Cloud Computing Project

M1 Informatique - Université Lumière Lyon 2

November 20, 2024

1 Project Overview

The goal of this project is to design and implement a small-scale cloud solution using Microsoft Azure. Each student will connect **at least three Azure services**, with **one of the services being new** (i.e., a service not covered in the course). The project should demonstrate how these services work together to deliver a cohesive solution. Students are encouraged to choose a use case that interests them, such as a web application, data analytics pipeline, IoT solution, or any other scenario that showcases the power of cloud integration.
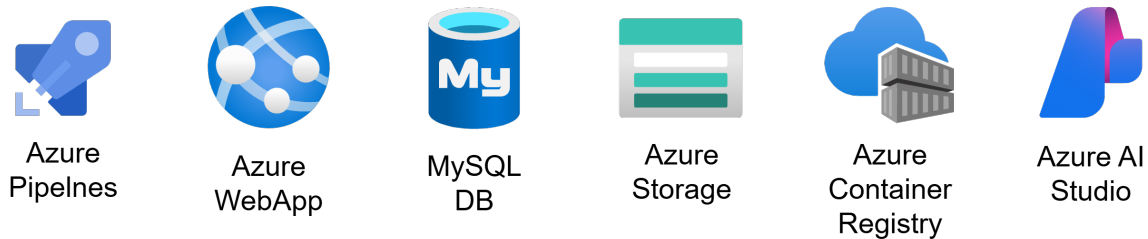
Azure Pipelnes   Azure WebApp   MySQL DB   Azure Storage   Azure Container Registry   Azure AI Studio

Figure 1: Example Azure services.

2 Deliverables

By the end of this project, you will need to provide the following:

- Working Solution in Azure.

- Project report.

- Demonstration.

- GitHub repository (optionnal).

Details are given in the following sections.

2.1 Working Solution in Azure

A functional cloud project using at least three Azure services, including:

- At least **one service not covered in class** (e.g., Azure Logic Apps, Azure Databricks, Azure Cognitive Services, Azure Synapse Analytics, etc.).

- Integration between the selected Azure services to demonstrate a use case.

2.2 Project Report

A detailed report that covers:

- An **overview** of the project's purpose and goals.

- Integration between the selected Azure services to demonstrate a use case.

- An explanation of the **selected Azure services** and why they were chosen.

- A detailed **description of the architecture**, including how the services interact.

- **Challenges faced** and how they were overcome.

- A summary of what was learned during the project.

2.3 Demonstration

- A **live presentation** on December 5th, showcasing the project.

- A brief walkthrough of the project's key components, functionality, and how the services are connected.

2.4 GitHub Repository (Optionnal but recommended)

If your project involves coding (such as Azure Functions, web apps, scripts, etc.), push all your code to a GtHub repository. The repository can include:

- **README** file with an overview of the project.

- Code for any scripts, applications, or automation.

- Deployment instructions if others want to replicate your project.

This repository can be added to your portfolio for future use.

3 Grading Criteria

1. **Documentation:** Quality and detail of the project report.

2. **Presentation:** Clarity and effectiveness of the final demonstration.

3. **Innovation:** Use of a new service and creativity in the solution.

4. **Functionality:** How well the project works; each service should integrate smoothly.

5. **Complexity:** The choice of services and the integration complexity will be considered.

6. **Code Quality (if applicable):** Well-organized code in the GitHub repository.

4 Project Milestones

1. **Project Proposal:** Define the scope of your project and the services you will use.

2. **Project Demonstration (December 5th):** Showcase your solution live during a class session.

3. **Final Report Submission (December 9th):** Submit the final report and provide the GitHub repository link (if applicable).

5 Suggested Azure Services

Below are some suggested Azure services that you might use, including those not covered in the course:

- Azure App Service: To host a web application.

- Azure Functions: For serverless compute to handle background tasks.

- Azure Storage (Blob, Queue, Table): For data storage and handling.

- Azure SQL Database or Cosmos DB: For database requirements.

- Azure Logic Apps: For workflow automation and orchestration.

- Azure Cognitive Services: For adding AI capabilities like image or language processing.

- Azure Key Vault: For managing secrets, keys, and certificates.

- Azure Synapse Analytics: For data analytics and big data processing.

- Azure Virtual Machines: For virtualized computing environments.

Good luck, and we look forward to seeing your creative cloud solutions!