



Design of a client/server application

Final Report

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REVISION HISTORY AND APPROVAL RECORD

Revision	Date	Purpose
0	11/12/2024	Document creation
1	11/12/2024	Document planification
2	13/12/2024	Document revision
3	15/12/2024	Document improvement

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1. DOCUMENT SCOPE

The aim of this document is to report on how the creation of a managed server has been the timetables, tasks and jobs to be done by the students in two different ways of doing it. It is reported how we have organized ourselves within the team and we are informed of how the final result came out. From this document we highlight five main points:

1. First a brief summary of what the project consists of.
2. In the Time Plan it will be possible to observe how the organization within the team has been done. It also specifies the management of the pooling of the whole project.
3. The System Design Documentation shows the design documentation that was initially made before the project was made.
4. In the System Implementation Documentation we will attach captures of the final result of the platforms we have created.
5. In the Costs we will comment on the prices and the final costs that we have incurred in total to be able to do the project, specifying each cost of the project.
6. The conclusions of the project.
7. In the Reflection Document we will comment on what we think we could have improved.

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2. PROJECT SUMMARY

The main objective of this project is to create a platform so that a client can access, through a profile with a target or with name and password, to all the information stored on your campus of the university such as their timetables, pending tasks or grades. The results of this platform are in the form of a graphical Python application and also in web format with graphic design.

The client side is in charge of requesting the commands to make a restriction on the search for all possible parameters.

The server side, on the other hand, must query the database and return what the customer has requested.

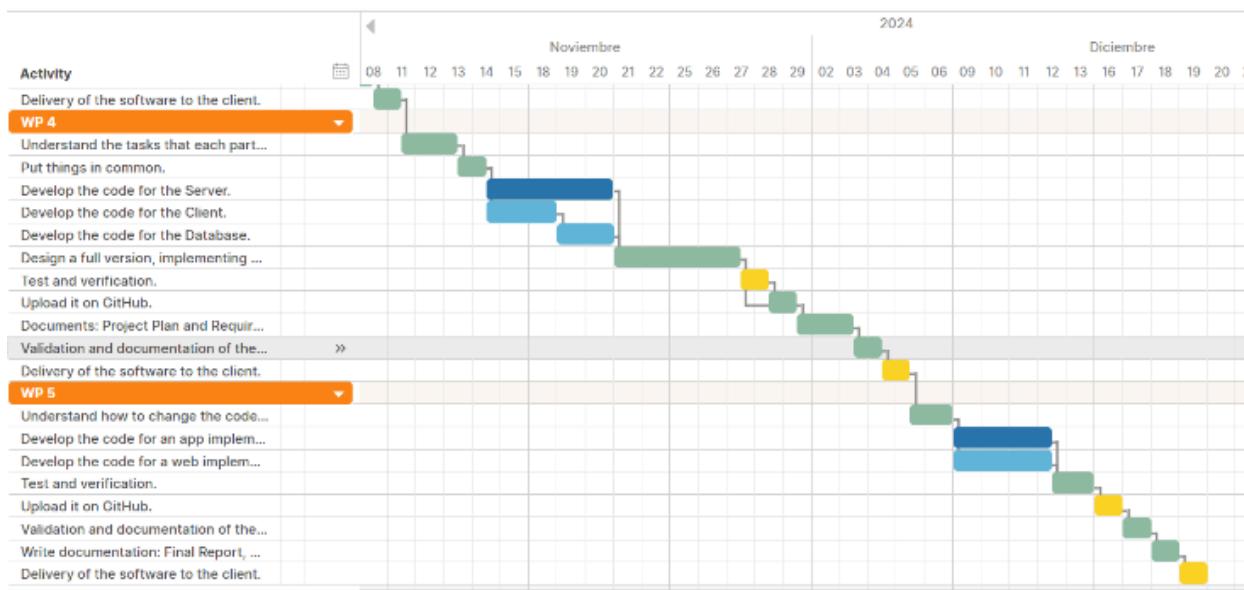
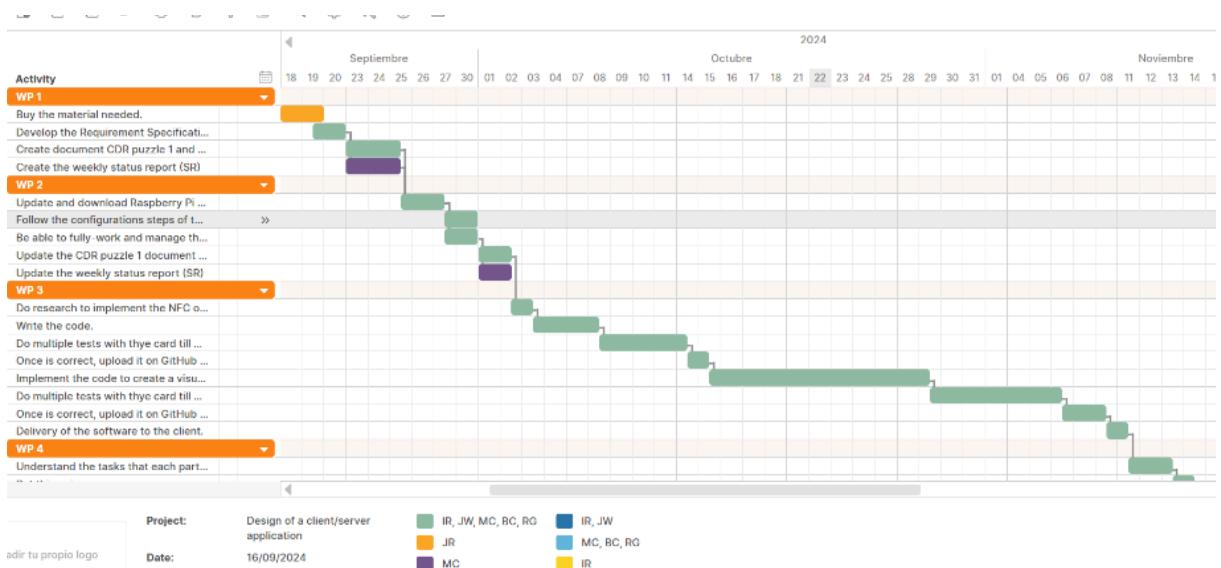
The database part is responsible for saving all the information that customers who are authorized want to access.

We have presented this platform in two formats, one on a graphical Python application programmed with Python and a web page that has been programmed with html. In the two formats we have programmed the servidor with php and the database with MySQLi.

The clients of this project are mainly the universities that want to offer this service to his students.

3. TIME PLAN UPDATED

Through the whole development of this project, we have decided to follow the Work Packages listed on the Project Plan document. The final version and the one that reflects the progress on working in each part is shown in the following pictures.



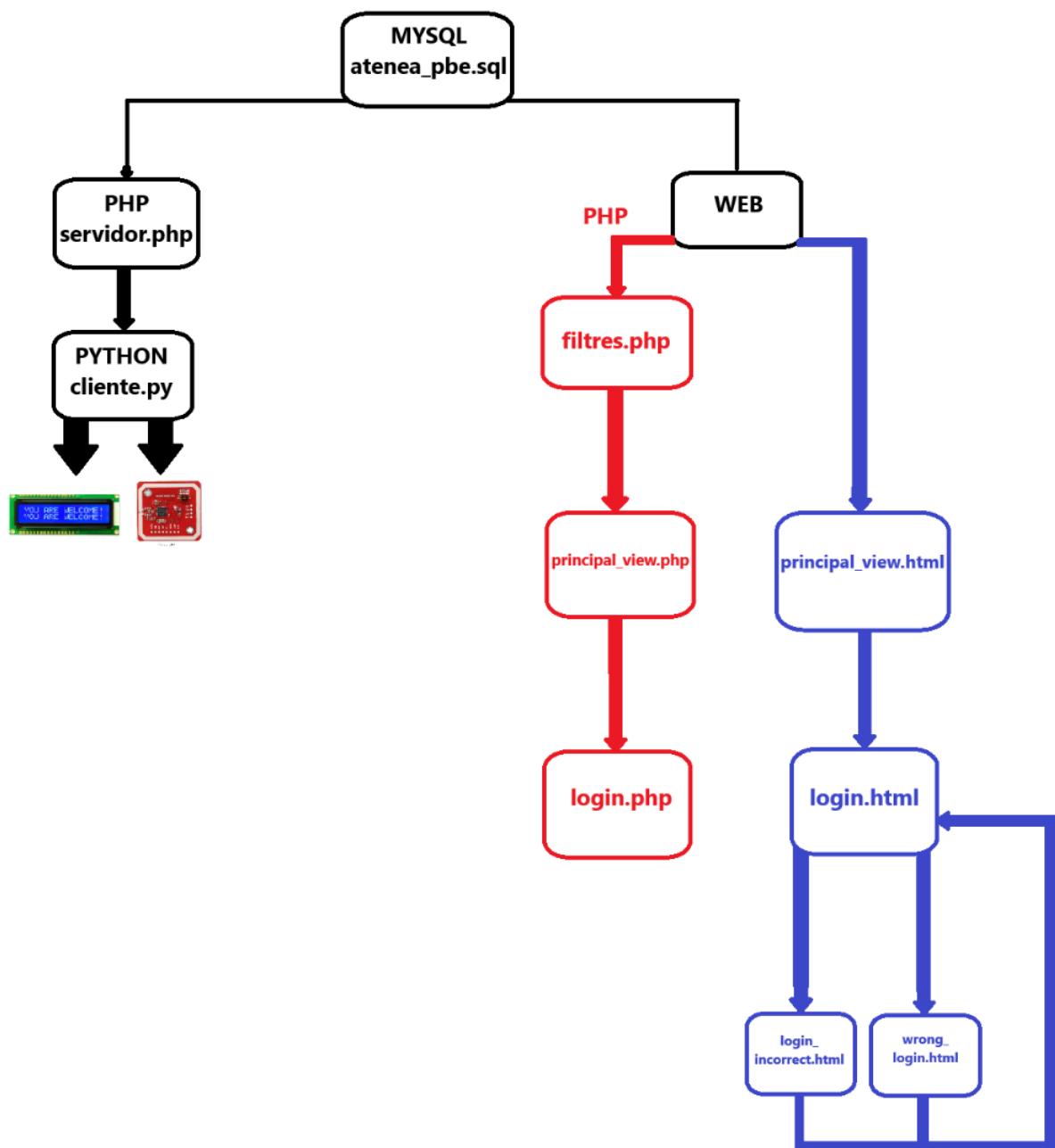
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We provided an overview of any delays and modifications to the project plan, specifically focusing on tasks that were not completed or have been rescheduled. These deviations from the initial time plan were caused by various factors, including unforeseen challenges or changes in project scope. Each delayed task has been analyzed to determine the impact on the overall timeline and any adjustments made to ensure the project's successful completion. Additionally, we have identified any non-performed parts and the reasons behind them, outlining any necessary steps or future actions to address these gaps.

In conclusion, despite these changes, the project remains on track to meet its objectives, with contingency plans in place to mitigate further delays.

4. SYSTEM DESIGN DOCUMENTATION

- System block diagram



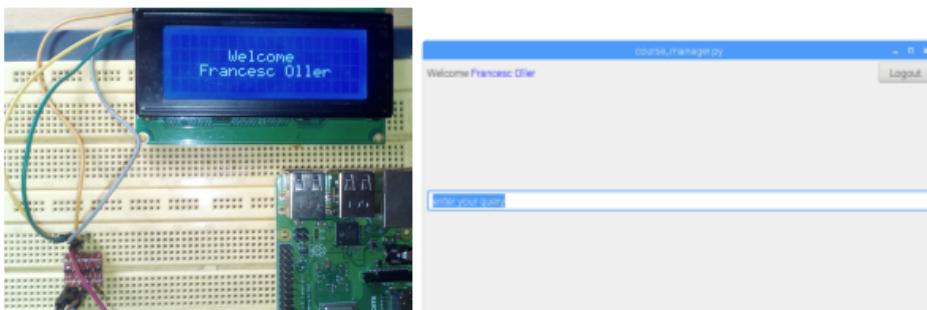
- **Initial design**

- **Servidor.php and client.py:**

To acces with target:



To send query:



course_manager.py

Welcome Francesc Oller

Logout

timetables

day	hour	subject	room
Tue	08:00:00	TD	A4-105
Tue	10:00:00	PSAVC	A4-105
Tue	11:00:00	DSBM	A4-105
Tue	12:00:00	RP	A4-105
Wed	08:00:00	Lab PBE	C4-S10
Thu	08:00:00	PBE	A4-105
Thu	10:00:00	TD	A4-105
Thu	12:00:00	PSAVC	A4-105
Fri	08:00:00	RP	A4-105
Fri	10:00:00	TD	A4-105
Fri	11:00:00	DSBM	A4-105
Mon	08:00:00	Lab RP	D3-006
Mon	10:00:00	PSAVC	A4-105
Mon	12:00:00	Lab DSBM	D3-006

course_manager.py

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tasks

date	subject	name
2018-09-30	AST	Práctica 1
2018-10-08	PBE	Project Plan
2018-10-10	AST	Práctica 2
2018-10-22	PBE	Requirement Specifications
2018-11-25	PBE	Critical Design Report
2018-12-06	AST	Práctica 3
2018-12-08	AST	Práctica 4
2018-12-13	PBE	Final Report

course_manager.py

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marks

marks

subject	name	mark
AST	control teoria	7.5
AST	Lab1	3.2
AST	Lab2	4.7
AST	final	8.6
PBE	puzzle1	2.8
PBE	puzzle2	8.4
PBE	control	7.3
PBE	CDR	8
PBE	FR	9

- **Web:**

login.html:



Welcome to Course Manager

username:

password:

principal_view.html:



Welcome: Francesc Oller

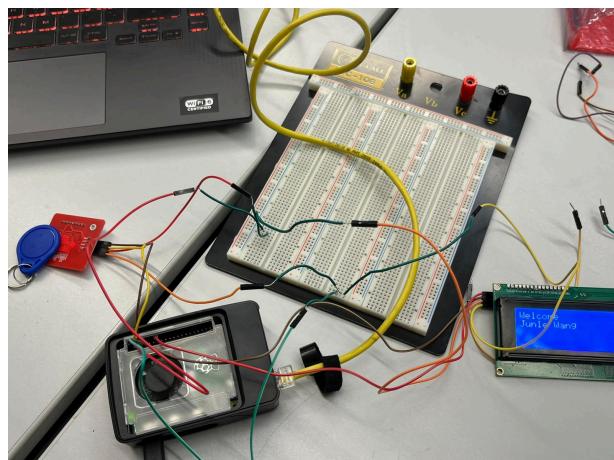
marks/mark[0]s

marks		
subject	name	marks
AST	Lab1	3.2
AST	Lab2	4.7
PBE	pendel	2.8

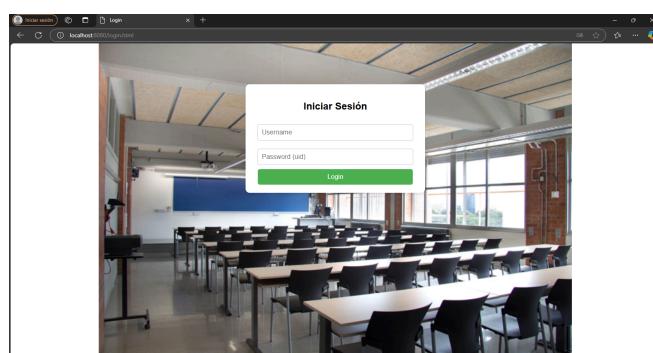
5. SYSTEM IMPLEMENTATION DOCUMENTATION

This is an example of an implementation connecting an NFC reader (PN532) and the LCD on the Raspberry, it should be said that we have had to use a breadboard to connect them.

The two peripherals are connected to the RPI from the I2C ports, that is, they have had to share the SDA and SCL ports, the only thing we have had to do is use the breadboard with male-male cables, because to connect the peripherals to the RPI What we use are female-female cables.



The operation of the 'system' that we have set up works despite the fact that they share pins, since the LCD is configured with port 0x27, while the NFC reader is configured with port 0x24.

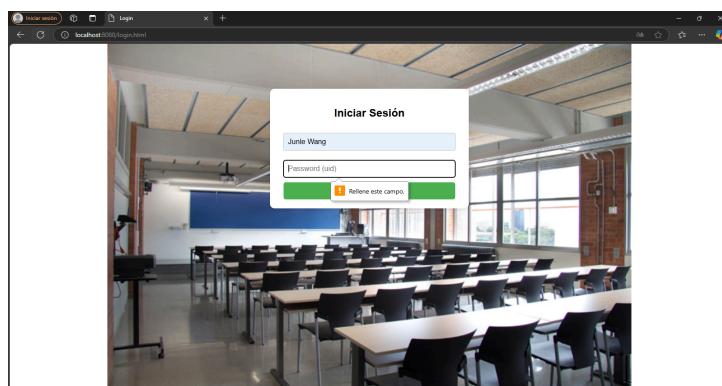


We have managed to implement a remote website from any computer prepared with the necessary packages. We use a graphical interface, together with a CSS style to provide the academic data to the students who identify themselves with their card.

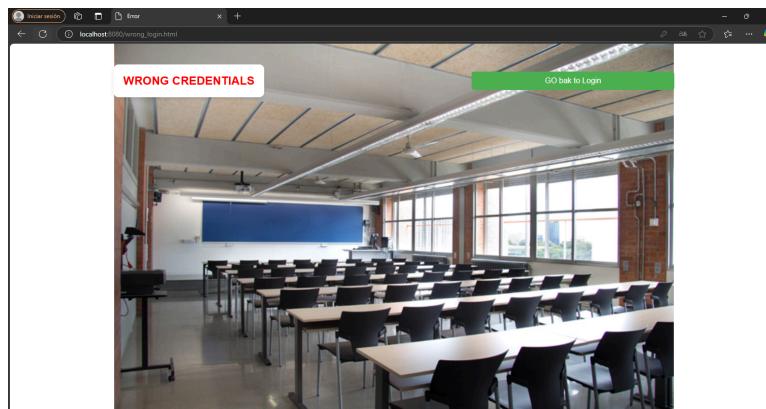
6. SYSTEM CHARACTERIZATION

After carrying out our entire project, the final result has been an accessible website with an NFC card reader. For each student, subjects, marks and timetables are provided on request.

This is the result when you enter the website.

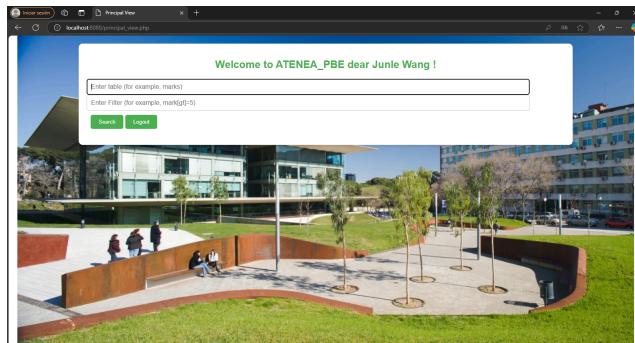


If we leave a password blank and click login, it notifies us that we have to fill out that field.



If we enter the username or password incorrectly, it shows us the WRONG CREDENTIALS page, but we can return to the home page by clicking the green button shown on the screen.

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Once we enter our user name by keyboard and approach the corresponding card (the read uid fills in the password section), it will show us the following table.

Welcome to ATENEA_PBE dear Junle Wang !

marks
mark[gt]=5

This table allows us to enter by keyboard the data we want the web page to provide us with. If the request is correct, it will provide the data, otherwise an error message will appear to ask again.

Welcome to ATENEA_PBE dear Junle Wang !

Enter table (for example, marks)
Enter Filter (for example, mark[gt]=5)

Search Logout

uid	subject	name	mark
5F63B81E	DSBM	Examen Parcial	6.00
5F63B81E	PBE	Examen Parcial	8.70

This way we will save ourselves from entering the &.

Welcome to ATENEA_PBE dear Junle Wang !

Table Error, try again please.

Enter table (for example, marks)

Enter Filter (for example, mark[gt]=5)

Search Logout

If we make a mistake entering the table, the following appears. When you re-enter the table correctly, the red message will be erased. If you click the Logout button it will redirect us to the login page.

Indicate that at any time we have available the log out button to return to the main tab.

7. COSTS

In order to study the cost of our project, we have to take into account both the final project and the two previous projects that led to it. What we spend on the previous projects is:

Name, description of the product	Number	Image	Cost (€)
Raspberry Pi 5, 8GB RAM	3		89,95
Raspberry Pi model 4B, 4GB RAM	2		69,95
Raspberry Pi 5 official box	3		11,95
Raspberry Pi 4 official box	2		5,95
Raspberry Pi 5 official power supply	3		14,95
Raspberry Pi 4 official power supply	2		9,95
C-Ethernet adapter	5		16,99
Ethernet cable	5		2,99
Dupont cable female-female	40		5,49
Micro SD target, 64 GB	5		6,99
Micro SD-USB adapter	5		1,22

RFID RC522 module	1		1,5
Itead PN532 NFC module	1		10,3
Elechouse PN532 NFC module	1		7,4
LCD display	1		9

All materials used for the first two projects amount to a total of 695,24 €.

By the other hand, we have made a study of the materials and tools necessary to achieve our objective, the most economical and useful way is:

Name, description of the product	Number	Image	Cost (€)
Raspberry Pi model 4B, 4GB RAM	1		69,95
Raspberry Pi 4 official box	1		5,95
Raspberry Pi 4 official power supply	1		9,95
C-Ethernet adapter	1		16,99
Ethernet cable	1		2,99
Dupont cable female-female	8		5,49

Micro SD target, 64 GB	1		6,99
Micro SD-USB adapter	1		1,22
Elechouse PN532 NFC module	1		7,4
LCD display	1		9

In total the final project have a cost of 135,93 €.

On the other hand, we also have to take into account the costs with the workers. As they are students, they will be paid 10 €/h.

All the work we have done has been approximately 7 hours per week. Taking into account that we have worked for 13 weeks, in total we have done 91h. The costs per person would be 910 € and the total cost of the group would be 4550 €.

In conclusion, the total cost of the work would be about 4685,93 €.

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8. CONCLUSIONS

The design and implementation of the client/server application project has been a rewarding and educational experience. Despite some challenges and delays, the team managed to deliver a functional platform that allows students to access their academic information through a web interface and NFC card reader. The project provided valuable hands-on experience in system design, programming, and teamwork, and the final result meets the original objectives of offering a user-friendly service to university students.

Although the project was generally successful, there were areas for improvement, particularly in task delegation, time management, and communication within the team. With clearer guidelines and better alignment during the initial stages, the team could have avoided some setbacks. Additionally, providing more presential work sessions could have further enhanced collaboration and alignment with course objectives.

Ultimately, the team worked well together, and the project resulted in a functional and cost-effective solution. The total cost, both in terms of materials and labor, reflects the scale and effort invested, and the experience gained will be beneficial for future projects. The lessons learned from this process will guide future development and teamwork strategies, ensuring even greater success in subsequent projects.

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9. REFLECTION DOCUMENT

Things That Could Have Been Done Better by the Organizers/Lecturers

While the project ran smoothly overall, there were a few areas where the organizers or lecturers could have enhanced the experience. Clearer guidelines and more detailed communication regarding deadlines and expectations would have helped avoid some confusion early in the project. Additionally, offering more extra presential work sessions would have allowed the team to better align with the course objectives and make any necessary adjustments to the project plan in a timely manner.

Things That Could Have Been Done Better by the Team

As a team, there were certain areas where we could have improved our performance. Better time management and earlier identification of potential obstacles would have allowed us to stay more aligned with the initial project timeline. Moreover, delegating tasks more efficiently and ensuring that everyone had a clear understanding of their responsibilities could have helped improve the overall workflow. Some tasks were delayed due to miscommunication and lack of clarity about individual roles, we started assigning tasks to each team member but we finally ended working all together and developing at the same time.

Performance as a Work Team

The team demonstrated strong collaboration, with most members contributing valuable insights and skills. However, at times, coordination could have been more effective, especially in the initial phases of the project when tasks were being assigned. Regular team meetings to discuss progress and resolve challenges would have enhanced our collective performance. Despite these occasional setbacks, the team adapted quickly and ultimately delivered a quality final product.

Self-Assessment

Reflecting on the team's performance and the individual contributions, we believe that our overall work met the objectives outlined in the project plan. According to the team constitution document, our goal was to achieve a balance between individual effort and team collaboration, and we believe we succeeded in this respect. Based on this self-assessment, we believe our team mark should reflect both our achievements and the areas where we developed. We all agree to split the final mark equitably (0,2% for each member).