

WEB DEVELOPMENT (17)

Test Project Design

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1 INTRODUCTION

1.1 PURPOSE

This document describes the Test Project Design of Trade 17, Web Development. It is circulated to the competitors and experts 3 months prior to the competition and contains only basic information. The actual Test Project will be created by external Test Project Developers using this document as a guide and it will be presented on C-2 to all experts.

1.2 MODULES

The Test Project will consist of 5 modules with the following topics:

- Module **A**: Front-end Development
- Module **B**: API Development & Consumption
- Module **C**: Content Management Systems
- Module **D**: Speed Challenge
- Module **E**: Team Challenge

The modules will be further described in this document.

1.3 TIME MANAGEMENT

DAY	TOPIC	DURATION
C1 Morning		
	Module A: Frontend Development using JavaScript and Browser APIs for rich-media control and client-side interactivity	3.5h
C1 Afternoon		
	Module A: Static Website design using HTML/CSS	3h
C2 Morning		
	Module B: Backend API Development with PHP frameworks	3h
C2 Afternoon		
	Module D: Speed Challenge Part 1	0.5h
	Module B: Frontend JavaScript Application Development using the API implemented in C2 Morning	2.5h
C3 Morning		
	Module C: CMS Website design	3h
C3 Afternoon		
	Module D: Speed Challenge Part 2	1h
	Module E: Team Challenge	2h

2 MARKING SCHEME

The following table shows the point distribution for all sections and modules.

WSOS SECTION	DESCRIPTION	POINTS
1	Work organization and self-management	5
	Module A	2
	Module B	2
	Module C	1
	Module D	0
	Module E	0
2	Communication and interpersonal skills	5
	Module A	1
	Module B	1
	Module C	1
	Module D	0
	Module E	2
3	Website design	22
	Module A	10
	Module B	6
	Module C	6
	Module D	0
	Module E	0
4	Layout	22
	Module A	12
	Module B	4
	Module C	4
	Module D	2
	Module E	0

5	Front-End Development	22
	Module A	10
	Module B	10
	Module C	0
	Module D	2
	Module E	0
6	Back-End Development	16
	Module A	0
	Module B	14
	Module C	0
	Module D	2
	Module E	0
7	Content Management Systems	8
	Module A	0
	Module B	0
	Module C	8
	Module D	0
	Module E	0
	Total	100

3 MODULE A – FRONT-END DEVELOPMENT

This section outlines the description of Module A. It is circulated to the competitors and experts 3 months prior to the competition. This outline only describes the basic information of module A. The actual test project module will be created by external Test Project Developers using this outline as a guide. The module description will be presented on C-2 to all experts. The marking scheme will not be presented or supplied to competitors or experts during the competition.

3.1 INTRODUCTION

Module A will focus on front-end development and browser APIs. The object of this module is to create a website for a specified client. The breakdown of points according to the Technical Description can be found in a table at the end of this section.

3.2 DESCRIPTION OF PROJECT AND TASKS

The competitors will be asked to create two websites for a specified client.

The first website focuses on client-side interactivity with various browser APIs that can include but are not limited to the Geolocation API and the HTML Drag and Drop API. Detailed requirements, as well as images, icons, text, and other media to use, will be provided by the client.

For the second website, competitors will be asked to create a static "one-page" website for the same client. It has to implement responsive design, use different types of media, and conform with accessibility standards. The client will supply the competitors with a defined website structure and will therein define all the sections of the website. The client will also provide all content for the website, such as text, images, and other media.

The responsiveness will be evaluated using three different viewports: mobile, tablet, and desktop. The exact resolutions will be described in the actual module description.

No server-side framework will be allowed for module A but client-side libraries can be used. CSS pre-processors may be used. Framework and library availability will be limited and will be decided by all experts using the EuroSkills forums.

3.3 ASSESSMENT

Module A will be assessed using the latest stable version of Google Chrome and Firefox. HTML and CSS will be assessed using W3C validators. Accessibility will be tested using axe.

Where possible, automated end-to-end tests with Cypress will be used to assess measurement marks.

3.4 COMPETITION TIME

Competitors will have **6.5 hours** to complete module A.

3.5 MARK DISTRIBUTION

The table below outlines how marks are broken down and how they align with the WorldSkills Occupation Standards (WSOS). Please read the Technical Description for a full explanation of the WorldSkills Occupation Standards.

WSOS SECTION	DESCRIPTION	POINTS
1	Work organization and self-management	2
2	Communication and interpersonal skills	1
3	Website design	10
4	Layout	12
5	Front-End Development	10
6	Back-End Development	0
7	Content Management Systems	0
	Total	35

4 MODULE B – API DEVELOPMENT & CONSUMPTION

This section outlines the description of Module B. It is circulated to the competitors and experts 3 months prior to the competition. This outline only describes the basic information of module B. The actual test project module will be created by external Test Project Developers using this outline as a guide. The module description will be presented on C-2 to all experts. The marking scheme will not be presented or supplied to competitors or experts during the competition.

4.1 INTRODUCTION

Module B will focus on API development and consumption. The object of this module is to create a web application for a specified client with a separate API and frontend. For competitors that are not able to implement all features of the API, a mock API will be provided to still allow them to create a fully working frontend. The breakdown of points can be found in a table at the end of this section.

4.2 DESCRIPTION OF PROJECT AND TASKS

The competitors will be asked to create a web application that is divided into a separate RESTful API and a frontend.

The RESTful API will use a MySQL database provided by the client. The client will also provide a list of all desired API endpoints as well as a detailed description of each request and the expected response. As the client is already in contact with a different agency to create a native app that will consume the same API, the API needs to be exactly implemented as described, including response format, header fields, and HTTP status codes.

The frontend of the web application will consume the previously created API and provide a user interface for the client's customers that conforms to accessibility standards. The client will provide you any content needed for the frontend, such as images, icons, text, and other media.

The web application will implement login functionality and should consider security issues. It will also include upload functionality for images.

4.3 ASSESSMENT

Module B will be assessed using the latest stable version of Firefox. HTML and CSS will be assessed using W3C validators. Accessibility will be tested using axe.

Where possible, automated unit and end-to-end tests with PHPUnit and Cypress will be used to assess measurement marks.

4.4 COMPETITION TIME

Competitors will have **5.5 hours** to complete module B.

4.5 MARK DISTRIBUTION

The table below outlines how marks are broken down and how they align with the WorldSkills Occupation Standards (WSOS). Please read the Technical Description for a full explanation of the WorldSkills Occupation Standards.

WSOS SECTION	DESCRIPTION	POINTS
1	Work organization and self-management	2
2	Communication and interpersonal skills	1
3	Website design	6
4	Layout	4
5	Front-End Development	10
6	Back-End Development	14
7	Content Management Systems	0
	Total	37

5 MODULE C – CONTENT MANAGEMENT SYSTEMS

This section outlines the description of Module C. It is circulated to the competitors and experts 3 months prior to the competition. This outline only describes the basic information of module C. The actual test project module will be created by external Test Project Developers using this outline as a guide. The module description will be presented on C-2 to all experts. The marking scheme will not be presented or supplied to competitors or experts during the competition.

5.1 INTRODUCTION

Module C will focus on Content Management System. The object of this module is to create a website for a specified client. The breakdown of points according to the Technical Description can be found in a table at the end of this section.

5.2 DESCRIPTION OF PROJECT AND TASKS

The competitors will be asked to create a multi-page website using a CMS for a specified client. They are requested to install and configure the CMS as well as additional plugins provided by the client.

A custom theme has to be created to match the client's requirements.

The client will supply the competitors with a defined website structure and will therein define all the pages and sections of the website. The client will also provide all content for the website, such as text, images, and other media.

CMS availability will be limited and will be decided by all experts using the EuroSkills forums.

5.3 ASSESSMENT

Module C will be assessed using the latest stable version of Google Chrome. HTML and CSS will be assessed using W3C validators. Accessibility will be tested using axe.

Where possible, automated end-to-end tests with Cypress will be used to assess measurement marks.

5.4 COMPETITION TIME

Competitors will have **3 hours** to complete module C.

5.5 MARK DISTRIBUTION

The table below outlines how marks are broken down and how they align with the WorldSkills Occupation Standards (WSOS). Please read the Technical Description for a full explanation of the WorldSkills Occupation Standards.

WSOS SECTION	DESCRIPTION	POINTS
1	Work organization and self-management	1
2	Communication and interpersonal skills	1
3	Website design	6
4	Layout	4
5	Front-End Development	0
6	Back-End Development	0
7	Content Management Systems	8
	Total	20

6 MODULE D – SPEED CHALLENGE

This section outlines the description of Module D. It is circulated to the competitors and experts 3 months prior to the competition. This outline only describes the basic information of module D. The actual test project module will be created by external Test Project Developers using this outline as a guide. The module description will be presented on C-2 to all experts. The marking scheme will not be presented or supplied to competitors or experts during the competition.

6.1 INTRODUCTION

Module D will focus on several mini test projects. The object of this module is to implement many smaller tasks from all topics in web development. The breakdown of points according to the Technical Description can be found in a table at the end of this section.

6.2 DESCRIPTION OF PROJECT AND TASKS

The competitors will be asked to complete many smaller tasks.

Tasks can include but are not limited to implement PHP or JavaScript functions according to a provided documentation of that function, manipulate files and images using PHP, create and style a single UI element or parts of a website, or create interactive features with JavaScript.

All tasks will be categorized into three levels according to the estimated time it takes to complete them: easy, medium, and hard. The different levels will award a different number of points for the completion of such a task.

6.3 ASSESSMENT

This module will be fully automated unit and end-to-end tested by:

- PHPUnit for PHP Tasks
- Mocha for JavaScript tasks that do not require user interactivity
- Cypress using Google Chrome for HTML/CSS tasks and JavaScript tasks that require user interactivity

The assessment using the automated tests will be done live during the competition and the real-time ranking will be visible to the visitors of the competition.

6.4 COMPETITION TIME

Competitors will have **1.5 hours** to complete module D.

Module D will be split into two independent parts (**0.5 hours** and **1 hour**) that will get completed on two different days.

6.5 MARK DISTRIBUTION

The table below outlines how marks are broken down and how they align with the WorldSkills Occupation Standards (WSOS). Please read the Technical Description for a full explanation of the WorldSkills Occupation Standards.

WSOS SECTION	DESCRIPTION	POINTS
1	Work organization and self-management	0
2	Communication and interpersonal skills	0
3	Website design	0
4	Layout	2
5	Front-End Development	2
6	Back-End Development	2
7	Content Management Systems	0
	Total	6

7 MODULE E – TEAM CHALLENGE

7.1 INTRODUCTION

Module E will be developed by EuroSkills experts. The external Test Project Developers will not have any influence in this module.

7.2 COMPETITION TIME

Competitors will have **2 hours** to complete module E.

7.3 MARK DISTRIBUTION

The table below outlines how marks are broken down and how they align with the WorldSkills Occupation Standards (WSOS). Please read the Technical Description for a full explanation of the WorldSkills Occupation Standards.

WSOS SECTION	DESCRIPTION	POINTS
1	Work organization and self-management	0
2	Communication and interpersonal skills	2
3	Website design	0
4	Layout	0
5	Front-End Development	0
6	Back-End Development	0
7	Content Management Systems	0
	Total	2