



General Description

Introduction

This document describes the ICT Regional Championships in the category Web Technologies.

The competition is divided into three to five completely independent tasks. You will have **three hours** to complete as many tasks as possible. You are free to perform the required tasks with all the skills you have using the tools provided.

To provide all participants with the same starting situation, you get a virtual Ubuntu machine at the competition with all tools preinstalled required to solve the tasks (see the tools section for more information). The description and tasks are included in the virtual machine. All work has to be completed within this virtual machine. Any further information about the tasks and the delivery of your work you will get at the championship.

i Changes in 2022

For the first time, the backend development part is no longer restricted to PHP. From now on, **Node.js** can also be used for all backend development tasks.

Also, the championship will be done on the competitor's own laptops. Please read the [BYOD](#) section for more information.

Bring your own device

Competitors will use their own devices for the championship. This also has the effect that internet usage is no longer restricted. Please note that any communication about the championship tasks, or the exchange of the tasks or solutions, is strictly prohibited and will result in disqualification of all involved parties from the current and future championships.

The virtual machine for the championship will be distributed a few days before it takes place to give everyone enough time for downloading it. The VM features full disk encryption and the password to decrypt the filesystem will be shared on the competition day.

The following **software is required** to use the provided virtual machine:

- For Windows/Linux: **VMware Workstation Player** version 14 or higher (free)
- For Mac: **VMware Fusion Player** version 10 or higher (free)

It is suggested to download and test the preparation VM (see [Preparation VM](#) section). The preparation VM is built as closely as possible to the final VM that will be provided for the championship and will help you to make sure that everything runs smoothly.

Rules

To perform the tasks, the following rules apply:

- The use of any communication is prohibited (mobile, tablet, chats, etc.).
- No external storage can be used (USB, memory card, etc.).
- You are not allowed to talk with other candidates (offline or online).
- No sound devices (headset, headphones, etc.) can be used.

Rating

For each task, a marking scheme is given that you can check if you have done all the required work. We cannot provide you with any more information here. At the competition, check the marking scheme and set your own priorities - to avoid losing too much time working on less weighted tasks.

Automated tests and rating

For some tasks, you can execute automated tests (e.g. unit tests or end-to-end tests). Instructions will be given in the tasks on how to execute them. These tests are then also used to rate your work. If a test runs successfully on your virtual machine, you will get the corresponding points.

Tools

The tools available to perform the tasks at the championship are:

- Atom
- Eclipse IDE for PHP Developers
- GIMP Image Editor
- Google Chrome
- Mozilla Firefox
- PhpMyAdmin
- PhpStorm
- Sublime Text
- Visual Studio Code
- WebStorm
- Zeal (Documentation Browser)

Preparation VM

To allow familiarization with the environment, installed editors, and their plugins, a preparation VM is provided and can be downloaded here: <https://files.skills17.ch/regional/2022/preparation-vm.zip> Please read the README.pdf provided within the zip archive for more information about how to use it. Also, note that this VM is provided as a best effort and everything is still subject to change for the final championship VM.

Documentation

To perform the tasks of this project, you are given the application Zeal which includes the following manuals:

- CSS
- HTML
- JavaScript
- MySQL
- PHP

If some additional technology is tested or a framework is used, you will also be provided with the documentation.

One More Thing

! It is suggested that you read carefully through the assignment and look through the provided content for the website such as the images and text.

You probably will not have enough time to complete all the formal and technical criteria of the tasks. In this case, you must decide the criteria to achieve in priority to win as many points as possible.

Example Championship Tasks

On www.ict-berufsbildung.ch you will find the tasks from the regional championship 2021 to get an impression of how the championship could look like. Please note that the topics are subject to change and Node.js was not yet allowed for the backend task last year and therefore, the provided code in the backend part is only for PHP.

On the next page, you find a list of skills that can be tested. Also, be prepared for some changes on the design, styles of the tasks, or work you have to do.

Tested Skills

Following skills can be tested during the championship:

General

Very good knowledge in programming methods, paradigms, and code understanding.

- Object-oriented programming.
- Procedural programming.
- Usage of different data formats (CSV, XML, JSON).
- Reading documentations.
- Understanding existing code.

Frontend Development

Very good knowledge in writing JavaScript up to ECMAScript 2021.

- Object-oriented JavaScript programming.
- Scope & closures.
- Usage of a framework.

Backend Development

Very good knowledge in one of the available backend programming languages:

- PHP up to version 8.1
- Node.js up to version 16

 You are free to choose which language you want to use for backend development. All tasks can be done in both languages.

SQL

Basic knowledge in writing SQL queries.

HTML

Good knowledge in writing HTML up to HTML5.

- Basic HTML usage.
- Knowledge of HTML tags and attributes and their meaning.
- Usability and accessibility.

CSS

Good knowledge in writing stylesheets up to CSS3.

- Basic CSS usage.
- Understanding of selectors.
- Pseudo-classes.
- Usage of media queries.
- Inheritance.
- Animations.

Regex

Basic knowledge in writing regex expressions.

 Since the tasks of the championship change annually, not all skills can be checked equally.