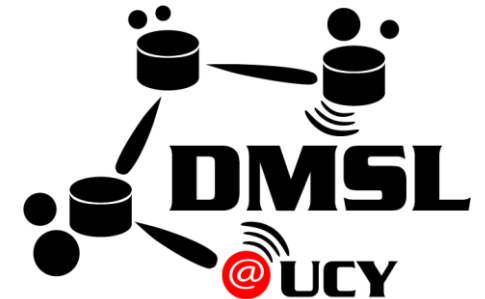# EPL646 – Advanced Topics in Databases
Docker Installation
&
CouchDB and Hadoop Containers

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http://www.cs.ucy.ac.cy/~dzeina/courses/epl646/labs/lab.html

Docker installation

- For the following labs, we need CouchDB, Hadoop and Spark (we will install them on your machines with docker)

- Docker installation on Windows & macOS
  - Download Docker Desktop from the official website: https://www.docker.com/products/docker-desktop
  - Folow the installer instructions to install it
  - Start Docker Desktop to verify correct installation

- Docker installation on Linux (Ubuntu / Debian)
  - Update your system: sudo apt update && sudo apt upgrade –y
  - Install required packages:
    sudo apt install -y apt-transport-https ca-certificates curl software-propertiescommon
  - Add the official Docker repository:
    curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add –
    sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable"
  - Install Docker Engine:
    sudo apt update
    sudo apt install -y docker-ce docker-ce-cli containerd.io
  - Verify Instalation: docker --version

Docker installation

- For Windows & macOS that is enough

- On Linux you also need to install Docker Compose
  - Download Docker Compose:
    sudo curl –L "https://github.com/docker/compose/releases/latest/download/dockercompose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose
  - Make it executable:
    sudo chmod +x /usr/local/bin/docker-compose
  - Verify installation: docker-compose –version

- To check that everything works ok on a terminal give the command:
  docker run hello-world

Useful Docker commands

Command	Description
docker ps	Displays active Docker containers
docker images	Lists downloaded images
docker stop <container_id>	Stops a Docker container
docker rm <container_id>	Deletes a Docker container
docker-compose up -d	Starts all services from docker-compose.yml (will create a container on first run)
docker-compose down	Stops and deletes containers defined in docker-compose.yml

Creating CouchDB Docker Container

- Extract the filedocker-compose-couchedb.yml in a directory (name it as you want)

- Execute in a terminal in the directory you have your yml file: docker-compose -f docker-compose-couchedb.yml up –d

- Check that the services where created: docker ps

- Verify that CouchDB is running
  - From your browser go to: http://localhost:5984/
  - To view the Fauxton interface go to: http://localhost:5984/_utils/#login
    - Username and password are defined in the docker-compose-couchedb.yml file

Creating Hadoop Docker Container

- Extract the files docker-compose-hdfs.yml and hadoop.env in a directory (either a new one or the one used for CouchDB)

- Execute in a terminal in the directory you have your yml file (it will take some time:
  docker-compose -f docker-compose-hdfs.yml up –d

- Check that the services where created: docker ps

Creating Hadoop Docker Container

- Verify that HDFS is running
  - From your browser go to: http://localhost:9870/
  - You can view the actual file system by navigating to **Utilities > Browse the file system**
    - By refreshing you can view the changes in the file system (see commands below)
  - You can use the shell of Docker container to run command insider the Hadoop container
    - Open the shell: docker exec -it hdfs-namenode /bin/bash
    - Run the following commands:
      hdfs dfs -mkdir -p /user
      echo "My name is <Your Name>" > myname.txt
      hdfs dfs -put myname.txt /user
      hdfs dfs -ls /user
      hdfs dfs -du -h /user/myname.txt
      hdfs dfs -rm /user/myname.txt
      hdfs dfs -ls /user
    - Close the shell with the command exit

Questions?

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