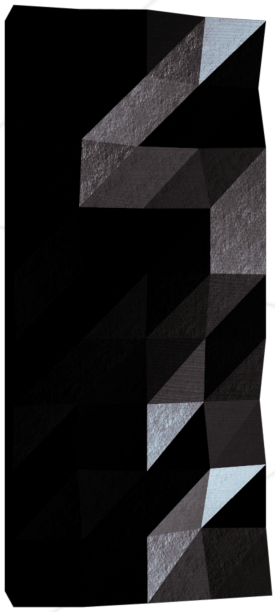

Cloud-1

Automated deployment of `Inception`

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Summary: Automated deployment of ***`Inception`*** *on a remote server.*

Version: 8

There is no cloud it's just someone else's computer

Contents

Chapter I

Introduction

This topic is inspired by the subject `Inception`. The goal is to deploy your site and the necessary docker infrastructure on an instance provided by a cloud provider.

In this version, each process will have its container. You CANNOT deploy the same images from `Inception` and be done with it ;) You can of course get the source of the website (Your WordPress blog for instance), but you have to deploy it using a container per process and automation.

Automation is essential here. The stages of deployment must be automated by a tool of your choice (We suggest Ansible).

This complete web server must be able to run several services in parallel, such as WordPress, phpMyAdmin and a database.

Chapter II

AI Instructions

Context

AI is now a powerful coding partner — alongside your peers — for tackling large and demanding projects. You will guide it through both technical and non-technical aspects of your work.

AI tools can boost your efficiency and improve the quality of your output, but you should be able to dive deep into any part of the project without relying on them.

Your AI partner supports you, but you remain fully responsible for making informed technical decisions and to clearly explain and defend them.

Main message

- 👉 Strive for a mature and responsible use of AI.
- 👉 Never let AI take responsibility for decisions — especially when it lacks awareness of your goals, constraints, or team dynamics.
- 👉 Maintain creativity, innovation, and human oversight through active collaboration with your peers. AI is trained on existing data and rarely generates truly new ideas.
- 👉 Stay informed about emerging trends and be ready to adapt to new concepts and technologies.

Learner rules:

- Maintain intellectual leadership over your projects and make your own informed decisions.
- Prioritise the collective intelligence of your team and peers.
- Actively stay informed about the ongoing evolution of AI technologies.

Phase outcomes:

- AI engineering skills.
- Increased efficiency.
- Greater reliability and quality.
- A pioneering mindset.

Comments and examples:

- Your peers can identify trade-offs, question assumptions, and help you improve. The first answer from an AI might not be the best — it may lack efficiency, security, or real added value. Now more than ever, you should rely on your peers.
- AI can make you faster, but your peers make you better. Collaboration, discussion, and mutual challenge are key to success.
- Be transparent about how AI was used in your projects, and clearly identify what was generated by AI tools.

✓ Good practice:

> I asked AI to help generate unit tests for my API. I reviewed them with my teammate, and we adjusted them for edge cases. It saved time, and we both learned something new.

✗ Bad practice:

> I had AI generate the entire architecture of my project. It "works," but when I'm asked to explain design decisions during the peer review or in front from of a customer, I cannot. I lose credibility and I fail.

Chapter III

Platform choice

42 does not provide the servers needed to run your application. All your code will need to be hosted on servers outside the school, which you will need to procure (and pay for) on your own.

This project requires access to cloud resources. Several options are available depending on your needs and available opportunities.

Here are some possibilities:

- Take advantage of free student credits offered by providers like Azure, AWS, GCP ...
- Check if your campus can cover cloud hosting costs with a provider.

We encourage you to explore these solutions to choose the option that best suits your project.

If you decide to use a provider, you may be billed. Be sure to read the terms of use and the services you can use with your credits. Remember to turn off the services you are not using. In short, be careful, it is YOUR responsibility, we provide you with everything you need so that this project costs you absolutely nothing.

You are in a REAL work environment, your decisions have REAL consequences.

Chapter IV

Mandatory part

The deployment of your application must be fully automated. We suggest you use Ansible but you are free to use another tool if you wish. It is imperative to provide a functional site equivalent to the one obtained with `Inception` just using your script.

You need to install a simple WordPress site on an instance. You must ensure that:

- Your site can restart automatically if the server is rebooted.
- In case of reboot all the data of the site all the data of the site are preserved (images, user accounts, articles, ...).
- It is possible to deploy your site on several servers in parallel.
- The script must be able to run automatically, assuming only an Ubuntu 20.04 LTS-like OS with an SSH daemon and Python installed.
- Your applications will run in separate containers that can communicate with each other (1 process = 1 container)
- Public access to your server must be limited and secure (for example, it is not possible to connect directly to your database from the internet).
- The services will be the different components of a WordPress to install by yourself. For example phpMyAdmin, MySQL, ...
- You must have a docker-compose.yml.
- You will need to ensure that your SQL database works with WordPress and phpMyAdmin.
- Your server should be able, when possible, to use TLS.
- You will need to make sure that, depending on the URL requested, your server redirects to the correct site.
- Only ports 80 (HTTP), 443 (HTTPS), and 22 (SSH) must be accessible from outside. All other ports should be blocked.
- Your Ansible code should be organized into relevant roles for maintainability.

- Your Ansible script should be portable and able to deploy the application on a fresh instance, not only the one you used to develop.
- You may use official Docker images for each service. Optimization of Docker images is encouraged but not mandatory.

Chapter V

Focus points

This paragraph is very important, read it carefully, as many times as necessary. If you have any doubts, ask.

Most providers (AWS or GCP for example) offer a free level of use that will allow this project to be carried out at a lower cost or even for free.

In any case, YOU ARE RESPONSIBLE FOR STARTING AND STOPPING DEPLOYED SERVICES: if you forget a server or let a task run on a loop, you may exceed the credits allocated to you and you will have to pay for it.

You will pay particular attention to the size of all the servers and services you put in place. If you oversize your resources, it will potentially be expensive, and use up your credits faster. Also, not all services or server sizes are eligible for free usage levels offered by providers in general.

The use of third-party services is entirely YOUR responsibility, YOU will be charged if YOU exceed your free credits. The school cannot help you in your relations with external suppliers.

Also, pay attention to the code hosted on GitHub or other public repo: do not leave keys or identifiers lying around.

In short, we are not in a sandbox, these are real resources.

Chapter VI

Submission and peer-evaluation

Turn in your assignment in your `Git` repository as usual. Only the work inside your repository will be evaluated during the defense. Don't hesitate to double check the names of your folders and files to ensure they are correct.

It does not include a bonus game.

We will not pay too much attention to the look of the site, a basic WordPress is enough. We will tolerate the absence of a memorable domain name, but if you have a domain name, it is appreciable. Especially when this memorable name allows you to access your site via HTTPS. There are free domain names providers like:

- DuckDNS
- .tk TLD

If you want to take a new domain name specifically for this exercise, it will be at your expense.

The student must connect as root using their email address or login as the root account. Otherwise, the case should be considered as a cheating attempt and the defense will stop.