipay-dca-end-course-1)

**Project Objective:**

As a DevOps engineer in an IT firm, the objective is to create a Redis-based Docker image and deploy it on a Swarm cluster.

**Background:**

The organization requires Redis for data storage and caching within a Swarm cluster. The development team requests the creation of a Redis-based Docker image using a Dockerfile and its deployment on the Swarm cluster. Additionally, it's necessary to publish this image on the organization's Docker Hub account for accessibility by other team members.

**Requirements:**

* Utilize Docker CLI to create the Docker image and deploy it on the Swarm cluster.
* Publish the Docker image on Docker Hub.
* Document the step-by-step process for completion.

**Steps Involved:**

1. **Set Up Docker Environment:**
   * Install Docker on your local machine if not already installed.
   * Make sure Docker Swarm is initialized on the cluster where you intend to deploy the application.
2. **Create Dockerfile:**
   * Create a Dockerfile specifying the instructions to build the Redis-based image.
   * This file typically includes commands to pull the Redis base image, expose necessary ports, set configurations, etc.
   * Example:
   * # Dockerfile
   * FROM alpine:latest
   * RUN apk add --no-cache redis
   * EXPOSE 6379
   * CMD ["redis-server"]
3. **Build Docker Image:**
   * Navigate to the directory containing the Dockerfile.
   * Use the docker build command to build the Docker image.

docker build --pull --rm -f "Dockerfile" -t paglipay/redis:latest "."

1. **Test Docker Image Locally:**
   * Run a container using the newly created image to ensure it works as expected.

docker run --rm -it -p 6379:6379/tcp paglipay/redis:latest

1. **Push Image to Docker Hub:**
   * Log in to your Docker Hub account using the docker login command.

docker login

Tag the built image with your Docker Hub username and repository name.

docker tag paglipay/redis paglipay/redis

Push the tagged image to Docker Hub.

docker push paglipay/redis

1. **Deploy Image on Swarm Cluster Using Docker Compose:**
   * Create a docker-compose.yml file with the following content:

version: '3.9'

services:

redis:

image: paglipay/redis:latest

deploy:

replicas: 3 *# adjust the number of replicas as needed*

ports:

- "6379:6379"

1. **Verify Deployment:**
   * Confirm that the Redis service is running on the Swarm cluster.

docker service ls

Output:

docker stack deploy -c docker-compose.yml redis

Creating network redis\_default

Creating service redis\_redis

paul@ub-desk-230:~/Documents/Projects/paglipay-dca-end-course-1$ docker service ls

ID NAME MODE REPLICAS IMAGE PORTS

c5vvk57aysjs redis\_redis replicated 3/3 paglipay/redis:latest

**Gallery**











