



## Background information :

HTML, an acronym for HyperText Markup Language, is the fundamental language used to create web pages. It provides the basic structure of a web document and allows the content of a page to be described in a structured way. HTML is a mark-up language, which means that document elements are surrounded by tags to indicate their meaning and formatting. The basic structure of an HTML page follows a general pattern. Here is a simple example:

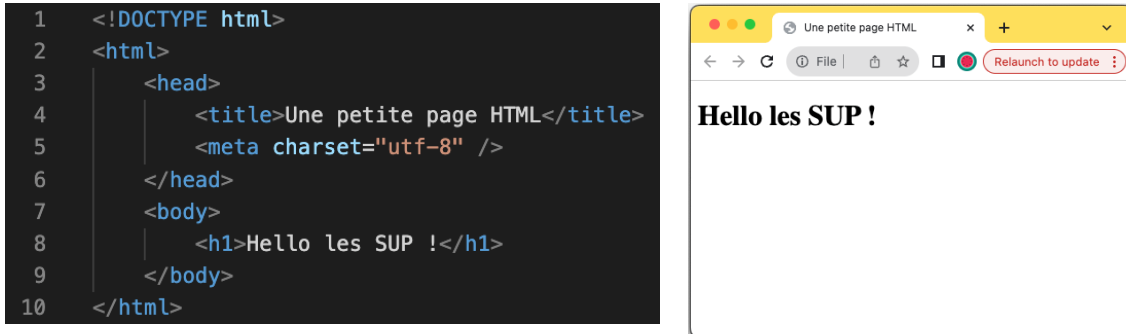


Figure 1. Example of an HTML page and its display in a browser

The blue HTML tags define and structure the content of a web page. They can be of two types:

- **- Self-closing tags:** These do not have a separate closing tag and end with `</>`.  
Example: ``.
- **- Tags with a closing tag:** These have an opening tag `<...>` and a closing tag `</...>`.  
Example: `<p> This is a paragraph.</p>`.

## The required work :

You are a team of young developers. Your current mission is to design a tool for checking the structure of an HTML page, aimed at simplifying the life of developers by ensuring that their web pages comply with mark-up and structure standards.

This tool must be developed in Python and must be capable of :

1. Analysing input HTML code, identifying tags, attributes and their structure.
2. Reporting structural errors such as incorrectly closed tags, missing tags, etc.
3. Providing a clear and understandable error report, indicating the exact locations of errors in the source code.

## Resources for dealing with the problem situation

Course 01 – Stacks and queues.ipynb

TD 01 – Stacks and queues.ipynb

Videos on IonisX :

Stacks

Stacks: <https://courses.ionisx.com/courses/ref/m126/x/course/>

Stacks – Implementations : <https://courses.ionisx.com/courses/ref/m128/x/course/>

Queues

Queues: <https://courses.ionisx.com/courses/ref/m129/x/course/>

Queues – Implementation : <https://courses.ionisx.com/courses/ref/m131/x/course/>

**Learning objectives of the PBL: at the end of the "RETURN" session of this PBL, each student should be able to...**

- Express an algorithm using a data structure of File type and Pile type.
- Translate an abstract machine of File type and Pile type into the Python language.
- Test the correct operation of the algorithm made up of an abstract machine of File type and Pile type.
- Allocate roles and tasks within the PBL.
- Make relevant comments on the programs.
- Summarise the group's work
- Use the Python language to manipulate text files.
- Program the basic routines for manipulating text in Python.

## PBL processing shedule:

### Schedule of " Outbound " seance and individual work :

Phases and Steps		Tasks
Phase A « Outbound » seance	1 10min	<b>Organize the team :</b> <ul style="list-style-type: none"> <li>Divide up the essential functions (see page 6)</li> <li>The helmsman takes note of the stages to be completed and stays on course</li> <li>The timekeeper undertakes to keep an eye on the timing</li> </ul>
	2 10min	<b>Familiaris yourself with the provided document:</b> <ul style="list-style-type: none"> <li>Everyone flips through the booklet to familiarise himself with its contents.</li> </ul>
	3 10min	<b>Understand and clarify the problem: from p. 3 :</b> <ul style="list-style-type: none"> <li>What exactly is the problem we are going to address?</li> <li>The scribe starts to note down what comes up in the discussion (key words, concepts, ideas, etc.).</li> </ul>
	4 30min	<b>Establish a set of tracks to deal with the problem:</b> <ul style="list-style-type: none"> <li>Draw up a list of relevant questions to be answered</li> <li>Take stock of what the team knows (and doesn't know)</li> <li>If necessary, draw up a list of simplifications and restrictions to limit the scope of the problem (if necessary, check with the tutor)</li> <li>Draw up a list of expected outputs</li> <li>Consider different ways of moving forward with the treatment</li> <li>The activator initiates and relaunches the discussion when necessary.</li> </ul>
	5 20min	<b>Identify learning outcomes:</b> <ul style="list-style-type: none"> <li>What do we need to (re-)learn/discover to deal with the problem?</li> <li>What questions should each of us be able to answer at the end of the "RETURN" session?</li> <li>What do we need to be able to do?</li> </ul>
	6 15min	<b>Draw up an action plan :</b> <ul style="list-style-type: none"> <li>Determine what information needs to be gathered to confirm or invalidate the leads listed.</li> <li>Draw up a list of tasks to be completed and deliverables to be prepared by each member before the next meeting, ...</li> <li>The secretary notes down what is decided and arranges for it to be communicated to the other team members.</li> </ul>
Phase B Individual work	7 de 6 à 10 h	<b>Individual Work :</b> <ul style="list-style-type: none"> <li>Implement the action plan drawn up in step 6: <b>everyone carries out the work decided and prepares what they are going to bring to the "RETURN" seance.</b></li> </ul>
Phase C « RETURN » Seance		(details p. 5)

## PBL processing shedule:

### Timing seance « Return »

Phases and steps		Task
Phase C « RETURN » seance	8 10min	<b>Organizing the team :</b> <ul style="list-style-type: none"> <li>Who does what (functions)? Should responsibilities be changed? Should new functions be assigned?</li> <li>What output do we need/choose to produce? → deliverable(s) (if necessary, confirm with the tutor).</li> <li>Planning: what needs to be done in the next stage and how can we best organise the time available? (+ instructions for the timekeeper)</li> </ul>
	9 60min	<b>Validate learning, solutions and deliverables</b> <ul style="list-style-type: none"> <li>Pool what everyone has studied, prepared and brought along.</li> <li>Examine answers to questions formulated during the "go" session</li> <li>Propose answers/solutions to the problem situation</li> <li>Prepare deliverable(s)</li> <li>Validate collectively</li> </ul>
	25min	<b>QCM graded</b>
	25min	<b>QCM Correction</b>

## Functions to facilitate the teamwork...








To ensure that the teamwork runs smoothly and efficiently, a little organization is required... Your tutor had given you cards describing the different functions you need to perform in order to achieve this objective.


The back of each card explains the function defined by the card. Examine the cards and distribute the functions among the members. Each person lays out his or her assigned card(s) in front of him or her, so that each member can see who will be responsible for which function(s).

Among the proposed functions, the "**Active Participant**" function must be assumed by each member!

### A few functions to be distributed :

#### Essential functions :

<b>Helmsman</b>		<ul style="list-style-type: none"> <li>You monitor the progress of the work.</li> <li>You ensure that the team follows the steps imposed or decided upon by the team.</li> <li>You prevent the team from getting sidetracked and wasting time on dead-end paths.</li> </ul>
<b>Activator</b>		<ul style="list-style-type: none"> <li>You encourage every team member to make an active contribution to the work, and don't forget the scribe or secretary!</li> <li>If tasks need to be shared out, you make sure that each member contributes equally.</li> </ul>
<b>Time keeper</b>		<ul style="list-style-type: none"> <li>You ensure that available time is used efficiently.</li> <li>You draw attention to the risk of falling behind schedule.</li> </ul>
<b>Scribe</b>		<ul style="list-style-type: none"> <li>On the shared workspace (e.g.: flip chart), you note important ideas, open questions and patterns that emerge during discussions, but without imposing your own points of view.</li> <li>You manage the flip chart sheets so that useful information is visible to all team members.</li> <li>And don't forget to take part in the discussions!</li> </ul>
<b>Secretary</b>		<ul style="list-style-type: none"> <li>You produce a summary of the key points arising from the discussions: those that need to be retained for the continuation of the work.</li> <li>You record all the information needed to continue the work: decisions made, deadlines set, upcoming meetings, collective and/or individual work plans, etc.</li> <li>You circulate your productions and other necessary documents to all team members.</li> <li>And don't forget to take part in the discussions!</li> </ul>
<b>Speech circulator</b>		<ul style="list-style-type: none"> <li>You make sure that every team member has a say.</li> <li>You encourage team members in the background to speak up; you don't forget the scribe or the secretary!</li> <li>You prevent one or other team member from taking the floor to the detriment of the others.</li> </ul>
<b>Spokesperson</b>		<ul style="list-style-type: none"> <li>You present the status or results of your team's work in a synthetic and comprehensive way, without showing any preference for your own point of view.</li> <li>You use all the necessary means for effective communication.</li> </ul>

<b>Stitch maker</b> 	<ul style="list-style-type: none"> <li>▪ What has been done? What remains to be done? What do we know and what don't we know?</li> <li>▪ You help the scribe to record these elements in the shared workspace.</li> </ul>
...	<i>If necessary, add a function that you find useful or necessary.</i>