

Introduction



A2.3 Learning Activity

Software architecture patterns



Instructions

- Based on the software architecture styles and patterns documentation, develop the system architecture for the case study.
- The advisor will indicate on which architectural pattern the activity should be carried out.
- Any activity or challenge must be done using the Markdown style with .md extension and the environment VSCode development process, it must be prepared as a single page document, that is, if the document with images, links or any external document must be accessed from tags and links, and must be named with the nomenclature A2.3_NameSurname_Equipment.pdf.
- It is a requirement that the .MD contains a tag of the link to the repository of your document in GITHUB, for example Link to my GitHub and at the end of the challenge it should be uploaded to github.
- From the .md file export a .pdf file that must be uploaded to classroom within its corresponding section, serving as evidence of its delivery, since being the official platform here it is you will receive the grade of your activity.
- Considering that the .PDF file, which was obtained from the .MD file, both must be identical.
- Your repository in addition to having a readme.md file inside your root directory, with information such as student data, work team, subject, career, advisor data, and even logo or images, it must have a section of contents or index, which really are Links or links to your .md documents, avoid using text to indicate internal or external links.
- A structure is proposed as indicated below, however any other can be used to support you to organize your repository.

```
| readme.md
| | blog
| | | Cx.1_ActivityName.md
| | | Ax.1_ActivityName.md
| | diagrams
| | docs
| | html
| | img
| | pdf
```

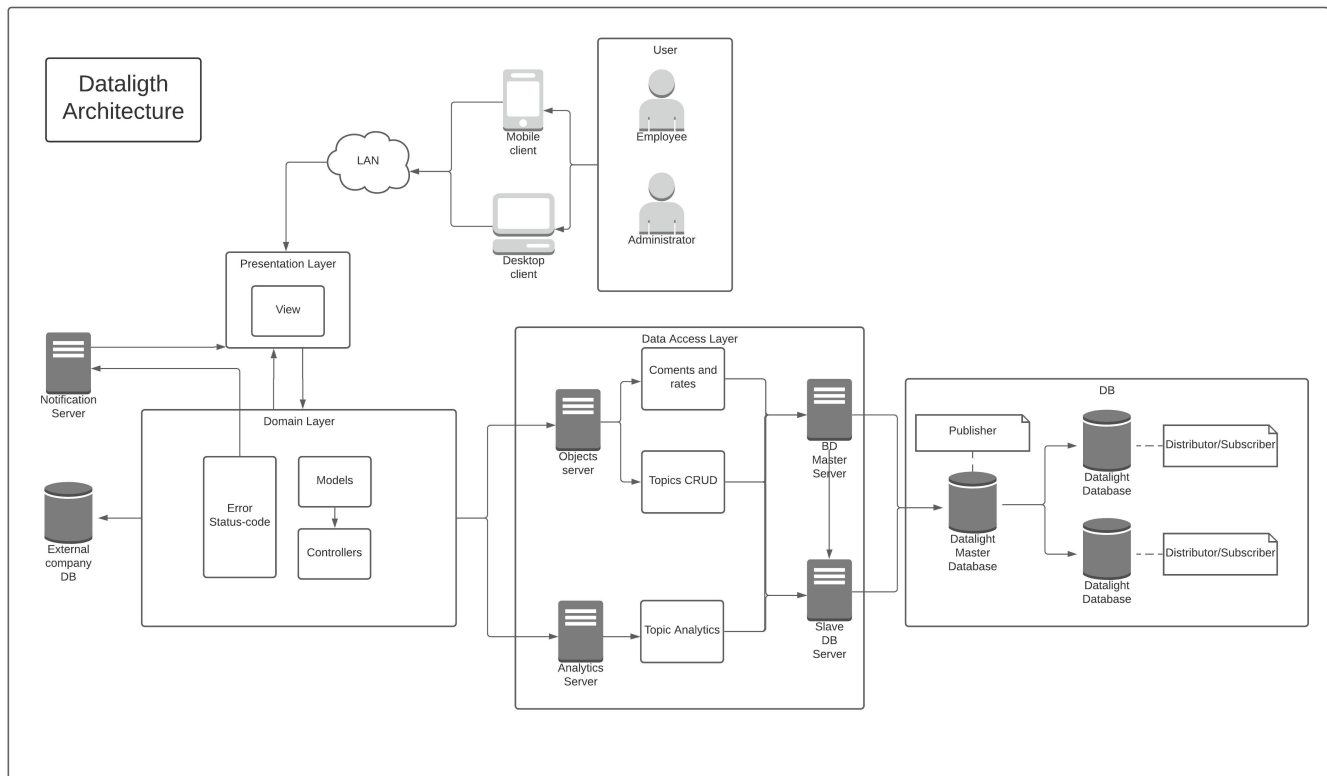


Development

1. Consider applying the following architecture patterns to the case study
- :white_medium_small_square: Client-server architecture pattern

- :white_medium_small_square: Layered architecture pattern
 - :white_medium_small_square: Architecture pattern Model view controller
 - :white_medium_small_square: Micro-service oriented architecture pattern
 - :white_medium_small_square: Architecture pattern Pipes and filters
 - :white_medium_small_square: Event-based architecture pattern
 - :white_medium_small_square: Repository or whiteboard architecture pattern
 - :white_medium_small_square: Publisher / Subscriber Architecture Pattern
 - :white_medium_small_square: Master-slave architecture pattern
 - :white_medium_small_square: Point-to-point architecture pattern
2. Take as a basis the architectural views as well as the elaborated UML diagrams, to apply the pattern that you consider the most appropriate for each of the following scenarios.
- 2.1 Considering that it is desired to maintain and scale the system, it is sought to develop the application through the decomposition of small independent and isolated services, which consume an external interface to communicate to a database server.
 - ✓ Micro-service oriented architecture pattern
 - ✓ Layered architecture pattern
 - 2.2 Being confidentiality and security attributes or requirements for the case study, it seeks to structure each of the components to be programmed into groups of sub-tasks, where each of these sub-tasks must communicate an intermediate layer and this to another layer higher.
 - ✓ Layered architecture pattern
 - ✓ Architecture pattern Model view controller
 - 2.3 Looking for the availability of the system, it is proposed to install two service servers, where these make their requests to a third server where the database would be stored
 - ✓ Client-server architecture pattern
 - ✓ Layered architecture pattern
 - 2.4 Identifying that the integrity of the data is a requirement, it is proposed to replicate and synchronize the database of data stored within the main server to another, considering the main one as the master and secondary as a slave.
 - ✓ Master-slave architecture pattern
 - ✓ Publisher / Subscriber Architecture Pattern
 - 2.5 Considering that the client requested that each time a failure occurs, it must be provided to the different users regardless of the place where they are, it is observed that You must hire a service provider to trigger the alarms and they reach the required users.
 - ✓ Event-based architecture pattern
 - ✓ Publisher / Subscriber Architecture Pattern

Diagram



Conclusions

Arredondo Bonilla Cesar

With this practice we were able to better understand how to use the different design patterns seen in class, besides we had to analyze which of these were going to be used for each of the situations raised in the activity, then we elaborated the diagram which was a little more difficult because we had to think about how to apply the patterns in this one.

Chavez Vargas Javier

In this activity, the selection of patterns was made for the operation of certain occasions or requirements that may affect the use case such as security, availability, etc., here the appropriate diagrams were selected for each section and a diagram was made that covers these patterns and the architecture of the project was broken down with each of the applied patterns

Mancilla Mora Moises

During the development of this activity we analyze the different patterns that we can use. Thanks to the analysis of these patterns we were able to apply them to our system and be able to make an architecture complying with the patterns.

Valerde Sanchez Alejandro

Through this practice, the components of the platform were analyzed, the main objective being to establish the architecture of the site. For this objective, different architectures were used since the entire platform can be divided into sections, showing the components in a clearer way. To establish the patterns, different indications that the teacher gave us were followed and they were followed successfully, resulting in a very complete architecture.



Rubric

Criteria	Description	Score
Instructions	Is each one of the points indicated in the instructions section fulfilled?	10
Development	Was each one of the points requested within the development of the activity answered?	60
Demonstration	Is the student present during the explanation of the functionality of the activity?	20
Conclusions	Is a personal opinion of the activity included by each of the team members?	10



[My Github](#)