

WORLD SKILLS SINGAPORE 2025 TECHNICAL DESCRIPTION



IT SOFTWARE SOLUTIONS FOR BUSINESS

Skill Competition

1. This competition covers a broad range of activities to analyse, design, develop, test and document software solutions.
2. Conducted as an individual event, competitors are given 15 to 20 hours over 3 days to complete the Test Projects for this competition.

Scope of Work

3. Competitors must be able to demonstrate competencies in the following areas:
 - 3.1. Work Organization and Management
 - a) Plan each day's production schedule according to available time and take into account deadlines and time limitations
 - b) Use a computer or device and a range of software packages
 - c) Apply research techniques and skills to keep up-to-date with the latest industry guidelines
 - d) Review own performance against the expectations and needs of the client and organization
 - 3.2. Communication and Interpersonal Skills
 - a) 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
 - b) Use oral communication skills to:
 - Discuss and offer suggestions regarding a system specification
 - Gather and confirm client requirements
 - Present the proposed and final software solution
 - c) 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
 - d) Use project management skills to:
 - Prioritize and schedule tasks
 - Allocate resources to tasks

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3.3. Problem Solving, Innovation and Creativity

- a) Use analytical skills to:
 - Synthesize complex or diverse information
 - Determine the functional and non-functional requirements of the specification
- b) 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
- c) Use problem-solving skills to:
 - Identify and resolve problems in a timely manner
 - Gather and analyse information skillfully
 - Develop alternatives for decision making, select the most appropriate alternative and produce the required solution

3.4. Analysing and Designing Software Solutions

- a) 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. 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)
- b) Design systems using:
 - Class Diagram, Sequence Diagram, State Diagram, Activity Diagram
 - Object design and package
 - Relational or object database design
 - User Interface and User Experience (UI/UX) Design
 - Security and controls design
 - Multi-tier application design

3.5. Developing Software Solutions

- a) Use database management system to construct, store and manage the data for the required system (MySQL or Microsoft SQL Server). For the purpose of this competition only relational databases will be used.

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- b) Use latest software development environments and tools to modify existing codes and write new codes of a client-server based software solution
- c) Evaluate and integrate appropriate libraries and frameworks into the software solution
- d) Build standalone, multi-tier and/or client-server applications
- e) Construct application functionalities for desktop and/or mobile

3.6. Testing Software Solutions

- a) Plan testing activities (e.g. unit testing, volume testing, integration testing and acceptance testing)
- b) Design test cases with data and check results of test cases
- c) Debug and handle errors
- d) Report on the test process

3.7. Documenting Software Solutions

- a) Produce professional quality:
 - User documentation
 - Technical documentation
 - Solution Presentation Kit

Assessment

- 4. Competitors will be assessed based on measurement (objective) and judgement (subjective) marking.
- 5. The assessment criteria and relative weighting of marks are as follows:

Criterion		Marks
A	Work organization and management	5
B	Communication and interpersonal skills	5
C	Problem solving, innovation, creativity	5
D	Analysis and design software solutions	30
E	Developing software solutions	40
F	Testing software solutions	10
G	Documenting software solutions	5
Total		100

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Materials, Equipment, and Tools

Stationery & Materials

6. The following stationery will be supplied to each competitor in the competition:
 - Writing paper
 - Pens and pencils – competitors will be allowed to bring in their own pen, pencil, highlighter and ruler
 - Access password to competitor's file resources.
7. No digital and media devices will be allowed into the competition area. Competitors will only be allowed to use their own non-programmable keyboard and mouse with no Bluetooth capability.
8. No music and headphones will be allowed. Only ear plugs are allowed

IT Hardware

9. A microcomputer system with the following minimum configuration may be used in the competition for each competitor:
 - 16 GB of RAM
 - Monitor with 1280x720 resolution (minimum)
 - Wired and/or WI-FI Network
 - Keyboard (QWERTY)
 - Mouse (Wired)
 - USB port

IT Software

10. All competitors must be familiar with the following applications and utilities software:
 - Windows 10
 - MS Visual Studio 2022 Community Edition (with Xamarin included)
 - Workloads:
 - .NET Desktop Development
 - Mobile Development with .NET
 - Individual components:
 - C# and Visual Basic
 - ASP.NET
 - .NET Framework 4.8
 - .NET Core 7.0
 - Entity Framework 6

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- Python (3.12.x)
 - Anaconda (preinstalled with Python)
- JetBrains DataSpell (2024.1.3)
- JetBrains PyCharm Professional (2024.1.6)
- Microsoft SQL Server 2022
- Microsoft SQL Server Management Studio (latest version)
- Android Studio Chipmunk 2021.2.1 (Emulator Nexus without cellular default API 28)
- Microsoft Office Professional Plus 2019
- Microsoft Visio 2024

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