



**PERTANDINGAN  
WORDLSKILLS MALAYSIA  
KATEGORI BELIA (WSMB)  
TAHUN 2024**

**WEB TECHNOLOGIES**

**TECHNICAL DESCRIPTION**

**JABATAN PEMBANGUNAN KEMAHIRAN  
KEMENTERIAN SUMBER MANUSIA**

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## About Web Technologies

Web technologies encompasses many different skills and disciplines in the design, development, production, and maintenance of websites. The skills required of a web developer are diverse, often to the point it is difficult for a developer to excel in all aspects. As a result, a team may cover the Web design process, with each member of the team having their own strengths, specialties, and role in the development process.

Web technologies involve implementing specific solutions by using web technologies that follow the business rules and objectives outlined by the client. Web developers develop a professional relationship with their clients, interacting with them in order to develop a deep understanding of the requirements, and convert these into a website specification. Strong design and communication skills, coupled with research techniques and a grasp of target audiences, markets and trends, will ensure initial client satisfaction.

Having completed the website content strategies, system architecture planning, user interface design, and user experience design, the Web developer then integrates the website with third party tools and platforms. During the development process Web developer implement the design, use their programming skills in order to create dynamic functionalities, test, and debug the website using a variety of devices. The current trend is to also integrate the website with social media to take advantage of the online marketing platforms available. All these skills may apply equally to the re-design or an upgrade of an existing website.

## Recommended Entry Requirements

- This competition is open to all Malaysian citizen and age must not be older than 21 years in the year of the competition.

The categories of applicant who are not eligible to compete:

- Gold medal winners are not eligible to participate in the same skills area in the future competition
- Secretariat, question setters and panel of judges who were involved in the competition.

## Competition Format

- This competition is an individual event.
- The participant must develop all task required in the test project at the competition venue.
- The participant only can use provided development tools and materials in the competition workstation.
- The participant is required to complete the test project within the specified

period of time.

## Time Allocated

15 to 18 hours are allocated for the competition which comprise of four modules namely Web Design/Layout, CMS, Client-side and Server-side programming. Each module is allocated for between 3 to 5 hours.

## Scope of Work

Participants must meet the following requirements:

<p><b>Web Page Graphic Design</b></p> <p><i>A competitor shall know and understand:</i></p> <ul style="list-style-type: none"> <li>• <i>Structure and common elements of web-pages of various types and purposes;</i></li> <li>• <i>Issues connected with the cognitive, social, cultural, technological, and economic conditions during the designing;</i></li> <li>• <i>How to create and optimize the graphics for the Internet;</i></li> <li>• <i>How to design based on the submitted guidelines and specifications;</i></li> <li>• <i>What knowledge and skills are necessary for the selection of color, typography, and composition;</i></li> <li>• <i>Principles and methods of graphics adaptation for its use in the web-sites;</i></li> <li>• <i>Rules of supporting the corporate style, brand, and style guidelines;</i></li> <li>• <i>Limitations of the mobile devices and screen resolutions for viewing the websites;</i></li> <li>• <i>Principles of aesthetic and creative designing;</i></li> <li>• <i>Modern styles and tendencies in the design.</i></li> </ul> <p><i>A competitor shall know how:</i></p> <ul style="list-style-type: none"> <li>• <i>Create and analyze the developed visual responses to the raised questions, including about the hierarchy, typography, aesthetics, and composition;</i></li> <li>• <i>Create, use, and optimize the images for the web-sites;</i></li> <li>• <i>Analyze the target market and the products promoted with the use of the design;</i></li> <li>• <i>Choose the design solution suiting the target market the best;</i></li> <li>• <i>Consider each element added to the project during the design development;</i></li> <li>• <i>Use all required elements during the design development;</i></li> <li>• <i>Consider the existing rules of corporate style;</i></li> <li>• <i>Create a responsive design which will be correctly displayed by various devices and with various resolutions;</i></li> <li>• <i>Stick to the original concept of the project design and improve its visual attractiveness;</i></li> <li>• <i>Turn an idea into an aesthetic and creative design.</i></li> </ul>
<p><b>Page Layout</b></p>

*A competitor shall know and understand:*

- *Methods of providing the physically challenged audience with the access to the web-sites;*
- *World Wide Web Consortium (W3C) HTML and CSS standards;*
- *Methods of layout of web-sites and their standard structure;*
- *Web accessibility initiative (WAI);*
- *How to apply the relative CSS rules and selectors for the obtainment of expected result;*
- *The best practices for the Search Engine Optimization (SEO) and Internet marketing;*
- *How to insert, integrate and animation, audio, video, and other multimedia information and to control the behavior of other elements on the page.*

*A competitor shall know how:*

- *Create html-pages of the web-site based on the submitted graphic layouts of their design;*
- *Correctly use the CSS for the provision of uniform design in different browsers;*
- *Create the adaptive web-pages able to stay functioning on various devices and with various resolutions;*
- *Create the web-sites in full compliance with the current standard W3C (<http://www.w3.org>);*
- *Create and modify the web-sites considering the Search Engine Optimization.*

## **CMS**

The individual needs to know and understand:

- Benefits and limitations of open source Content Management Systems
- How to find, choose and implement suitable themes
- How to find, choose and implement suitable plugins/modules
- How to implement client side functionalities to CMS web sites
- Understand the need for maintenance and updates to CMS plugins and modules for security

The individual shall be able to:

- Install, configure and update Content Management Systems
- Install, configure and update CMS plugins/modules
- Use and modify open source theme starter to create theme for CMS
- Create custom themes/templates for Content Management Systems
- Create custom plugins/modules
- Create custom widgets

## **Clientside Programming**

*A competitor shall know and understand:*

- *Capacities of the client programming language JavaScript;*
- *How to develop a code using the open libraries.*

*A competitor shall be able to:*

- *Develop the animation for the web-site to raise its accessibility and visual attractiveness;*
- *create and modify JavaScript for the improvement of the web-site functioning and interactivity;*
- *Use the open libraries.*

## **Serverside Programming**

*A competitor shall know and understand:*

- *How to develop PHP (PHP: Hypertext Preprocessor) code at the procedure and object-oriented levels;*
- *How to use the open libraries and Frameworks;*
- *Widespread models of organization and data storage and their implementation with the use of MySQL;*
- *FTP (File Transfer Protocol), the specific features of its client-side and server-side use as well as the software necessary for it;*
- *How to develop the web-services with the use of PHP, XML (Extensible Markup Language), and JSON;*
- *Various programming methods;*
- *How to develop a program code in accordance with the parameters (for example, MVC (Model View Controller));*
- *How to develop a safe web-application.*

*A competitor shall know how:*

- *Create a library and modules for the repetitive tasks;*
- *Develop the web-applications with the access to MySQL database and the web-services on the requests of the clients;*
- *Interpret the ER (Entity-Relationship) diagrams into a functioning database;*
- *Create the SQL (Structured Query Language) requests using the correct syntax (classic and PDO (PHP Data Object));*
- *Provide security (the web-application resistance to the attacks and cracking);*
- *Integrate the existing program code with the API (Application Programming Interfaces), libraries, and frameworks;*
- *Develop an object-oriented program code.*

## **Assessment and Marking**

Participants will be assessed based on measurement (objective) marking. The marking scheme for the competition is as detailed as follows:

CRITERION	JUDGEMENT MARKS	MEASUREMENT MARKS	TOTAL
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A	Web design & layout	15	5	20
B	CMS	15	5	20
C	Client-side Programming	27	3	30
D	Server-side Programming	27	3	30
<b>TOTAL</b>		<b>84</b>	<b>16</b>	<b>100</b>

## **Infrastructural Requirements**

### **Participants**

- Every participant will be allowed to access a workstation with a bundle of software installed for development of the test project.
- All work must be implemented and saved at the local workstation or at the remote server provided by the organizer based on instruction in the test project.
- Organizer will provide all the facilities required.

### **Judges**

- A server where all participants upload their finish test project for marking.