User Interface
Computer Science Engineering
Course 2017 / 2018

Programming exercises
(Assignments)

TECHNOLOGIES FOR DEVELOPING WEB USER INTERFACES
Websites (HTML5 and CSS3)

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1. Introduction

This document presents the first set of programming exercises of the course. These exercises aim at providing you with a hands-on introduction to emerging web technologies: HTML5 and CSS3. We give a succinct overview of these technologies and their specifications in Section 2. Subsequently, we present 3 exercises in which you will create web pages and become familiar with basic and more advanced aspects of HTML5 and CSS3. We set below the conditions under which the exercises will be conducted.

Estimated effort

The estimated number of hours each student will need to devote to conducting the exercises is 10, which will be distributed along three working weeks and three sessions. The sessions will take place in small lecture rooms, wherein the lecturers will (i) introduce the technologies to the students, (ii) go through a number of examples and (iii) solve general doubts or concerns.

Submitting the exercises

The exercises of this first set of programming exercises will be submitted **on the fourth week of the course** (see the calendar of the labs available at the Aula Global under "*Información para los alumnos*"). Only one of the three programming exercises (ex1 or ex2 or ex3) will be submitted. The exercise which you have to submit will be defined at the start of the submission session.

Assessment

In this set of exercises, we will evaluate: **functionality** (i.e. what you are asked to do), **code** (e.g. can a person who is not you understand the code? Have you written comments in the code?) and **user interface design** (e.g. think about a human user interacting with your page – colors, size of text…)

This set of exercises corresponds to 10% of the final mark. Students **will not pass** the course if they either copy the exercises from web pages or from another group, or allow them to copy their exercises.

Organization of the document

This document is divided into four sections. Section 2 gives an overview of HTML5 and CSS3. Section 3 describes the exercises and the submission procedure.

2.Websites

A **website** consists of web pages and resources, both hosted in the same domain, which are accessed through a web navigator by using HTTP (*Hypertext Transfer Protocol*). **Static websites** can be defined as a number of web pages, which are written in HTML and CSS (*Cascade Style Sheets*), whose content is both stored and processed in web servers, who manage requests from clients.

Hyper Text Markup Language (HTML)

HTML stands for *Hyper Text Markup Language*. HTML is a language designed to give some structure to web pages and present their information. This is done by means of mark-up tags (e.g. <body>). One of the main problems of HTML is that an HTML document is not aware of its content. HTML is defined by W3C (www.w3c.org).

HTML5 is the fifth revision of the HTML standard. Its core aims have been to improve the language with support for the latest multimedia while keeping it easily readable by humans and consistently understood by computers and devices.

For further information about HTML, the HTML tutorial of the w3schools [1] provides a number of interactive examples of the main characteristics of HTML. The HTML elements and attributes are defined in the HTML specification [2]. The most recent version of the HTML5 specification can be found in [3]

Cascade Style Sheets (CSS)

CSS (*Cascade Style Sheets*) allow us to group HTML elements into categories. These categories enable us to reuse and simplify the HTML code. For example, the color and size of HTML elements can be defined in CSS style sheets, which are usually coded in CSS files and linked to HTML, which is used for defining the structure of the webpage. Nowadays, there are three versions of CSS, CSS1, CSS2 and CSS3.

The main objectives of the CSS specification are to:

- solve the problem of HTML regarding the separation of content and presentation. HTML was originally designed to define the content of a web page. Over time, a number of attributes have been added to the specification, increasing the complexity of web pages. CSS was created after HTML 4.0 with the aim of making the separation between content and styles clearer.

- help the web programmer by reusing styles and simplifying the HTML code of web pages.

For further information on CSS, the tutorial of w3schools [4] provides a number of interactive examples [5]. The official specifications provide further information of CSS1 [6] and CSS2 [7], and a reference manual of HTML and CSS can be found in [8].

3.Exercises

This section consists of 3 exercises, all of which are considered mandatory and eligible for evaluation. For each exercise, we describe its main objective, suggest examples and provide supporting material.

Description of the exercises

IMPORTANT: All the exercises must have the style of the web page in an external CSS style sheet linked to the HTML document.

Exercise 1

The aim of this exercise is to become familiar with the main elements of HTML and CSS. In this exercise, you will work with the HTML elements related to paragraphs, tables, lists, links and images.

The web page will follow the template shown in the image. It will be divided into four sections: i) heading, ii) menu, iii) body and iv) footer. These sections will be as follows:

- The heading of the page will display a logo and/or a title, and a horizontal menu. The menu will include at least 3 options.

- The body section of the page will be divided into two horizontal boxes.

  o The first box will contain the personal information of the user, including her name and surname, email, birthday, language and profile picture. The information will be organized in three columns. The column on the left will contain the title of the box. The central one will have the name and surname, the birthday and the profile picture. The column on the right will show the language and the profile picture.

  o The second box will have the billing information. The information will be organized in two columns. The left column will have the title, while the right one will list the address, the payment method and the payment details. In particular, by default the payment method will be the credit card and the additional details will be the card number, the valid thru and the three-digit code. Among the payment methods, there will also be others like PayPal and bank transfer.

- The footer of the page will display at least three links (like the copyright and the social networks Facebook and Twitter) separated by a vertical line.

- The information contained in the page (logo, titles, images, texts, links, …) has to be related to a subscription to a streaming service for accessing to multimedia content, like Netflix or HBO.

We encourage you to look at http://www.w3schools.com/html/html_examples.asp to complete this exercise, namely:

- HTML Layouts introduces the usage of DIV element with several examples.

- HTML5 Semantic Elements addresses important elements for this exercise such as <section>, <article> and <header>

- HTML Images provides examples of how to manage picture in HTML documents.

- HTML Links provides examples of how to include links to other HTML pages.

- HTML Styles provides examples of how to modify the style of HTML elements.

- HTML Video – Ejemplos sobre como incluir videos en una página web.

- CSS Floating introduces the positioning of the elements.

- CSS Margin explains how to specify the margins of an element.

- CSS Padding explains how to specify the content of an element.

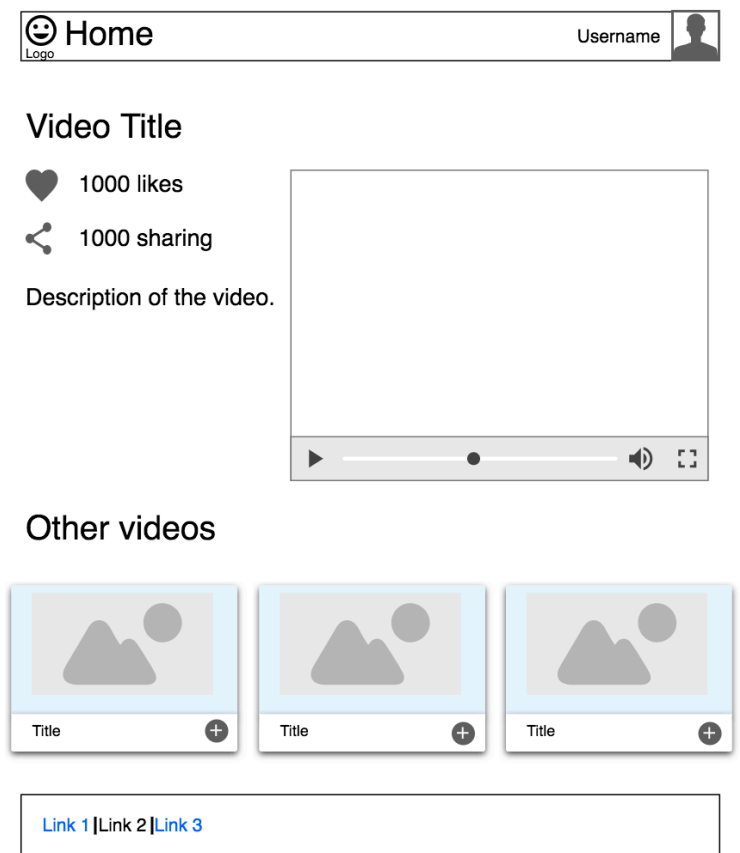- CSS Navigation Bar provides examples about the navigation menu of the page.

Exercise 2

The aim of this exercise is to become familiar with the main elements of HTML5 and CSS3.

The web page will follow the template shown in the image. It will have the same structure as the one you created in exercise 1 (heading, menu, body, footer).

In the body section, the wider column will contain the profile information as follows:

- The heading of the page will display a logo and/or a title, the username and the profile picture.

- The body section of the page will be divided into two horizontal boxes, each one of the them with a title.

   o The first box will show a video on the right and some related details on the left, including the number of likes and sharing, and a short description.

   o The second box will contain a gallery of videos, where each video will have in the bottom part a title and a plus icon (+) to open its additional information.

- The footer of the page will display at least three links (like the copyright and the social networks Facebook and Twitter) separated by a vertical line.

We encourage you to look at http://www.w3schools.com/html/html_examples.asp to complete this exercise, namely:

- HTML Layouts introduces the usage of DIV element with several examples.

- HTML Styles provides examples of how to modify the style of HTML elements.

- CSS Floating introduces the positioning of the elements.

- CSS Margin explains how to specify the margins of an element.

- CSS Padding explains how to specify the content of an element.

- CSS Navigation Bar provides examples about the navigation menu of the page.

Exercise 3

The aim of this exercise is to make the website of the first exercise responsive. In this way, it will be possible to adapt the website to the dimensions of the browser.

Within this scope, you have to implement almost two breakpoints: the first one for the tablet (768px) and the second one for the phone (600px). The layout of the website has to change according to the breakpoint, as shown in the following images:

Desktop layout

Tablet layout

☺ My Account
Logo

Link 1   Link 2   Link 3

PERSONAL INFORMATION

First & Last Name
Luis Suarez

e-mail
luissuarez@mail.es

Birthday
14/03/83

language
español   ▼

Photo
path/to/photo   ◯

BILLING INFORMATION

Address
calle Madrid 1, Madrid, 10000, Spain

Payment method
credit card   ▼

Number
1111 1111 1111 1111

Valid Thru
05 / 25

Code
123

Link 1 | Link 2 | Link 3

Phone layout

☺ My Account
Logo

Link 1

Link 2

Link 3

PERSONAL INFORMATION

First & Last Name
Luis Suarez

Birthday
14/03/83

e-mail
luissuarez@mail.es

language
español   ▼

Photo
path/to/photo   ▢

We encourage you to look at http://www.w3schools.com/css/css_examples.asp to complete this exercise, namely:

- RWD Viewport introduces the viewport property.

- RWD Media Queries introduces the usage of the media queries.

- RWD Images introduces the properties to make the images responsive.

Material

Editors of web pages such as Macromedia Dreamweaver can't be used, since the aim of these exercises is to get familiar with HTML and CSS. We encourage you to use a free text editor such as Notepad++ or HTML-Kit. None of the lecturers will help you to use these tools.

4.Rules

The realization and submission of the programming exercises is guided by the following set of rules. If you do not comply with them, your mark **won't be more than 3** in the exercises.

Conducting the exercises

The exercises will be carried out in groups of two people.

The members of each group will belong to the same lab group.

The members of the group cannot be altered throughout the course.

The exercises will be carried out by using HTML5 and CSS3.

The exercises will be tested with either Mozilla Firefox version 16 (or above) or Chrome 26 (or above).

The exercises will be coded to be visualized in screens with resolution = 1024x768

IMPORTANT: The lecturers will not solve problems via e-mail.

Submitting the exercises

The exercises will be submitted **at the beginning of the session** indicated in the introduction of this document. Exercises submitted afterwards will not be considered.

The submission norms are:

- All the files will be submitted through Aula Global.
- All the files will be either zip or rar files, with the following filename:

PE01_grXX.zip

- XX is the ID of your group. For example, group 5 will submit ep01 as:

PE01_gr05.zip

The zip or rar files will have the following structure:

- ExN. Root folder. HTML files.
- ExN/style. CSS styles.
- ExN/images. Images and material.

N = number of exercise (1 – 3).

IMPORTANT: Exercises must be submitted as it has been stated before. Other forms of submission will not be considered.

5.References

[1] *"HTML Tutorial"*, HTML Tutorial, W3 Schools: http://www.w3schools.com/html/

[2] *"HTML 4.01 Specification"*: http://www.w3.org/TR/html4

[3] "HTML5", http://www.w3.org/TR/html5/

[4] *"CSS Tutorial"*, http://www.w3schools.com/css/

[5] *"CSSPlay"*, http://www.cssplay.co.uk/index.html

[6] *"Cascading Style Sheets, level 1"*, http://www.w3.org/TR/REC-CSS1

[7] *"Cascading Style Sheets, level 2"*, http://www.w3.org/TR/REC-CSS2

[8] "HTML5 and CSS3: Visual QuickStart Guide, Seventh Edition"
Elizabeth Castro; Bruce Hyslop. Ed. PeachPit Press, 2011