

INFORMATION AND COMMUNICATION TECHNOLOGY

Mobile Applications Development



WorldSkills Occupational Standards

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WorldSkills Occupational Standards (WSOS)

Occupation description and WSOS

The name of the occupation is

Mobile Applications Development

Description of the associated work role(s) or occupation(s)

Mobile Applications Development refers to applications development for mobile communication terminals. With the onset of the mass global information age, the market for these applications is booming, since “apps” are widely and increasingly used in people's work, life, and entertainment. The development of mobile applications is overtaking more traditional communication, improving the efficiency of work, and massively extending services and benefits for users. This is leading to new opportunities for employment and self-employment in organizations of all sizes, entrepreneurship and contracting. These roles especially appeal to young adults, due to their confidence and expertise with new technologies.

Depending on the Mobile Applications Developer's relationship to clients and their needs, the role may be deep and highly specialized, or broad, across the entire applications development process. An employed Developer may have a tightly defined role within a large global company in the digital economy, such as Uber and Alibaba. By contrast, a self-employed contractor expects to have a wide range of development skills in close, short- or longer-term, relationship with a variety of clients and needs. Globally, the expertise in demand covers creativity, design, and technical skills, together with the traversal skills of work organization and management, communication and interpersonal skills, problem solving and innovation.

In summary, the scope and range of the mobile application development role, is to:

- Receive and analyse a brief for planning purposes;
- Apply design thinking to create flow diagrams;
- Within a test-driven development framework, create designs within the given parameters, and in consultation with the client;
- Build the systems architecture, choosing the platform in keeping with the brief;
- Select the required modules, and code the application, regularly testing for functionality;
- Continuously test, modify and optimize the application for functionality, reliability, and optimization, relative to the user experience.

With the growing take-up of services on the go, using smart mobile terminals such as phones, tablets and watches, the role of Mobile Applications Developer offers both strong immediate work opportunities and a basis for involvement in the global evolution of applications development.

General notes on the WSOS

The WSOS 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/WSOS).

The skill competition is intended to reflect international best practice as described by the WSOS, and to the extent that it is able to. The Standard 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 only be separate tests of knowledge and understanding where there is an overwhelming reason for these.

The Standard 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. This is often referred to as the “weighting”. The sum of all the percentage marks is 100. The weightings determine the distribution of marks within the Marking Scheme.

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

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

WorldSkills Occupational Standards

Section	Relative importance (%)
1 Work organization and management	5

The individual needs to know and understand:

- Principles, regulations and standards relating to safe working space and practices
- The importance of personal integrity and ethical standards
- Obligations to clients and users for the security of their data, information, and other types of property
- The need for self-appraisal relative to work demands and expectations
- Options for filling gaps in personal expertise relative to the work in hand
- The nature of contracts and agreements, and the rights and obligations that accompany them
- The availability of the resources required to fulfil clients' requirements
- Good practice in relation to the acquisition, use, storage and maintenance of equipment and materials
- Techniques and options for work planning, scheduling and prioritization
- The importance of methodical work practice, including attention to detail, accuracy, and checking
- The importance of continuing and proactive professional development

The individual shall be able to:

- Organize and maintain a safe and efficient workspace
- Maintain the integrity and confidentiality of systems, data, information and documents at all times
- Acquire, use, maintain, and store all equipment and materials to ensure optimal and sustained performance
- Read, appraise and clarify the rights and obligations tied to formal documentation of all kinds
- Review opportunities, expectations and offers, relative to personal professional capacity, in order to make open, informed choices
- Select, use and keep up to date selected measures for work planning, scheduling and prioritization
- Check and ensure that all specific resources are available for the work in hand
- Meet or enhance the satisfaction of clients and others through self-knowledge, expectation management, and personal efficiency and effectiveness
- Proactively grow personal expertise through research and, professional development.

Section	Relative importance (%)
2 Business, communication, and interpersonal skills for clients and project fulfilment	5

The individual needs to know and understand:

- Principles and applications of costing, budgeting and charging, relative to market factors
- The importance of speaking, listening, and writing skills to communicate with clients, colleagues and others
- Communication and behavioural techniques for preventing and, if necessary, resolving misunderstandings
- The need for discretion and confidentiality when dealing with clients and others
- The importance of establishing and maintaining productive working relationships with colleagues, and team members where relevant
- Conventions and protocols for software documentation
- The principles and applications of record keeping and report writing in relation to the entire work process, from receiving a brief to completion and handover of the agreed work.

The individual shall be able to:

- Prepare for meetings with clients and associates
- Gather, clarify, and confirm client requirements
- Receive, clarify, and interpret briefs and specifications
- Offer and discuss options and alternatives
- Discuss time, costs and fees with client, to reach mutual acceptance
- Document and sort out customer needs
- Use project management skills and techniques to make the most of workplace organization and resources
- Follow instructions from available guidance documentation
- Record each stage of work development
- Keep client regularly updated on progress
- Present proposed and final software solutions
- Prioritize and schedule tasks
- Allocate resources to tasks

Section	Relative importance (%)
3 Initial planning, design, and test framework	10

The individual needs to know and understand:

- Characteristics and advantages of various development platforms (e.g. iOS, Android)
- The behaviours 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”
- Principles and applications for flow diagrams
- The principles and applications of version control
- The design of test plans and procedures
- A range of testing methods and tools (e.g. unit test, functional test, performance test, etc.)
- Specifications for writing codes
- Methods for writing detection program documentation.

The individual shall be able to:

- Choose the most suitable development platforms
- Use UI design software such as Adobe XD, Sketch and Sigma
- Conduct prototype and visual design on the application user interface (UI)
- Use UI application specifications of iOS or Android systems
- Produce user experience (UE) documentation for applications
- Produce standardized documentation of applications’ brand image, following clients’ brand guidelines
- Plan and design marketing solutions for mobile applications store
- Plan test cases
- design specifications for writing test reports.

Section	Relative importance (%)
4 Systems architecture planning	40

The individual needs to know and understand:

- Principles and applications for creating systems architecture
- The interaction of platforms and systems architecture
- The basis for the choice of Flutter or React Native
- 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, http(s) 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 individual shall be able to:

- Design the interface based on visual design drafts
- Review, select and use open source libraries and frameworks (e.g. using Google Map)
- Develop corresponding functions according to the features of different mobile devices
- Obtain the mobile terminal device's performance parameters from mobile applications
- Implement visualized data statistical analysis and screening in mobile applications
- Handle common issues caused by servers, databases, etc.

5 Implementation and product development	10
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The individual needs to know and understand:

- 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.)
- 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

Section	Relative importance (%)
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The individual shall be able to:

- Conduct integrated development with existing code using API (application programming interface)
- Realize user interaction effects, animation, and data interaction via programming
- Create modular and reusable development codes
- Develop Android or iOS interface, and complete compatibility testing
- Use Android or iOS development language to implement application development in common design patterns
- Use high-performance programming and performance tuning on Android or iOS platform
- Apply the test cases
- Plan and implement frequent tests to ensure efficient development
- Record test results and resolve issues
- Debug the mobile applications to identify issues and write normalized codes to resolve the issues
- Complete interface and functional compatibility testing on different platforms and screen resolutions
- Simulate testing and troubleshooting of sensors on different devices
- Record test results
- Implement automated tests of the standardized application programming interfaces
- Conduct performance testing and performance tuning (APIs).

6	Final product tests, troubleshooting, and optimization	15
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The individual 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.

Section	Relative importance (%)
<p>The individual shall be able to:</p> <ul style="list-style-type: none"> • Complete all tests to verify functionality • Bring together all aspects of the project • Analyse and evaluate each stage of the project, relative to <ul style="list-style-type: none"> • The client’s specification • The quality of the user experience • Bring together test results to produce a final report • Evaluate own performance relative to the given brief • Review the completed project in order to ask “how would I move this on?” “How would I take this to the next stage?” • Prepare and present proposals for optimization to line managers and/or clients 	
Total	100

References for industry consultation

WorldSkills is committed to ensuring that the WorldSkills Occupational Standards fully reflect the dynamism of internationally recognized best practice in industry and business. To do this WorldSkills approaches a number of organizations across the world that can offer feedback on the draft Description of the Associated Role and WorldSkills Occupational Standards on a two-yearly cycle.

In parallel to this, WSI consults three international occupational classifications and databases:

- ISCO-08: (<http://www.ilo.org/public/english/bureau/stat/isco/isco08/>)
- ESCO: (<https://ec.europa.eu/esco/portal/home>)
- O*NET OnLine (www.onetonline.org/)

There were no responses to the requests for feedback this cycle.