



NATIONAL SKILLS QUALIFICATION

LEVEL 4

TITLE:

Mobile Application Development

YEAR: 2024

NATIONAL SKILLS QUALIFICATION

LEVEL 4 - MOBILE APPLICATION DEVELOPMENT

GENERAL INFORMATION

QUALIFICATION PURPOSE

This qualification is aimed at developing competence in mobile applications development across different platforms. The focus is on generic mobile programming language training, communication skills, personal development and workplace experience.

QUALIFICATION OBJECTIVES

To achieve this qualification, the Mobile Application Developer should gain the following competencies:

1. Understanding types of programming languages in relation to mobile development.
2. Implement basic programming operations and functions.
3. Relate the programming language to the mobile application.
4. Develop mockups and prototypes.
5. Implement prototype on multiple screen sizes.
6. Demonstrate use of event listeners and triggers in a mobile app.
7. Identify various map services that can be used in a mobile app.
8. Implement use of map API in geolocation and reverse geolocation.
9. Demonstrate the use of SMS and Email in the mobile app.
10. Understand basic network and connectivity tools.
11. Implement network calls that consume APIs.
12. Understand use of broadcast and notifications.
13. Implement security mechanisms in mobile application.

Mandatory Units

S/No /Unit No	Reference Number	NOS Title	Credit Value	Guided Learning Hours	Remark
01	ICT/MOB/001/L4	Occupational Health and Safety	2	20	Level 4
02	ICT/MOB/002/L4	Communication and Interpersonal Skills	2	20	Level 4
03	ICT/MOB/003/L4	Teamwork	2	20	Level 4
04	ICT/MOB/004/L4	Advanced programming languages	4	40	Level 4
05	ICT/MOB/005/L4	User Interaction Design	4	40	Level 4
06	ICT/MOB/006/L4	Using Maps and Location Services	4	40	Level 4
07	ICT/MOB/007/L4	Network Services	4	40	Level 4
08	ICT/MOB/008/L4	Notifications & broadcast services	4	40	Level 4
09	ICT/MOB/009/L4	Messaging services	4	40	Level 4
10	ICT/MOB/010/L4	Security in Mobile Applications	4	30	Level 4
TOTAL			28	280	

NATIONAL SKILL QUALIFICATION
LEVEL 4 - MOBILE APPLICATION DEVELOPMENT

Unit 1: OCCUPATIONAL HEALTH AND SAFETY

Unit Reference Number: ICT/MOB/001/L4

Level: 4

Credit Value: 2

Guided Learning Hours: 20

Unit Purpose: This unit specifies the competencies required to demonstrate understanding of safe work practices.

Unit Objectives

At the end of this unit, the learner should be able to:

1. Understand about workplace safety.
2. The correct use of signs and symbols.
3. identifying and reducing risks of hazards in the work environment.

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS), etc.

UNIT 01: OCCUPATIONAL HEALTH AND SAFETY

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA	Evidence Type					Evidence Ref. Page No.				
The learner will:		The learner can:										
LO 1: Understand Safe working Practices and Instructions	1.1	Explain safe work practice and instructions.										
	1.2	Identify safety signs and symbols.										
	1.3	Use signs and symbols correctly.										
	1.4	Carry out safe work practices and instructions.										
	1.5	Comply to accordance with health and safety best practices.										
LO 2: Demonstrate Understanding of Safety Hazards and risks	2.1	Identify work environment hazards.										
	2.2	List various ways to avoid common workplace hazards										
	2.3	State methods to reduce the risk of work hazards.										
LO 3: Possess the ability to take appropriate actions during accident/injuries	3.1	Identify basic first aid equipment.										
	3.2	identify the benefits of first aid equipment										
	3.3	State how to maintain hygienic, safe and secure workplace.										
	3.4	State the uses of safety equipment in a mobile application work environment.										
LO 4: Demonstrate safe work habit and clean work environment	4.1	Use safe access and exit routes in the work environment.										
	4.2	Have knowledge of safe work habit and clean work environment.										
	4.3	Dispose all wastes appropriately to designated waste facilities										

UNIT 2: COMMUNICATION AND INTERPERSONAL SKILLS

Unit Reference Number: ICT/MOB/002/L4

Level: 4

Credit Value: 2

Guided Learning Hours: 20

Unit Purpose: This unit aims to provide the competencies required to demonstrate good communication and interpersonal skills.

Unit Objectives:

This unit aims to train learners the ability to read and understand documented instructions and the ability to know how to communicate respectfully when in a bad mood or under pressure.

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO).
2. Question and Answer (QA).
3. Professional Discussion (PD).
4. Reflective Journal (RJ).

UNIT 02: COMMUNICATION AND INTERPERSONAL SKILL

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Demonstrate knowledge of the importance of good communication	1.1	State reasons why good communication is important.									
	1.2	List ways to communicate effectively.									
	1.3	Exhibit patience and a mild demeanour while communicating with colleagues, managers and clients.									
	1.4	Speak in a professional manner.									
	1.5	Use respectful body language even when in a bad mood or while under pressure.									
LO 2: Demonstrate ability to follow documented instructions	2.1	Read accurately follow steps in a mobile framework/plugin installation documentation.									
	2.2	Interpret and understand mobile app documentation.									
	2.3	While programming, find specific class definitions and method descriptions in documentations.									
LO 3: Demonstrate ability to create documented instructions	3.1	Determine what is needed in a documented instruction									
	3.2	Describe how the scope of the documented instruction is valid									
	3.3	Explain the importance of the documented instruction.									

NATIONAL SKILLS QUALIFICATION

LEVEL 4 Mobile Application Development

Unit 3: TEAMWORK

Unit Reference Number: ICT/MOB/003/L4

NSQ Level: 5

Credit Value: 2

Guided Learning Hours: 20

Unit Purpose: Trainees will learn to work in agile development environments, collaborate with diverse roles such as designers, developers, testers, and product managers, and deliver high-quality applications.

Unit Objectives:

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS), etc.

UNIT 03: TEAMWORK

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type				Evidence Ref. No.	Page			
LO 1: Know team roles and responsibilities	1.1	Identify key roles within a mobile app development team.									
		Explain functions of these roles collaborate to complete a project.									
	1.2	Define tasks assignment.									
	1.3	Know importance of cross-functional collaboration between development, design, and testing.									
	1.4	Define Agile Driven Methodologies.									
LO 2: Work collaboratively to contribute to mobile app development goals.	2.1	Explain sprint goals in an agile team.									
	2.2	Describe agile ceremonies such as stand-ups, sprint planning, and retrospectives, contributing to team discussions and decisions.									
	2.3	State tasks assignment on time while aligning personal goals with the team's development goals.									
LO 3: Communicate effectively with team members	3.1	Use communication tools (e.g., Slack, Microsoft Teams) to provide clear and timely updates on development progress, roadblocks, and changes.									
	3.2	Ensure that code changes, pull requests, and project documentation are properly communicated through tools like GitHub, JIRA, or Confluence to maintain team transparency.									
	3.3	Effectively communicate app development progress or technical details to non-technical stakeholders, such as product owners or clients.									
	3.4	Foster a collaborative and inclusive app development environment.									
	3.5	Lead and support teams through app development challenges									
	3.6	Adapt to evolving team structures and project requirements.									
LO 4: Evaluate and enhance team performance in	4.1	Participate actively in sprint retrospectives									
	4.2	Review code or project deliverables collaboratively.									
	4.3	Use metrics such as sprint velocity, defect rates, or app performance metrics to evaluate									

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
app development projects.		the team's overall success in achieving project goals.									
	4.4	Use version control systems like Git to collaborate on code with other developers.									
	4.5	Describe project management platforms like JIRA , Trello , or Asana to track tasks, manage workflows, and ensure everyone is aligned on sprint priorities.									
	4.6	Leverage cloud platforms such as Firebase , AWS , or Google Cloud to collaboratively build, test, and deploy mobile apps.									

UNIT 4: WORKING WITH PROGRAMMING LANGUAGES - II

Unit Reference Number: ICT/MOB/004/L4

Level: 4

Credit Value: 4

Guided Learning Hours: 40

Unit Purpose:

This unit aims to equip the learners with knowledge and skills of programming language(s) of choice to be used in mobile application development.

Prerequisite(s):

Level 3

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS)

UNIT 04: WORKING WITH PROGRAMMING LANGUAGES - II

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA	Evidence Type					Evidence Ref. Page No.				
The learner will:		The learner can:										
LO 1: Implement Programming Techniques in Mobile Application Development	1.1	Writes reusable and modular code by implementing functions, methods, and classes effectively.										
	1.2	Utilizes collections such as lists, sets, and dictionaries to manage and process data.										
	1.3	Implements asynchronous programming techniques to handle tasks such as data fetching and file I/O.										
	1.4	Integrates debugging tools and techniques to identify and resolve runtime errors.										
LO 2: Build Features Using Platform-Specific APIs	2.1	Configures platform-specific libraries and SDKs to access mobile device features such as sensors, cameras, and geolocation.										
	2.2	Implements user authentication using platform-provided methods such as email/password or biometric authentication.										
	2.3	Retrieves and updates data from cloud services using REST APIs.										
	2.4	Tests the functionality of API integrations and resolves common issues such as timeouts or incorrect responses.										
LO 3: Optimize Mobile Applications for Improved Performance and Efficiency	3.1	Analyses the application's resource usage to identify performance bottlenecks.										
	3.2	Refactors redundant or inefficient code to improve execution speed.										
	3.3	Implements caching techniques to reduce network calls and enhance app responsiveness.										
	3.4	Tests applications under various conditions to evaluate their performance and resolve identified issues.										

UNIT 05: USER INTERACTION DESIGN

Unit Reference Number: ICT/MOB/005/L4

Level: 4

Credit Value: 6

Guided Learning Hours: 60

Unit Purpose:

This unit aims to equip learners with the knowledge and skills in creating graphical user interface (GUI) mock-up design.

Prerequisite(s)

Level 3

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS)

UNIT 05: USER INTERACTION DESIGN

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type				Evidence Ref. No.	Page No.
LO 1: Creating an application for multiple screen sizes	1.1	Explain the differences between smartphone and tablet design processes.						
	1.2	Identify different user interface components used in mobile design platforms.						
	1.3	Execute the design of a tablet compatible application on a popular mobile platform.						
LO 2: Demonstrate knowledge of graphics design	2.1	State attributes of popular graphics design tools						
	2.2	State advantages of one over the other						
	2.3	Construct mock-ups using graphics design tool						
LO 3: Demonstrate the ability to work effectively with GUI events	3.1	State common graphical user interface (GUI) event types						
	3.2	Explain the roles of the various event listeners and triggers						
	3.3	Implement event listeners in a mobile application.						
	3.4	Implement event triggers in a mobile application.						
LO 4: Ensure backward compatibility of mobile app user interface	4.1	Identify user interface components that may require backward compatibility across several platforms						
	4.2	Execute a version compatible user interface in a mobile app						
	4.3	Compare the user interface across two versions of the related mobile operating system						

UNIT 06: USING MAP AND LOCATION SERVICES

Unit Reference Number: ICT/MOB/006/L4

Level: 4

Credit Value: 4

Guided Learning Hours: 40

Unit Purpose:

This unit aims to equip learner with skills and knowledge on mobile apps that utilize maps and location-based services.

Prerequisite(s)

Level 3

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS)

UNIT 06: USING MAP AND LOCATION SERVICES

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type	Evidence Ref. Page No.
LO 1: Apply knowledge of existing map services	1.1	State different types of map services.		
	1.2	Distinguish features of the different map services.		
	1.3	Differentiate between the usage policies and pricing of these map services.		
LO 2: Demonstrate the use of map services Application Programming Interfaces (APIs).	2.1	List the steps in development of a mobile app that uses a map service.		
	2.2	Obtain map API keys from the map service provider.		
	2.3	Execute mobile app code that displays a map.		
	2.4	Control the zoom and change the views.		
	2.5	Add markers at specific locations on the map.		
	2.6	Get coordinates and other available info about a location.		
	2.7	Generate map project on Geocoding and Reverse Geocoding.		
	2.8	Use the map to monitor device Geolocation.		
LO 3: Show knowledge of a location-aware app	3.1	Explain the concept of location awareness.		
	3.2	Describe the process involved in maps and location in various mobile platforms.		
	3.3	Determine the API location and its availability.		

UNIT 07: NETWORK SERVICES

Unit Reference Number: ICT/MOB/007/L4

Level: 4

Credit Value: 4

Guided Learning Hours: 40

Unit Purpose:

This unit aims to equip learner with skills and knowledge on using HTTP requests.

Prerequisite(s)

Level 3

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS)

UNIT 07: NETWORK SERVICES

LEARNING OBJECTIVE (LO)			PERFORMANCE CRITERIA			Evidence Type			Evidence Ref. Page No.			
The learner will:			The learner can:									
LO 1: Understand networking in mobile applications.	1.1	Explain networking in relation to mobile applications.										
	1.2	Explain the concept of HTTP/HTTPS requests.										
	1.3	State the advantages of HTTP/HTTPS requests										
	1.4	Differentiate between synchronous and asynchronous HTTP/HTTPS requests.										
LO 2: Understand Web services in mobile applications	2.1	Explain web services and its relation to mobile applications.										
	2.2	List popular web services.										
	2.3	Write web services.										
LO 3: Demonstrate network calls in mobile applications	3.1	Explain network permissions in mobile applications.										
	3.2	Write mobile applications to call web services.										
	3.3	Handle responses from web services										

UNIT 08: NOTIFICATION AND SERVICES

Unit Reference Number: ICT/MOB/008/L4

Level: 4

Credit Value: 4

Guided Learning Hours: 40

Unit Purpose:

This unit aims to equip learners with skills and knowledge on notifications and broadcast services.

Prerequisite(s)

Level 3

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS)

UNIT 08: NOTIFICATION AND SERVICES

LEARNING OBJECTIVE (LO)			PERFORMANCE CRITERIA				Evidence Type				Evidence Ref. Page No.			
The learner will:			The learner can:											
LO 1: Understand notifications in mobile applications	1.1	Explain notifications in mobile application.												
	1.2	Explain importance of notifications.												
	1.3	List examples of notifications.												
LO 3: Create notifications in mobile applications.	3.1	List steps to build a notification.												
	3.2	Explain how to publish notification.												
	3.3	Perform other tasks through a notification.												
LO 2: Understand services in mobile application.	2.1	Explain services in mobile application.												
	2.2	List type of services in mobile application.												
	2.3	Build services in mobile development.												

UNIT 09: MESSAGING SERVICES

Unit Reference Number: ICT/MOB/009/L4

Level: 4

Credit Value: 4

Guided Learning Hours: 40

Unit Purpose: This unit aims to equip learner with skills and knowledge of messaging services in relation to mobile applications.

Prerequisite(s)

Level 3

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS)

UNIT 09: MESSAGING SERVICES

LEARNING OBJECTIVE (LO)		PERFORMANCE CRITERIA	Evidence Type					Evidence Ref. Page No.						
The learner will:		The learner can:												
LO 1: Understand the use of SMS.	1.1	State some benefits of SMS												
	1.2	Write a mobile app that demonstrates ability to send SMS.												
	1.3	Write a mobile app that demonstrates ability to send SMS by launching the device default messaging application.												
LO 2: Demonstrate the knowledge of building communication API	2.1	Understand the benefits of communication API within a mobile app												
	2.2	Identify various popular messaging APIs												
	2.3	Describe process in creating an in-app message												
LO 3: Demonstrate an overview of messaging support	3.1	Identify various messaging support document												
	3.2	Explain the various message support like sending pictures, videos and links												
	3.3	Explain the concept of multimedia messaging support.												

UNIT 10: SECURITY IN MOBILE APPLICATION

Unit Reference Number: ICT/MOB/010/L4

Level: 4

Credit Value: 4

Guided Learning Hours: 40

Unit Purpose: This unit aims to equip learner with skills and knowledge with understanding securing mobile applications.

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS)

UNIT 10: SECURITY IN MOBILE APPLICATION

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type	Evidence Ref. Page No.
LO 1: Understand Security mechanisms of mobile application	1.1	Explain the concept of security in mobile app development		
	1.2	Enumerate the different strategies in securing a mobile app		
	1.3	Explain the different concepts and strategies for securing mobile application		
LO 2: Understand the implementation of user authentication in mobile application	2.1	Define user authentication in the context of mobile application.		
	2.2	Explain the processes involved in user authentication		
	2.3	Implement user authentication in mobile app.		
LO 3: Understand the implementation of user authorization in mobile apps	3.1	Define user authentication in the context of mobile application.		
	3.2	Differentiate between user authentication and authorization		
	3.3	Explain the processes involved in user authorization		
	3.4	Implement user authorization in mobile app.		
LO4: Consume transport layer security mechanism in mobile application	4.1	Explain transport layer security.		
	4.2	Explain the processes involved in consuming transport layer security via a mobile application		
	4.3	Implement consumption of transport layer security mechanism on a mobile application.		

PARTICIPANT FOR CRITIQUE WORKSHOP

S/N	Full Name	Organization	Address	Email	Telephone
1	OBIAHU, Okechukwu Othniel	Oando Energy Resources Nigeria Ltd.	No 43 NDDC Road 11, Rumukwursi Pipeline, Rivers State	othnielobiahu@yahoo.com	08038869114
2	FASINA, Felicia Itse	NBTE	Plot B Bida Road, NBTE, Kaduna	feliciasina@gmail.com	08036570850
3	ABDULLAHI, Lawal	KAD ICT HUB	No 47 Kanta Road Off Independence Way, Kaduna State	ocplawal@gmail.com	08035169089
4	YOUNG- HARRY, Constance Soye	Ministry of Education Rivers State	Road 12, House 14 Trans Amadi Gardens Port Harcourt, Rivers State	constanceyounggharry@gmail.com	08032684914
5	MUHAMMAD, BILYAMINU MUSA	NBTE	PLOT B, Bida Road, Kaduna	mahogany@gmail.com	09036071291
6	Muhammad Bello Aliyu	CPN	1321 Adesoji Aderemi Street, Gudu District, Apo Abuja FCT	mbacaspet@gmail.com	08039176984
7	BENJAMIN, Prince Chukwudindu	CPN	1321 Adesoji Aderemi Street, Gudu District, Apo Abuja FCT	Pco.benjamin@gmail.com	08132850544
8	Amoo, Taofeek	CPN	1321 Adesoji Aderemi Street, Gudu District, Apo Abuja FCT	taofeekamoo@gmail.com	08053370334
9	Olatunji Abibat	CPN	1321 Adesoji Aderemi Street, Gudu District, Apo Abuja FCT	adehabb@gmail.com	08054263602

10	Linda Ngbeken	CPN	1321 Adesoji Aderemi Street, Gudu District, Apo Abuja FCT	excel4all2000@yahoo.com	08128219274
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PARTICIPANT FOR VALIDATION WORKSHOP

S/ N	Full Name	Organization	Address	Email	Telephone
1	OBIAHU, Okechukwu Othniel	Oando Energy Resources Nigeria Ltd.	No 43 NDDC Road 11, Rumukwurusi Pipeline, Rivers State	othnielobiahu@yahoo.com	08038869114
3	ABDULLAH I, Lawal	KAD ICT HUB	No 47 Kanta Road Off Independence Way, Kaduna State	ocplawal@gmail.com	08035169089
4	YOUNG-HARRY, Constance Soye	Ministry of Education Rivers State	Road 12, House 14 Trans Amadi Gardens Port Harcourt, Rivers State	constanceyounggharry@gmail.com	08032684914
5	Dr. Musa Hatim Koko	NBTE	PLOT B, Bida Road, Kaduna	hatimlion@gmail.com	08039606948
6	MUHAMMAD, BILYAMINU MUSA	NBTE	PLOT B, Bida Road, Kaduna	mahogany@gmail.com	09036071291
7	Muhammad Bello Aliyu	CPN	1321 Adesoji Aderemi Street, Gudu District, Apo Abuja FCT	mbacasp@gmail.com	08039176984
8	BENJAMIN, Prince Chukwudindu	CPN	1321 Adesoji Aderemi Street, Gudu District, Apo Abuja FCT	Pco.benjamin@gmail.com	08132850544