

# Computational resources

**Master in Informatics and Computing Engineering**  
**Database and Web Applications Laboratory**  
**Instance: 2019/2020**

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This page describes the computational resources required for the development of the project.

## 1. Version Control with Git

Git is the version control system used during LBAW. The group (gg) repository is: <https://git.fe.up.pt/lbaw/lbaw1920/lbaw20gg>. The teacher adds you to the repository in the first class.

Make sure you login in <https://git.fe.up.pt/> before the first class, so that your account is created in the system.

The repository's README file must include:

- Group reference (lbaw20gg)
- Project theme (e.g. "1. Collaborative news")
- List of team members, including names and email addresses

The group must ensure that the repository remains private, visible only by the team members and the teacher.

[Git Documentation](#) | [Git User Manual](#) | [A tutorial introduction to Git](#)

## 2. Develop the User Interfaces Prototype

The User Interface Prototype (PIU) is composed by a subset of the user interfaces the group has to develop for the project. The pages are static HTML pages which use the Bootstrap framework.

The group starts the PIU by copying the files available at the template repository <https://git.fe.up.pt/lbaw/template-piu> to his own repository, and then follow the instructions, detailed in the README, to setup the technologies needed for the development.

The PIU uses the NGINX HTTP server. A local instance is created inside the Docker container using the bundled Dockerfile (see the README for the required steps).

Once the PIU HTML pages are developed, the group builds and uploads a Docker image (lbaw20gg-piu) to the group Docker hub repository (see the README for the required steps).

Using the FEUP VPN, the project will be available at <http://lbaw20gg-piu.lbaw-prod.fe.up.pt>. Be aware that these interfaces need to be available for evaluation. Otherwise, the group won't be graded in that

component.

[NGINX Beginner's Guide](#) | [Docker documentation](#) | [Overview of Docker Hub](#)

### 3. Docker Caveats

If you are using your own machine for development you won't likely face the problems described here. If you are using FEUP's desktop computers, you must read this section. Docker server is not installed natively on Windows and Linux, so we need to run it inside a virtual machine.

On Windows, you need to open the **Links** folder on your desktop and start the Docker-toolbox executable. This will download a virtual machine and set everything for you. Keep the Docker-toolbox window open. Once running, you can use the Docker and Docker-compose binaries that are already set on your Windows Path. Note that as the Docker service is running inside a virtual machine, you do not have access to it using localhost. Instead, you need to use the IP address presented on the Docker-toolbox window.

The process is similar in Linux, but there's no Docker-toolbox available to automatically set up the virtual machine that runs Docker. We've set one up that you can [download it from here](#). Note that the image is large and won't likely fit in your user home, you should download it to the /tmp/ folder. The username and password for the image is "lbaw". The image is configured to run with a bridged network card, which will provide an IP address with which you can interact with it. You can check this IP address with ifconfig command inside the terminal.

```
ubuntu 18.04.4 LTS ubuntu tty1
ubuntu login: lbaw
Password:
Last login: Mon Feb  3 16:36:36 MET 2020 on tty1
Welcome to Ubuntu 18.04.4 LTS (GNU/Linux 4.15.0-76-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

lbaw@ubuntu:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
    inet 192.168.1.30 netmask 255.255.255.0 broadcast 192.168.1.255
    inet6 fe80::a00:27ff:fef4:7d92 prefixlen 64  scopeid 0x20<link>
    inet6 2001:81b:ea9e:2400:a00:27ff:fef4:7d92 prefixlen 64  scopeid 0x0<global>
    ether 08:00:27:f4:7d:92  txqueuelen 1000  (Ethernet)
    RX packets 27  bytes 4296 (4.2 KB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 21  bytes 2294 (2.2 KB)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0
```

You can then use that IP address to instruct your local Docker client to connect to the Docker server running inside the virtual machine, by setting the Docker\_HOST environment variable. Docker is running inside the VM in port 4243, so you can set the variable with export DOCKER\_HOST tcp://192.168.1.30:4243. Feel free to add this to your bash profile so that it is set on every session. From here on, you can run Docker commands locally that are executed inside the VM.

### 4. Persist data with PostgreSQL

PostgreSQL is an object-relational database management system (ORDBMS) used in the course.

A *production environment* of PostgreSQL is provided, which is used in the application's production version. Each group (gg) will be provided with a PostgreSQL user account `lbaw20gg`, with the group password, and a database `lbaw20gg` available on the production machine (`dbm.fe.up.pt`) inside FEUP's VPN.

To configure a connection to the database, the following attributes are used:

**Host name:** `dbm.fe.up.pt`

**Port:** `5432`

**Maintenance database:** `<lbaw20gg>`

**Username:** `<lbaw20gg>`

**Password:** `<group password>`

A *development environment* of PostgreSQL can be used with Docker containers. The group starts by copying the files available at the template repository <https://git.fe.up.pt/lbaw/template-postgresql> to a new branch of his own repository, and then follow the instructions, detailed in the README, to setup the technologies needed for the development.

[PostgreSQL 9.4 Manual](#) | [pgAdmin](#) | [Docker documentation](#)

**To be continued...**

— LBAW

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