Software engineering project

Deliverable #0: Work environment

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EasySave version 1.0

Your team has to set up a work environment that complies with the constraints imposed by ProSoft.

The proper use of the work environment and the constraints imposed by the Management will be assessed throughout the project.

Content:

- Git
- Github
- Collaborative tools
- Umlh
- Project management
- Experience

Git

Git is a versioning software created in 2005 by Linus Torvalds, the creator of Linux.

A versioning software, or version control software, is a tool that allows one to keep a history of modifications made to a project, making it easy to quickly modify them and revert to a previous version if needed.

Version control systems are almost essential today because they greatly simplify project management and enable much more efficient teamwork.

Among version control systems, Git is the undisputed leader, and it is therefore essential for any developer to know how to use Git.

Typically, to handle this within a Git-based workflow, you should follow these steps:

- Create a branch from the main copy of the files that you (and your collaborators) are working on.
- Make changes to the files independently and safely on your own personal branch.
- Let Git intelligently merge your specific changes into the main copy of the files, so that your updates don't interfere with those made by others.
- Let Git keep track of your changes and those of others, ensuring that you continue working with the most up-to-date version of the project.

Github

GitHub is a cloud-based platform where you can store, share, and work together with others to write code.

A large number of the repositories hosted on GitHub are public, meaning that anyone can download the code from these repositories and contribute to their development by proposing new features.

Storing your code in a "repository" on GitHub allows you to:

- Showcase or share your work.
- Track and manage changes to your code over time.
- Let others review your code, and make suggestions to improve it.
- Collaborate on a shared project, without worrying that your changes will impact the work of your collaborators before you're ready to integrate them.

Collaborative working, one of GitHub's fundamental features, is made possible by the open-source software, Git, upon which GitHub is built.

References :

https://www.pierre-giraud.com/git-github-apprendre-cours/presentation-git-github/
https://docs.github.com/fr/get-started/start-your-journey/about-github-and-git

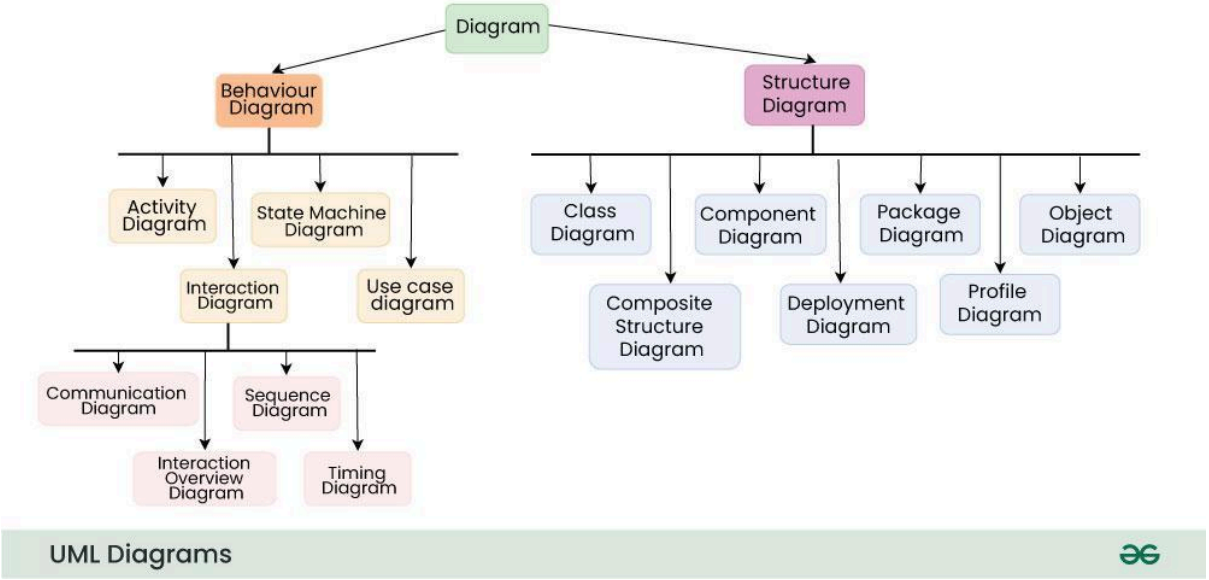
Collaborative tools

As detailed before, Github is a really useful tool when it comes to version control and collaboration.
In terms of communication between the stakeholders of a project, tools like Slack or Team are common in the professional world. But for the organisation of our group we will use discord.
For project management, we can use tools like Jira and Trello for the management of software development, bug tracking, and agile workflows (like Scrum and Kanban). Jira is more for complexe projects whereas Trello is for less complexe.

UML

Uml, standing for "***U**nified **M**odeling **L**anguage"* is a visual modeling language which is used as a standardized visualization method in software development and object-oriented design. It is used by IT developers for the visual representation of objects, states and processes in software and systems. The modeling language can serve as a blueprint for a project, ensuring a structured information architecture; it can also help developers to present their description of a system in a way that external specialists can understand.

The diagram below represents the different diagrams provided by the UML standard:



Project Management

To successfully complete the EasySave project, we implemented an effective project management methodology, relying on collaborative tools.

We decided to use Discord for internal project communication, as it allows for structured project communication.

Jira allows us to organize tasks, making it easier to visualize progress and thus have more structured ticket management. We also allow us to track project progress over the versions and establish a schedule.

Given the duration of the project and the deadlines for the various deliverables, we are implementing an Agile approach inspired by SCRUM to be able to respond to requests through short sprints with regular reviews to monitor project progress.

Experience

Throughout the project, we will apply the fundamentals of software engineering to ensure a rigorous working method and good development practices, thus ensuring the reliability, evolution, and correction of the application, as well as the efficiency of the project's development.

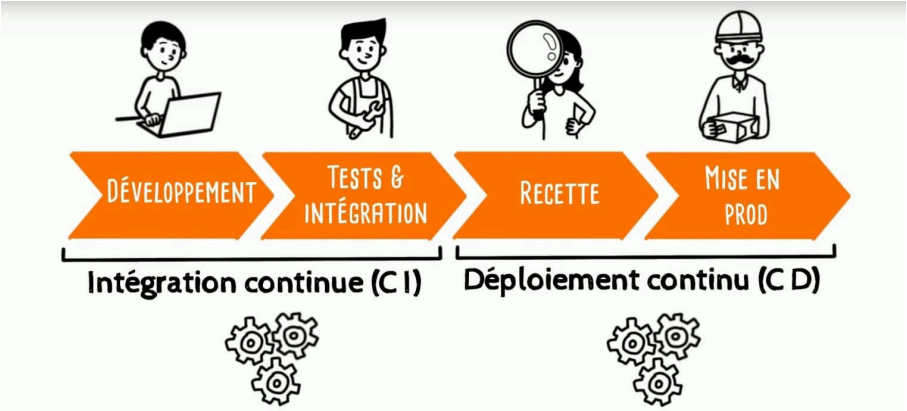
- **Design**: Before coding, we develop UML diagrams (classes, use cases) to clarify the need, structure and architecture of our application

- **Build**: Development is done in C# with particular attention to code readability, modularity and the reuse of existing components.

- **Testing**: At each stage, we integrate systematic manual tests to validate functionalities (unit & implementation), avoid regressions and guarantee stability before delivery.

- **Maintaining**: The code architecture and use of Git versioning allow us to facilitate the identification and correction of potential bugs and to plan the rapid integration of future improvements.

Finally, although our project does not require automatic deployment to production, we have initiated a CI/CD (Continuous Integration / Continuous Deployment) approach, ensuring that we test and integrate our developments as soon as they are completed, to maintain a code base that is always functional.



Source: DataScientest