WORLDSKILLS STANDARD SPECIFICATION

Skill 09
IT Software Solutions for Business

THE WORLDSKILLS STANDARDS SPECIFICATION (WSSS)

GENERAL NOTES ON THE WSSS

The WSSS specifies the knowledge, understanding and specific skills that underpin international best practice in technical and vocational performance. It should reflect a shared global understanding of what the associated work role(s) or occupation(s) represent for industry and business (www.worldskills.org/WSSS).

The skill competition is intended to reflect international best practice as described by the WSSS, and to the extent that it is able to. The Standards Specification is therefore a guide to the required training and preparation for the skill competition.

In the skill competition the assessment of knowledge and understanding will take place through the assessment of performance. There will not be separate tests of knowledge and understanding.

The Standards Specification is divided into distinct sections with headings and reference numbers added.

Each section is assigned a percentage of the total marks to indicate its relative importance within the Standards Specification. The sum of all the percentage marks is 100.

The Marking Scheme and Test Project will assess only those skills that are set out in the Standards Specification. They will reflect the Standards Specification as comprehensively as possible within the constraints of the skill competition.

The Marking Scheme and Test Project will follow the allocation of marks within the Standards Specification to the extent practically possible. A variation of five percent is allowed, provided that this does not distort the weightings assigned by the Standards Specification.

WORLDSKILLS STANDARDS SPECIFICATION

SECTION		RELATIVE IMPORTANCE (%)
1	**Work organization and management**	5
	The individual needs to know and understand: • The principles and practices that enable productive team work • The principles and behaviour of systems • The aspects of systems that contribute to sustainable products, strategies and practices • How to take initiatives and be enterprising in order to identify, analyse and evaluate information from a variety of sources	
	The individual shall be able to: • Plan each day's production schedule according to available time and take into account time limitations and deadlines • Use a computer or device and a range of software packages • Apply research techniques and skills to keep up-to-date with the latest industry guidelines • Review own performance against the expectations and needs of the client and organization	
2	**Communication and interpersonal skills**	5
	The individual needs to know and understand: • The importance of listening skills • The necessity of using discretion and confidentiality when dealing with clients • The importance of resolving misunderstandings and conflicting demands • The importance of establishing and maintaining customer confidence and productive working relationships • The value of written and oral communication skills	

The individual shall be able to:
- Use literacy skills to:

  - Follow documented instructions from a supplied guide
  - Interpret workplace instructions and other technical documents
  - Keep up-to-date with latest industry guidelines

- Use oral communication skills to:

  - Discuss and offer suggestions regarding a system specification
  - Keep client updated regarding system progress
  - Negotiate with client regarding project budget and timeline
  - Gather and confirm client requirements
  - Present the proposed and final software solution

- Use written communications skills to:

  - Document a software system (e.g. technical document, user guide)
  - Keep client updated regarding system progress
  - Confirm that the created application meets the original specifications and obtain user sign-off for completed system

- Use team communication skills to:

  - Collaborate with others to develop the required outcomes
  - Work well in group problem solving

- Use project management skills to:

  - Prioritize and schedule tasks
  - Allocate resources to tasks
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3	Problem solving, innovation and creativity	5
	The individual needs to know and understand: • The common types of problem which may occur within software development • The common types of problem which may occur within business organization • Diagnostic approaches to problem solving • Trends and developments in the industry including new platforms, languages, conventions, and technical skills	

The individual shall be able to:
- Use analytical skills to:

  - Synthesize complex or diverse information
  - Determine the functional and non-functional requirements of the specification

- Use investigation and learning skills to:

  - Obtain user requirements (e.g. interviews, questionnaire, document search and analysis, joint application design, and observation)
  - Research encountered problems independently

- Use problem-solving skills to:

  - Identify and resolve problems in a timely manner
  - Gather and analyse information skilfully
  - Develop alternatives for decision making, select the most appropriate alternative and produce the required solution

4	Analysing and designing software solutions	30

The individual needs to know and understand:
- The importance of considering all possible options and deriving the best solution based on sound analytical judgment and the client's best interests
- The importance of using system analysis and design methodologies (e.g. Unified Modelling Language, Model-View-Control (MVC) software framework, Design Patterns)
- The need to be up to date with new technologies and make a judgment about the appropriateness of adopting them
- The importance of optimization of system design with an emphasis on modularity and reusability

The individual shall be able to:
- Analyse systems using:

  - Use case modelling and analysis (e.g. Use Case Diagram, Use Case Description, Actor Description, Use Case Package)
  - Structural modelling and analysis (e.g. Object, Class, Domain Class Diagram)
  - Dynamic modelling and analysis (e.g. Sequence Diagram, Collaboration Diagram, State Diagram, Activity Diagram)
  - Data modelling tools and techniques (e.g. Entity Relationship Diagram, Normalization, Data Dictionary)

- Design systems using:

  - Class Diagram, Sequence Diagram, State Diagram, Activity Diagram
  - Object design and package
  - Relational or object database design
  - Human-computer interface design
  - Security and controls design
  - Multi-tier application design

5	Developing software solutions	40
	The individual needs to know and understand: • The importance of considering all possible options and deriving the best solution to meet the user requirements and the client's best interests • The importance of using system development methodologies (e.g. object-oriented technology) • The importance of considering all normal and abnormal scenarios, and exception handlings • The importance of following standards (e.g. code convention, style guide, user interface designs, managing directories and files) • The importance of accurate and consistent version control • Using existing code as a basis for analysis and modifications • The importance of selecting the most appropriate development tool from those provided	
	The individual shall be able to: • Use database management system to construct, store and manage the data for the required system (MySQL or SQL Server) • Use latest software development environments and tools to modify existing codes and write new codes of a client-server based software solution (.NET or Java) • Evaluate and integrate appropriate libraries and frameworks into the software solution • Build multi-tier applications • Construct a web enabled and/or mobile interface for client-server based system	
6	Testing software solutions	10
	The individual needs to know and understand: • Troubleshoot common software applications problems • The importance of thoroughly tested solutions • The importance of documenting testing	
	The individual shall be able to: • Plan testing activities (e.g. unit testing, volume testing, integration testing and acceptance testing) • Design test cases with data and check results of test cases • Debug and handle errors • Report on the test process	
7	Documenting software solutions	5
	The individual needs to know and understand: • The importance of thoroughly documenting developed solutions	

	The individual shall be able to:
	• Produce professional quality:
	   • User documentation
	   • Technical documentation	