

COGSI - Configuração e Gestão de Sistemas
Mestrado em Engenharia Informática, Ramo Sistemas Computacionais
Class Assignment
P3 - Virtualization and Containers

Alexandre Bragança atb@isep.ipp.pt

Dep. de Engenharia Informática – ISEP

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- **Start Date:** 29, March
- **End Date:** 19, April
- **Development Repository:** Your individual repository
 - Create Issue(s) for your work
 - Expected several commits (at least 1 for each lab class!)
 - You should commit to the repository only files that you created or edited (e.g., do not commit the nagios directory!)
 - Documentation should be provided **only in the readme.md file related to the assignment!**
- **Presentation/Review:**
 - Lectures: April 19
- **If you are selected for presentation** then you should **pull request** the final version of your work into the class shared repository (<https://bitbucket.org/mei-isep/cogsi-22-23-class-rep>) before the deadline.

- The topic of this sprint is **Virtualization and Containers**
- For this exercise it is **mandatory to use Docker** as a replacement for virtual machines (i.e., VirtualBox)
- You may also use orchestration tools, such as, Docker compose, Docker Swarm, Kubernetes, etc.
- The system monitoring tool must be **Nagios**
- The **alternative** for this exercise must be based on a **solution based on Linux Namespaces**, as presented and explained in the lectures. Therefore, the alternative is how to design/implement a similar scenario but using Linux Namespaces instead of Docker.
- The overall objective is to **implement the scenario developed for P2 but this time with Docker instead of VMs.**

Scenario with Docker

The overall objective is to implement the scenario developed for P2 but this time with Docker instead of VMs.

- You should have a monitoring container with Nagios;
- You should have a monitored container with the Todd sample application;
- You should have a monitored container with tomcat;
- You should implement active and passive checks (with NRPE and JMX) in a similar way to P2

Alternative

- The alternative for this exercise must be based on a solution **based on Linux Namespaces**.
- Therefore, the alternative is how to design a similar scenario but using Linux Namespaces instead of Docker.
- For the implementation you should try to implement, at least, the "containerization" of the Todd application using Linux Namespaces.

You should produce a technical report documenting the assignment.

- The technical report **must be produced** in the **readme.md** file located in the repository folder related to P3 (e.g., 1133224-maria-ferreira/p3/)
- The report should include:
 - The Analysis of the Problem
 - The Design of your Solution
 - Present an overview of the tools (e.g., software used, major concepts, major processes, architecture of the tools)
 - Present an overview of the solution (e.g., the architecture and major configurations required)
 - The Steps required to Reproduce your Solution (it should include references/links to configuration files, scripts or code included in the same folder of the repository)

You may also include:

- Justification of Design Options
- Analysis of the Alternative
- The Steps required to Reproduce the Alternative (i.e., implement the alternative)

P3: How to Submit to the Class Shared Repository

If you have been selected to make a presentation for this component you must share your work with the class using the shared repository.

- The shared repository is located in <https://bitbucket.org/mei-isep/cogsi-22-23-class-rep>.
- You should make a fork of this repository.
- You should then clone the forked repository into your local computer.
- Copy to this repository only the folder where you developed P3 (e.g, 1133224-maria-ferreira/p3/).
- Commit and push the changes to the forked repository.
- In Bitbucket do a pull request against the original shared class repository in <https://bitbucket.org/mei-isep/cogsi-22-23-class-rep>.
- The teacher will review your pull request and, once accepted, it will become available to all other students.