II.2302 - WEB DEVELOPMENT PROJECT (APP)

Project-Based Learning (PBL)

2024/2025

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Guide Book

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PROJECT-BASED LEARNING: YOUR GUIDE TO SUCCESS

1. Project-based Learning at ISEP

Welcome to your project-based learning (PBL) journey! This tutorial is designed to equip you with the skills and knowledge necessary to successfully plan, manage, and execute your project, both individually and as part of a team.

In your PBL project, you will learn how to **specify**, **design**, **code** and **test**, while considering **security**, **usability** and **eco-design**.

Key Learning Objectives
- **Skill Development:** Acquire the skills outlined in the skills evaluation document (available on Moodle).
- **Project Management:** Learn effective project planning, time management, and task delegation.
- **Teamwork:** Develop strong teamwork and collaboration skills.
- **Problem-Solving:** Apply critical thinking and problem-solving abilities to real-world challenges.

Project Structure and Timeline
- **PBL Calendar:** Follow the provided PBL calendar to stay on track and avoid common pitfalls such as lack of personal work, poor time management, and ineffective team dynamics.
- **Deliverables:** Submit regular deliverables to your tutor and/or client for feedback and assessment.

Resources and Support
- **Tutor Guidance:** Benefit from the expertise and guidance of your PBL tutor.
- **Course Materials:** Access relevant course handouts, references, and other resources on Moodle.
- **Restructuring Lectures:** Attend lectures to clarify and deepen your understanding of key concepts.

Assessment
- **Individual and Collective Evaluation:** Your performance will be assessed both individually and as a team.
- **Final Presentation:** Present your final project to a jury, who will evaluate your technical knowledge,methodological skills, and overall performance. **Conclusion**

By successfully completing this PBL project, you will not only gain valuable skills and experience but also contribute to the development of a real-world web platform.

Remember to utilize the resources provided, follow the project timeline,and collaborate effectively with your team members to achieve your goals.

2. List of topics

2.1.   Topic 1 : Student accommodation management

The aim is to have a website that allows students looking for accommodation to search for and contact an organisation or individual. The site should allow individuals or organisations, such as CROUS, to add, modify or remove advertisements. Students will be able to select some as favourites, apply or simply obtain information. We can also consider ads placed by students to find flatmates.

2.2.   Topic 2 : Fostering and pet care

The purpose of this website is to enable private individuals to have their pets looked after or simply walked. Pet owners can post an advertisement for pet sitting or pet walking, giving all the details (location, dates, timetable, prices, etc.). Interested parties can then respond to the different ads. A service rating system can be added to help pet owners make a better choice of candidates.

2.3.   Topic 3 : Exchanging homes between individuals for a service

The aim of the website is to help private individuals exchange their accommodation (apartment, house, loft, etc.) for short holidays (from one day to a few weeks). These exchanges should be free of charge, but in return, each owner will be able to define the services that guests must provide and some constraints/limits that they must respect. A service might be locking the door when you leave, watering the plants or doing the housework. A restriction could be no smoking in the accommodation, no noise after 11pm or no children. A rating system can be added to rate owners and guests.

2.4.   Topic 4 : Art auctions

The aim of the project is to create a website for the auctioning of artworks (paintings, sculptures, etc.) that will allow amateur artists (classical painters, contemporary artists, sculptors, etc.) to promote and possibly sell their works.

Artists can publish their works for possible sale directly or by auction, describe their works, the price (fixed or starting price if it is an auction) and, if necessary, follow the progress of the auctions. They can also promote future exhibitions (News).

The site manager can also organise a virtual exhibition.

2.5.　Topic 5 : Event management for private individuals

The aim of this project is to create a website that allows individuals to propose, promote and participate in events of all kinds, such as giant picnics, concerts, dance shows, flea markets, exhibitions, conferences, etc.

An event can be visible to everyone and can have a limited number of places. Users can search, register (if available), waitlist or unsubscribe for a specific event. They receive reminder notifications. Registration for events is free, but may be subject to conditions such as bringing a drink, dress code, etc.

2.6.　Topic 6 : Your topic

If none of the topics motivate you, you can suggest a new topic to your tutor, who will decide whether or not to approve the content, making sure that the level of difficulty is equivalent to the topics suggested.

3. Project specifications and priorities

Any website project can be broken down into a list of features. To help you get started, and to provide you with a common set of requirements whatever the topic, here is the list of features and their corresponding priorities. All high priority features should be done by the team and distributed fairly.
Some features (in blue) will be done by you, depending on the topic.
Finally, the medium priority features should be completed as you progress. The more of these you complete, the better your 'meet the specifications' skill will be scored.

Feature	Priority
Homepage	High
Registration (account creation with different profiles)	High
Authentication	High
Profile editing	High
FAQ	High
Terms and Conditions and Legal Notices	High
Simple search (by keyword)	High
Backoffice management (admin panel) of users and access rights	High
Backoffice management of FAQ	High
Backoffice management of Terms and Conditions	High
Backoffice management of Legal Notices	High
Customizable features based on the topic: adding, modifying, displaying, and deleting one or more elements of the website (accomodation, artwork, animal, event, participant, tenant, task, etc.) => one or more additional features can be created, to be validated by the tutor and client	High
Contact	High
Forum	Medium
Forgot password	Medium
Internal messaging	Medium
Advanced search (multi-criteria)	Medium
Responsive site (adapts to the screen)	Medium
Accessible site (adapts to disabilities)	Medium
Backoffice management of forum	Medium
Backoffice management of internal messaging	Medium
Backoffice management of visual aspects	Medium
Customizable features based on the topic: For example, an interactive map, a chat between roommates => one or more additional features can be created, to be validated by the tutor and client	Medium

Figure 1. Specifications (features and priorities)

Note that this list, as well as the detailed timetable (available in separate document on Moodle), will be used to draw up a list of tasks to be carried out to complete your project.

4. Teamwork

4.1.   Effective Teamwork

Successful teamwork is essential for project completion and your development as an engineer. This section outlines best practices to ensure a productive and collaborative environment.

Key Steps Individual (I) or in Teams (T) for Effective Teamwork:
1. **Understand the Task (I):**
   - Carefully read the problem statement. o Identify key concepts, ideas, and data.
   - Clarify terms and expectations.
2. **Share Knowledge (T):**
   - Contribute your knowledge and experience to the team. o Identify relevant tracks and potential knowledge gaps. o Prepare individual work goals and learning objectives.
3. **Work Individually (I):**
   - Analyze documents and prepare summaries, plans, and diagrams.

   - Check your understanding and formulate questions for the team.
   - Complete your assigned tasks.
4. **Share Individual Work (T):**
   - Compare and discuss ideas to ensure mutual understanding.
   - Verify that all team members have grasped key concepts.
5. **Build Argued Solutions (I/T):**
   - Review the problem statement and completed tasks. o Apply knowledge to the problem, evaluate options, and select the most relevant solution.

4.2.   The Team Leader in a Project Team

All team members are responsible for the smooth running of the project. However, you are encouraged to have a team leader at each meeting who is responsible for:

- Distribute the tasks among the team members using one of the tools presented at the beginning of the school year or an equivalent tool.
- Supervising the use of this guide and ensuring that the work requested by the team at the previous session is completed.
- Ensure that everyone has a chance to speak and that no one speaks at the same time. ▪ Ensure that work progresses within the time limits set during the session.

- If necessary, communicate with the tutor or client using the format "[PBL-TeamName] Subject" and proper salutations and closings.

4.3. Running a Team

4.3.1. Team Charter

Create a team charter outlining expectations and guidelines for behavior and collaboration. Here is an example:

Article 1: The team leader change every week.

Article 2: Each latecomer will pledge at the next meeting. The absentee will be convoked to the disciplinary committee in front of the rest of the group.

Article 3: All group members must ensure that they understand all the concepts discussed. A member in advance on one or more specific points will help the rest of the group to understand these points.

Article 4: Each team member must necessarily have something to do. If not, ask others if they need help.

Article 5: Bad mood prohibited. 10 cents per swear words.

Article 6: In case of conflict, the resolution is done by vote.

Figure 2. Team charter example

4.3.2. Regular Debriefings

Conduct weekly or daily debriefings to discuss progress, challenges, and future goals:
- What each member accomplished?
- What are the difficulties and possible solutions?
- Next steps

These meetings will be led by the team leader and will be based on the task management tool you have chosen. During debriefing, it is good to raise the following questions:

- What makes a team effective at working together?
- What to do in between?
- What do we need for the next session? ▪ Is our approach correct?

4.3.3. Weekly Dashboard

Use a shared document to track team progress and communicate with the tutor.

This document (page) must briefly outline your weekly progress on the project, including the tasks you've done over the past week, roles, responsibilities, challenges, delays and what you've planned for the current week.

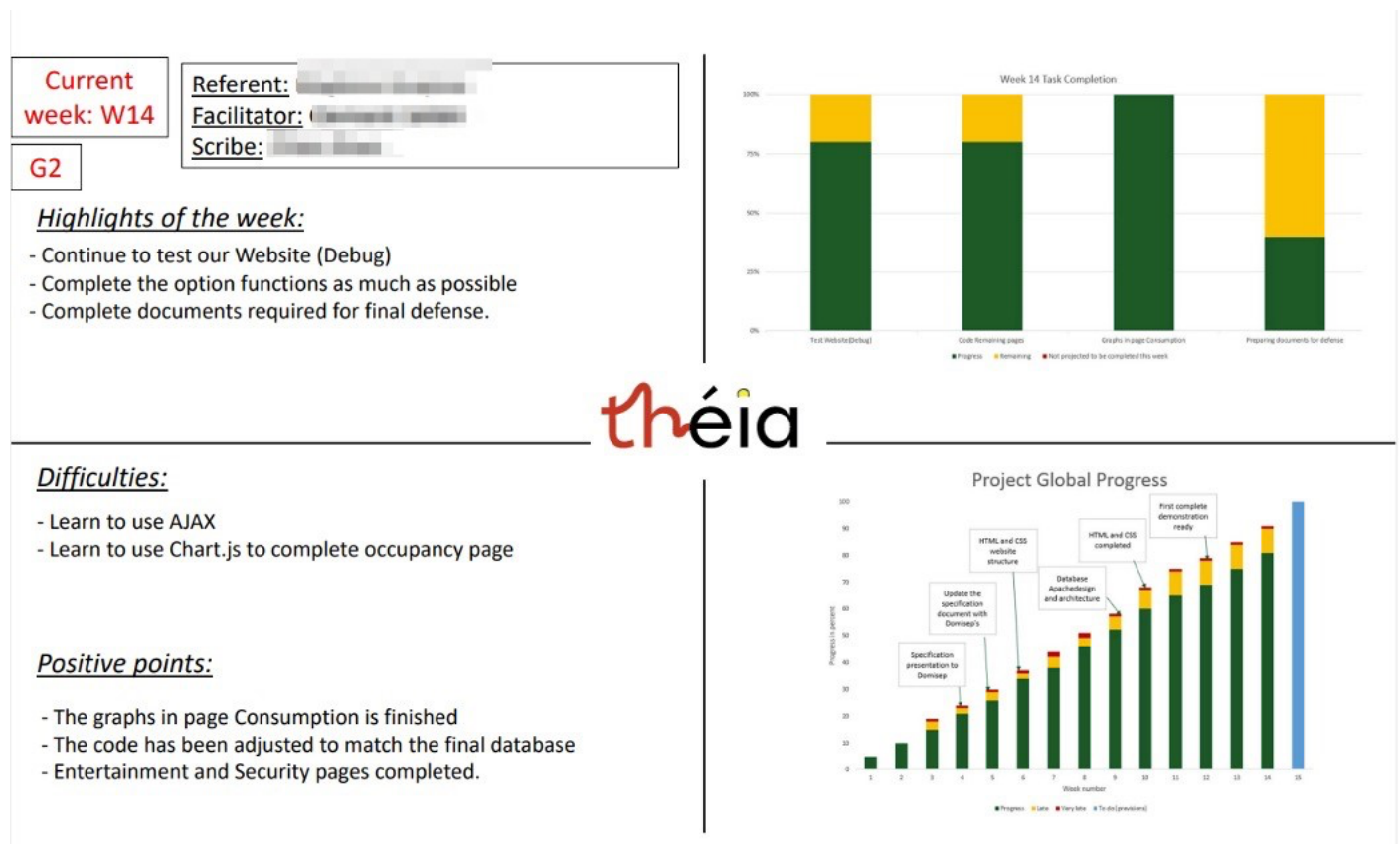It should be updated at the beginning of the week and shared with your tutor on Teams.

Figure 3. Dashboard example

4.3.4. Personal work
In addition to team meetings, dedicate time to individual learning and understanding of discussed concepts.

5. Planning

You can find the planning on Moodle, which details the sessions throughout the term. "**Supervised session**" is done with the tutor, "**Unsupervised session**" is done independently. Attendance is mandatory for each session and you may be called upon for both supervised and unsupervised sessions. Unexcused absences will be penalised.

- ▪ Supervised sessions can include:
  - ☐ Presentations done by the tutor in the form of lectures or tutorials with exercises.
  - ☐ **Presentations** done by two or three people from your team <u>in front of your tutor and other students</u> (all team members must be able to answer questions on the presentation). The presentation is about five-ten minutes long and deals with specific points and practices (such as how to use specific software, or how to implement a solution). The tutor will indicate the distribution of subjects a few sessions before. You will need to upload the presentations on Moodle.
  - ☐ **Presentations** done by the team to the Client. With these presentations, you must write some reports: specifications report, user manuals and deployment guide. The deliverables must be uploaded to Moodle in advance.
  - ☐ Evaluation sessions, such as individual exams, to assess your skills on a particular topic.

6. Explaining of the process

Week 1: Project Initiation

   Project Overview: Learn about the PBL topics, make your choice and its organization.

- • **Self-Assessment:** Evaluate your skills and strengths.
- • **Team Charter:** Create a team charter, allocate roles, and choose a team name and logo.
- • **Use Case Analysis:** Define the target audience and website features.

PBL Management Document

- • Create and maintain a PBL Management Document throughout the project.
- • The initial version should include:
  - o Team charter
  - o Role assignments for the IT part of the project
- • Update the document weekly with:
  - o Gantt charts
  - o Weekly reports

6.1. Stages in the development of a website

The PBL project PBL follows the main stages found in most projects.
- • **Specification Phase:** Define project requirements and goals.

- **Design Phase:** Develop a plan for achieving project objectives.
- **Implementation Phase:** Develop, test, and integrate project components.

A more detailed view of the stages is represented by a cascade model (see Figure 4).
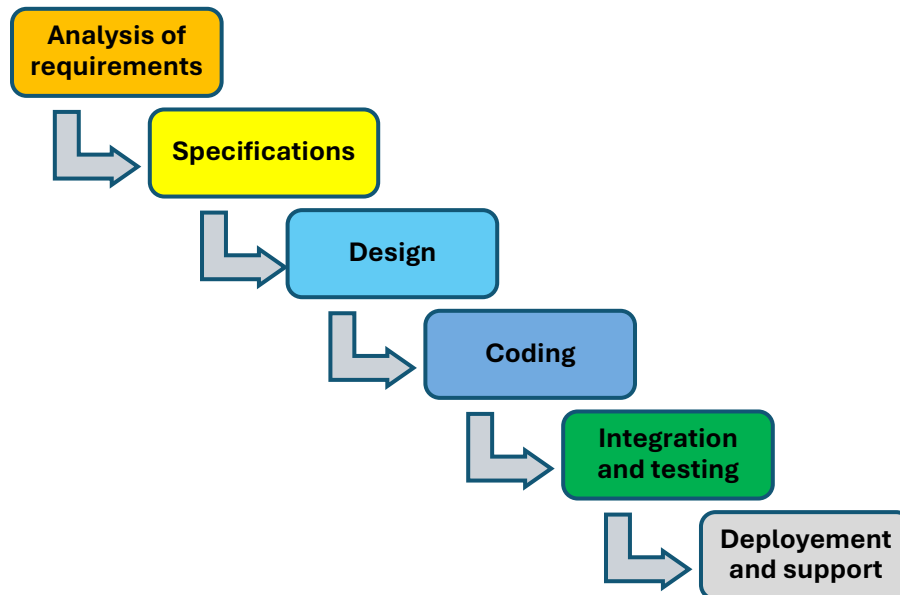

Figure 4. Stages in the cascade development process

6.2. Specification phase

Phase Objective: Analyze the project and identify its needs.

Key Questions:
- Who is the target audience?
- What features and functionality are required?

Phase Activities:
- **Project Planning:** Estimate time for tasks, distribute workload, and document your plan in the PBL Management Document.
- **Website Specifications:** Define functional specifications, GUI, navigational diagram, name, and logo.

Useful resources: UML, GUI lecture slides; hands-on tutorial on HTML and CSS; student presentations on CSS concepts.

Deliverables:
- **Specifications Document:** Upload a PDF document to Moodle detailing project context, requirements,specifications, and GUI.
- **Presentation to Client #1: Specifications:** Present your specifications to the client, focusing on features, UI, and branding.

6.3. Design Phase

Phase Objective: Focus on the "how" of the project, including database and website architecture design.

Phase Activities:
- **Database Design:**
  - Model and organize data using ER and logical schemas.
  - Present your database design to the tutor for validation.
- **Website Architecture Design:** Define the environment setup and code structure, including modularization and file organization.

Useful resources: Lecture slides and hands-on tutorial on DB modelling, SQL, PHP and MVC.

6.4. Implementation Phase

Phase Objective: Develop your website based on the specifications and design.

Phase Activities:
- **Development:**
  - Prioritize features, divide tasks among team members, and avoid code duplication.
  - Consider portability, security and user friendliness from the beginning.
- **Client Demonstration:**
  - Present a working version of your website to the client, focusing on key features and addressing their feedback.
- **Final Development:**
  - Integrate client feedback, complete remaining features, test and integrate modules, and prepare deployment and support documentation.
  - Conduct thorough testing to identify and resolve any issues. o
  - Develop a comprehensive user manual and deployment manual.
  - Prepare for the final project defense.

Useful resources: Lecture slides and hands-on tutorial on JavaScript and AJAX for interactive elements.

Deliverables:
- **Presentation to Client #2: Demonstration**

6.5. Project defense

Preparation:
- Practice your presentation and anticipate potential questions from the jury.
- Ensure your documents are organized and up-to-date.
- Familiarize yourself with the jury's expectations.

Deliverables:
- Updated Specifications Document
- Design Document
- User Manual
- Deployment Manual

Presentation:
- Deliver a clear and concise presentation that highlights the project's key achievements, challenges, and solutions.
  Use visuals and demonstrations to enhance your presentation.
- Address the functional, technical, and project management aspects of your work.

Q&A Session:
- Be prepared to answer questions from the jury on various topics, including technical details, project management,and team dynamics.
- Demonstrate your knowledge and expertise while remaining calm and professional.

7. Student presentations

As part of your learning journey, you'll be required to prepare and deliver presentations on various topics, either individually or in pairs. These 5-10 minute presentations are designed for your classmates, and you'll quickly discover that capturing their attention is no easy feat.

Tips for Effective Presentations:
- **Engage Your Audience:** Use lively and interactive techniques, including demonstrations, to keep your audience interested.
- **Showcase Your Skills:** Demonstrate your understanding of the topic and your ability to communicate it effectively.
- **Share Your Knowledge:** Consider presenting on a topic you've mastered to share your expertise with the group.

Presentation Topics

A list of presentation topics will be shared throughout the semester. While the themes are predetermined, you have the option to propose a presentation on a topic you've mastered, if you wish to share your knowledge with the class.
Note: All presentations will be made available on Moodle for reference.

8. Additional Considerations

- **Time Management:** Effective time management is crucial for completing the project on schedule. Use project management tools and techniques to track progress and allocate resources efficiently.
- **Communication:** Maintain open and transparent communication within your team and with the client. Regular updates and feedback are essential for success.
- **Problem-Solving:** Be prepared to address challenges and setbacks. Develop problem-solving skills and a positive attitude towards overcoming obstacles.
- **Continuous Learning:** Stay updated on the latest technologies and trends in web development. Seek opportunities for professional development and skill enhancement.

By following these guidelines and actively participating in the PBL project, you will develop valuable skills and contribute to the successful completion of the project.