WORLDSKILLS SINGAPORE 2025
TECHNICAL DESCRIPTION
<u>MOBILE APPLICATIONS DEVELOPMENT</u>

<u>Skills Competition</u>

1. This competition covers the full development of a mobile application.

2. Conducted as an individual event, competitors are given 16 hours over 3 days to compete the Test Projects for this competition (3 – 5 Apr 2025). The Familiarization session will be on 2 Apr 2025.

3. The competitors will be required to perform demand analysis, create preliminary design and development of the mobile application, develop core function modules as well as test and delivery the mobile application.

<u>Scope of Work</u>

4. Competitors must be able to demonstrate competences in the following areas:
    4.1 Design
    4.2 Development
    4.3 Testing and Delivery

<u>Test Project Design Requirements</u>

5. Test project modules are to be developed within the framework of the WorldSkills Occupational Standards. Topic can be entertainment, life, health, socializing, journalism, etc.

Module	Assessment Devices	Time (Hours)
Design	Figma	5
Development	Emulator	5
Testing and Delivery	Emulator	3

The three modules are developed under the same topic and based on an offline development system environment. The Android emulators are: Pixel 8 and Pixel Tablet, and the iOS emulators are: iPhone 15 and iPad Pro, 11-inch (M2).

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i)   *Design (C1)*

The competitor needs to know and understand:
- Characteristics and advantages of various development platforms (e.g., iOS, Android)
- The behaviors of mobile application users
- Impact of the features on mobile application products (e.g., size and various parameters)
- Principles and applications of design thinking processes
- The design methods of user interface (UI)
- The design methods of user experience (UE/UX)
- Principles and applications of framework design
- The means of selecting "what works best"
- The design of test plans and procedures
- Principles and applications for creating systems architecture
- The interaction of platforms and systems architecture
- The basis for selecting modules provided by the web services
- Mobile platform system mechanism (Android or iOS)
- SDK architecture and its usage
- Application code frameworks
- Web service, Socket, https protocols
- Architecture design, development, testing, tuning and other technologies, and the use of related tools
- Industry trends and developments, including new platforms, development languages, protocols, and technologies

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ii)   *Core Function Modules Development (C2)*

The competitor needs to know and understand:

- Characteristics and advantages of various development platforms (e.g., iOS, Android)
- The behaviors of mobile application users
- Impact of the features on mobile application products (e.g., size and various parameters)
- Principles and applications of design thinking processes
- The design methods of user interface (UI)
- The design methods of user experience (UE/UX)
- Principles and applications of framework design
- The principles and applications of version control
- Specifications for writing codes
- Principles and applications for creating systems architecture
- The interaction of platforms and systems architecture
- The basis for selecting modules provided by the web services
- Mobile platform system mechanism (Android or iOS)
- SDK architecture and its usage
- Application code frameworks
- Commonly used underlying libraries
- Programme compatibility on various terminal devices
- Web service, Socket, https) protocols
- Database design, SQL query language
- RESTful API design, XML and JSON data format
- Architecture design, development, testing, tuning and other technologies, and the use of related tools
- Basic principles and common design patterns of object-oriented design
- Industry trends and developments, including new platforms, development languages, protocols, and technologies
- The coding specifications and importance of mobile application codes
- Capability of smart terminals such as cameras, GPS, gyroscopes, accelerometers, and Bluetooth
- Visualized data presentation skills (e.g., pie charts, histograms, line graphs, etc.)

The organizers reserve the right to update the Technical Description whenever necessary

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- Prompted issues from the system and intelligent terminals
- Principle of 2D and 3D design of animation
- Mathematical aptitude
- Mobile applications' fault-finding skills.
- Encryption, decryption, signature, etc. of data communication between user terminal and server

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iii)   *Testing and Delivery (C3)*

The competitor needs to know and understand:
- Principles and procedures for product reviews using a range of specialized measures and procedures
- Principles and applications for evaluating efficiency and effectiveness
- Principles and methods for personal performance review
- Principles and techniques for continuous improvement and optimization.
- Performing unit test the existing application source program for troubleshooting
- Optimizing the application according to the existing test cases to ensure that the application passes the test and generate a test report
- Producing presentation documents to report the product development to customers

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Assessment Criteria

Competitors will be assessed based on measurement (objective) and judgement (subjective) marking.

The assessment criteria and relative weighting of marks for tasks are as follows:

	Test Project	Relative Weightage
i	Work organization and management	8%
ii	Communication and interpersonal skills	7%
iii	Sustainable Practice	5%
iv	Initial planning, design and test framework	25%
v	System architecture planning	15%
vi	Implementation and product development	30%
vii	Final product tests, troubleshooting and optimization	10%
	Total	**100%**

Major Tools & Materials

6. The following materials, equipment and software will be used in the competition depending on the option chosen by the competitor prior to the competition:

6.1. Materials
   The following materials will be supplied to each competitor in the competition:
   - Removable data storage media;
   - Stationary for documentation purposes; and
   - Consumables where required for the project(s).

6.2. Equipment
   The following hardware would be provided:
   - High performance laptop (either MacOS or Windows) with network connection
   - Monitor screen

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- USB Mouse
- USB Keyboard

6.3. Software

The following software would be provided depending on the option chosen by the competitor prior to the competition:

Option A (Windows OS)
- Windows 11 Pro (or greater)
- Microsoft Office 365
- Git command line client 2.46.0 (or greater)
- Sourcetree 3.4 (or greater)
- Adobe Acrobat Reader version 24 (or greater)
- Android Studio Jellyfish (or greater)
  - Flutter 3.22 (or greater)
  - Android SDK 34 (or greater)
- Visual Studio Code 1.90 (or greater)
- Figma Online

Option B (Mac OS)
- MacOS Sonoma (or greater)
- Microsoft Office 365
- Git command line client 2.46.0 (or greater)
- Sourcetree 3.4 (or greater)
- Adobe Acrobat Reader version 24 (or greater)
- Xcode 15.0 (or greater)
- Android Studio Jellyfish (or greater)
  - Flutter 3.22 (or greater)
  - Android SDK 34 (or greater)
- Visual Studio Code 1.90 (or greater)
- Figma Online

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