Contents

What are Occupational Standards(OS)?

➢ OS describe what individuals need to do, know and understand in order to carry out a particular job role or function

➢ OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

Introduction

Qualifications Pack- Telecom Terminal Equipment Application Developer (Android)

SECTOR: TELECOM

SUB-SECTOR: Handset

OCCUPATION: TERMINAL EQUIPMENT APPLICATION DEVELOPER

REFERENCE ID: TEL/Q2300

Aligned to: NCO -2015/2153.0101

Brief Job Description: Telecom Terminal Equipment Application Developer is responsible for creating customized Applications for Android platform that can be used by Smartphone or Tablets running on Android Operating System. Developer creates User Interfaces, writes business logics for events, activities and business logic defined by the app. The Developer also performs unit tests for the codes written and also ensures that adequate security measures are taken to protect valuable data used in the app by unauthorized external agents.

Personal Attributes: This job requires the individual to have good Programming Skills in Java , knowledge of Object Oriented Programming, Multithreading and operating System concepts. Additional skills including communication skills strong customer service, strong problem solving skills ; should be self motivated; should be able to apply practical judgment to successfully perform the assigned responsibilities and a team player with ability to work with team and under pressure.

Job Details

Qualifications Pack Code	TEL/Q2300		
Job Role	Telecom Terminal Equipment Application Developer (Android)		
Credits NSQF	TBD	Version number	1.0
Sector	Telecom	Drafted on	23-06-2014
Sub-sector	Handset	Last reviewed on	24-06-2014
Occupation	Tr. Equip. Application Developer	Next review date	26-12-2016
NSQF Clearance on	20/07/2015		

Job Role	Customer Premises Equipment
Role Description	Telecom Terminal Equipment Application Developer is responsible for interpreting the business logic required to create an Android Application, Creating User Interface, Writing Business logics for events and actions, processing data and information, testing the application and publishing application.
NSQF level	4
Minimum Educational Qualifications Maximum Educational Qualifications	12th Pass Preferably. ITI Diploma, Bsc. Computer Science, B.Tech (Telecommunication, Computer Science)
Training	**Practical knowledge of Java programming language is essential.**
Minimum Entry Job Age	**18 Years**
Experience	**0-2 years**
Applicable National Occupational Standards (NOS)	Compulsory: 1. TEL/N2300 (Setting up Android Application Development environment & creating User Interface) 2. TEL/N2301 (Creating Android VAS Application) 3. TEL/N2302 (Creating Applications for Android Tablets) 4. TEL/N2303 (Testing and Publishing Android Applications)
Performance Criteria	As described in the relevant OS units

Definitions

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Job Role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
OS	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
NOS	NOS are Occupational Standards which apply uniquely in the Indian context.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Unit Code	Unit Code is a unique identifier for an Occupational Standard , which is denoted by an 'N'.
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills or Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the OS , these include communication related skills that are applicable to most job roles.

Acronyms

Keywords /Terms	Description
JDK	Java Development Kit
IDE	Integrated Development Environment
SDK	Standard Development Kit
ADT	Android Development Tools
ADV	Android Virtual Devices
UI	User Interface
API	Application Programming Interface
SQL	Standard Query Language
SMS	Short Message Services
VAS	Value Added Services
SHE	Safety Health & Environment
OHS	Operational Health & Safetry

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National Occupational Standard
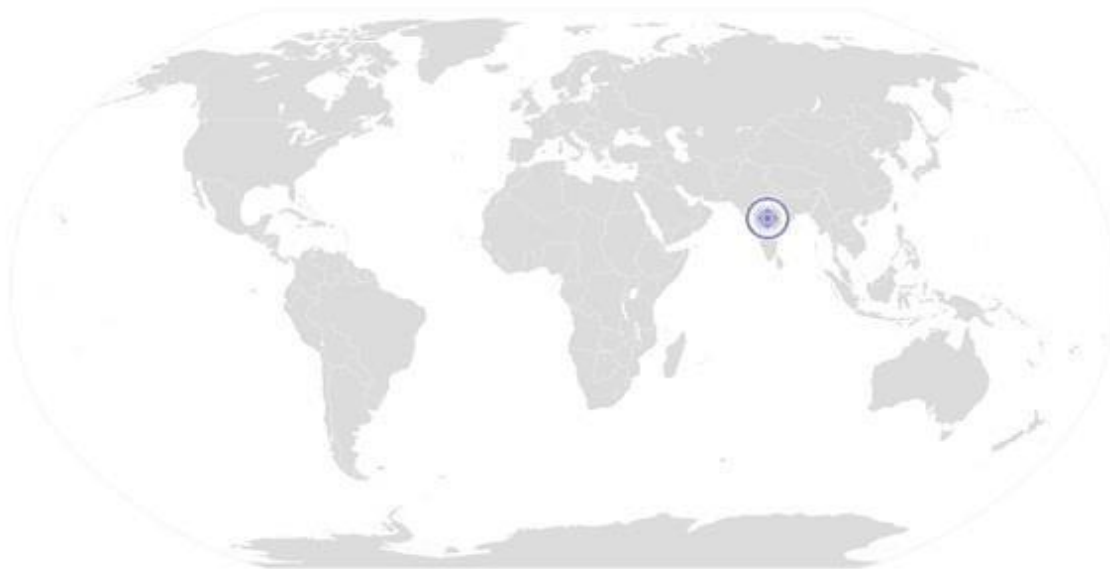
Ov erview

This unit is about Handing Data and Content Providers, Creating Value Added Services using Messaging , Networking , Email, Locatioon Based Services.

Unit Code	TEL/N2300
Unit Title (Task)	**Setting up Android Application Development Environment & Creating User Interface**
Description	This unit is about Setting up the Android Application Development environment and creating the User Interface for Android Application
Scope	This unit/task covers the following: • Understanding the Android Application Development Framework • Setting up Android Application Development Environment • Creating Android Projects • Creating Android User Interface Elements

Performance Criteria(PC) w.r.t. the Scope

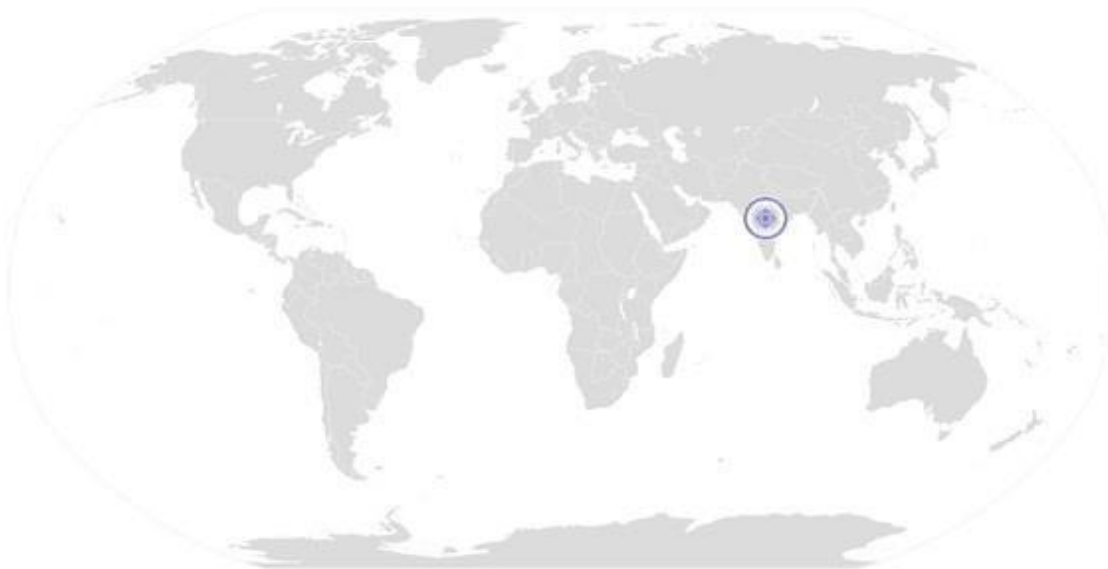| Element	Performance Criteria
Understanding the Android Application Development Framework	To be competent, the user/individual on the job must be able to PC1. Differentiate various Mobile operating Systems , key features and benifits PC2. Identify key features for various versions of Android PC3. Identify the various tools and softwares required for developing an Android Application
Setting up Android Application Development Environment	PC4. Install and Java and Android SDK PC5. Install Eclipse IDE PC6. Configure Android Development Tool PC7. Create Android Virtual Devices PC8. Identifying the components of an Android Project
Creating Android Projects	PC9. Creating an Android Project PC10. Identifying the role of .src, Android Library, gen, assets, res, AndroidManifest.xml
Creating Android User Interface Elements	PC11. Understanding activities and Intents PC12. Applying Styles and themes to activities PC13. Creating Dialog window and Process Dialog PC14. Linking Activities using Intents PC15. Creating built in Application using Intents PC16. Using Intent Object, Intent Filters and Categories PC17. Displaying Notifications PC18. Understanding the components of a Screen, Views and viewGroups PC19. Understanding Absolut Layout, Linear Layout, Table Layout, Relative Layout, Frame Layout and Scroll Layout PC20. Adapting to Display orientation using anchoring views , resizing and

National Occupational Standard

	Repositioning. Managing Screen Orientation
	PC21. Creating User Interfaces programmatically
	PC22. Listening for UI Notifications
	PC23. Creating Basic Views (TestView, Button, ImageButton, EditText, CheckBox, ToggleButton, RadioButton, RadioGroup, ProgressBar, AutoCompleteTestView, TimePickerView, DatePickerView, ListView, SpinnerView
	PC24. Displaying Pictures using Imageview, ImageSwitcher and GridView
	PC25. Using Menus , Helper Methods, Options Menu and Context Menu
	PC26. Working with Android camera

Knowledge and Understanding (K)

A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand:
	KA1. Project Management concepts and applications
	KA2. risk and impact of not following defined procedures/work instructions
	KA3. escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures ,fire and power failures
	KA4. records to be maintained and implications of non-maintenance of the same
	KA5. SHE and OHS guidelines and regulations as per company's norms
B. Technical Knowledge	The user/individual on the job needs to know and understand:
	KB1. Object Oriented Programming
	KB2. Java Programing (OOPS, Classes and Objects, Multithreading, Inheritence, AWT, Networking etc)
	KB3. Eclipse (Installation, using Eclipse Interface for creating Java Applications)

Skills (S)

A. Core Skills/ Generic Skills	**Basic Reading & Writing Skills**
	The user/ individual on the job needs to know and understand how to:
	SA1. fill up appropriate technical forms, activity logs in required format of the company
	SA2. maintain proper records as per given format
	SA3. read and understand manuals, work orders, health and safety instructions, memos, reports etc.
	Communication Skills
	The user/ individual on the job needs to know and understand how to:
	SA4. corteous to the customers
	SA5. Liaisioning and coordination skills
	SA6. communicate with supervisor and peers
	SA7. communicate in the local language (preferable)
B. Professional Skills	**IDE installation/Task ManagementSkills**

8 | P a g e	The user/individual on the job needs to know and understand how to: SB1. Installing Java, Android SDK and Eclipse SB2. Work systematically with required attention to detail and adherence to all safety requirements
	Technical Skills
	The user/individual on the job needs to know and understand how to: SB3. Read and comprehend/understand equipment installation manual SB4. Interpreting Application Requirements SB5. Interpreting UI requirements

<u>NOS Version Control</u>

NOS Code	TEL /N2300		
Credits NSQF	TBD	Version number	1.0
Industry	Telecom	Drafted on	23-06-2014
Industry Sub-sector	Handset	Last reviewed on	24-06-2014
		Next review date	26-12-2016

TEL/N2301   Creating Android VAS Applications

National Occupational Standard

Overview

This unit is about Handling Data, Content Providers, and creating Android VAS applications.

National Occupational Standard

Unit Code	TEL/N2301
Unit Title (Task)	**Creating Android VAS Applications**
Description	Involves in working with Data sources, Databases, Content Providers, Messaging Services, Email Services, Networking Services, Location Based Services, Creating customized Android Services
Scope	This unit/task covers the following: • Data Handling • Messaging and Networking • Location Based Services • Developing Android Services

Performance Criteria(PC) w.r.t. the Scope

Element	Performance Criteria
Data Handling	To be competent, the user/individual on the job must be able to PC1. Implementing Data Persistence PC2. Sharing and Loading user Preferences PC3. Storing Data to internal Storage, External Storage (SD Card) and static resources PC4. Storing Data in Cloud PC5. Using Database SQL Lite PC6. Applying SQL commands PC7. Using Contacts with Database PC8. Bundling Database with Application PC9. Using Content Providers
Messaging and Networking	PC10. Sending SMS messages programmically PC11. Sending SMS using Intent PC12. Receiving SMS and Processing SMS PC13. Sending Email PC14. Understanding Networking Fundamentals PC15. Working with Bluetooth PC16. Downloading Text Files, Binary Data, Accessing Web Services PC17. Performing Asynchronous Calls
Location Based Services	PC18. Understanding the MAP concept for Android and Creating a MAP Project PC19. Obtaining the Maps API Keys, Displaying the Map PC20. Controlling the Zoom abd changing the Views PC21. Navigating to specific locations PC22. Adding Markers PC23. Getting a locations that was touched

	PC24. Geo coding and reverse Geocoding PC25. Monitoring Locations
Developing Android Services	PC26. Creating your Own Android Services PC27. Performing Long-Running tasks, Repeated Tasks, Asynchronous Tasks in a Service PC28. Using Multi Threading PC29. Communicating between a Service and Activity PC30. Building Activities into Services
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. Project Management concepts and applications KA2. risk and impact of not following defined procedures/work instructions KA3. escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures ,fire and power failures KA4. records to be maintained and implications of non-maintenance of the same KA5. SHE and OHS guidelines and regulations as per company's norms
B. TechnicalKnowledge	The user/individual on the job needs to know and understand: KB1. Object Oriented Programming KB2. Java Programing (OOPS, Classes and Objects, Multithreading, Inheritence, AWT, Networking etc) KB3. Eclipse (Installation, using Eclipse Interface for creating Java Applications) KB4. Creating Android User Interface Elements KB5. SQL Essentials
Skills (S)	
A. Core Skills/ Generic Skills	**Basic Reading & Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. fill up appropriate technical forms, activity logs in required format of the company SA2. maintain proper records as per given format SA3. read and understand manuals, work orders, health and safety instructions, memos, reports etc.
	Communication Skills
	The user/ individual on the job needs to know and understand how to: SA4. corteous to the customers SA5. Liaisioning and coordination skills SA6. communicate with supervisor and peers SA7. communicate in the local language (preferable)
B. Professional Skills	**IDE installation/Task ManagementSkills**

|	
13 | P a g e	The user/individual on the job needs to know and understand how to:
	SB1. Installing Java, Android SDK and Eclipse
	SB2. Work systematically with required attention to detail and adherence to all safety requirements
	Technical Skills
	The user/individual on the job needs to know and understand how to:
	SB3. Read and comprehend/understand equipment installation manual
	SB4. Interpreting Application Requirements
	SB5. Interpreting UI requirements

NOS Version Control

NOS Code	TEL /N2301		
Credits NSQF	TBD	Version number	1.0
Industry	Telecom	Drafted on	23-06-2014
Industry Sub-sector	Handset	Last reviewed on	24-06-2014
		Next review date	26-12-2016
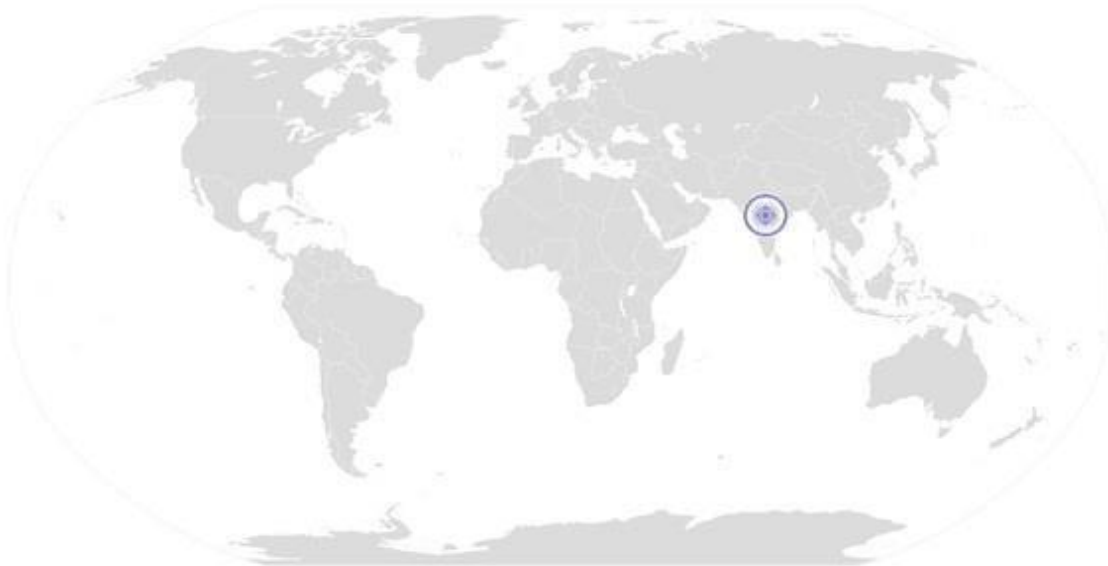
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National Occupational Standard

<u>Overview</u>

This unit is about Creating Applications for Android Tablets

National Occupational Standard

Unit Code	TEL/N2302
Unit Title (Task)	**Creating Applications for Android Tablets**
Description	This unit is about Creating Applications for Android Tablets
Scope	This unit/task covers the following: • Creating Android User Interfaces for Tablet App • Creating VAS Applications for Android Tablets

Performance Criteria(PC) w.r.t. the Scope

Element	Performance Criteria
Creating Android User Interfaces for Tablet App	To be competent, the user/individual on the job must be able to PC1. Differentiate between creating an App for Smartphone and Tablet PC2. Understanding the components of an Android App for Tablet PC3. Workign with Activities, Fragments, Action Bars PC4. Creating Android User Interface Elements (Views, ViewGroupss, Layouts, Basic Views, Fragments, Buttons, Menu, Boxes) PC5. Working with Events
Creating VAS Applications for Android Tablets	PC6. Working with Database and Data storage PC7. Working with Emails PC8. Working with SMS PC9. Working with Networking and Bluetooth Devices PC10. Working with MAPS and creating Location Based Services PC11. Creating custom Services

Knowledge and Understanding (K)

| A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. Project Management concepts and applications KA2. risk and impact of not following defined procedures/work instructions KA3. escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures ,fire and power failures KA4. records to be maintained and implications of non-maintenance of the same KA5. SHE and OHS guidelines and regulations as per company's norms
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Object Oriented Programming KB2. Java Programing (OOPS, Classes and Objects, Multithreading, Inheritence, AWT,

17 | P a g e	Networking etc) KB3. Eclipse (Installation, using Eclipse Interface for creating Java Applications) KB4. Creating Android User Interface Elements KB5. SQL Essentials

Skills (S)	

	Basic Reading & Writing Skills
A. Core Skills/ Generic Skills	The user/ individual on the job needs to know and understand how to: SA1. fill up appropriate technical forms, activity logs in required format of the company SA2. maintain proper records as per given format SA3 read and understand manuals, work orders, health and safety instructions, memos, reports etc.
	Communication Skills
	The user/ individual on the job needs to know and understand how to: SA4. courteous to the customers SA5. Liaisioning and coordination skills SA6. communicate with supervisor and peers
B. Professional Skills	**IDE installation/Task ManagementSkills**
	The user/individual on the job needs to know and understand how to: SB1. Installing Java, Android SDK and Eclipse SB2. Work systematically with required attention to detail and adherence to all safety requirements
	Technical Skills
	The user/individual on the job needs to know and understand how to: SB3. Read and comprehend/understand equipment installation manual SB4. Interpreting Application Requirements SB5. Interpreting UI requirements

NOS Version Control

NOS Code	TEL /N2302		
Credits NSQF	TBD	**Version number**	**1.0**
Industry	**Telecom**	Drafted on	23-06-2014
Industry Sub-sector	**Handset**	Last reviewed on	24-06-2014
		Next review date	26-12-2016
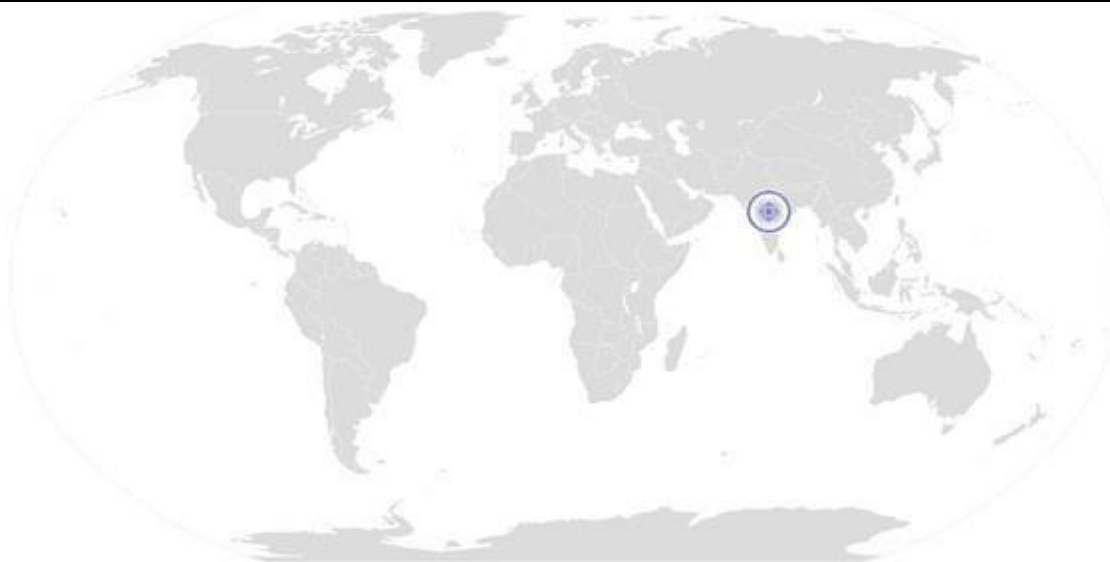
National Occupational Standard

Overview

This unit is about Testing and Publishing Android Applications

National Occupational Standard

Unit Code	TEL/N2303
Unit Title (Task)	**Testing and Publishing Android Applications**
Description	This unit is about Creating Applications for Android Tablets
Scope	This unit/task covers the following: • Android Application Testing • Securing Android Applications • Publishing Android Applications

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Android Application Testing	To be competent, the user/individual on the job must be able to PC1. Testing fundamentals, Types of Testing PC2. Testing Android Application using Unit Testing PC3. Functional /Usability Testing Android Applications PC4. UI Testing PC5. Performance Testing PC6. Localization issues & Battery Impact
Securing Android Applications	PC7. Application Security Testing PC8. Security Best Practices for Android VAS Applications
Publishing Android Applications	PC9. bundle application for release on app store PC10. Google licensing PC11. Using Admob SDK for ad PC12. Backward compatibilty strategies

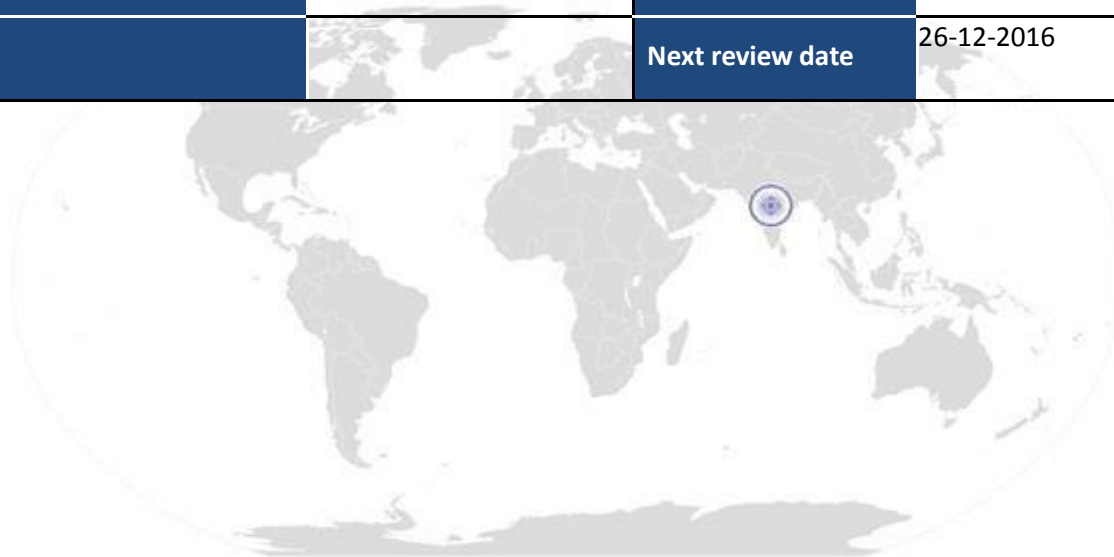| Knowledge and Understanding (K)	
B. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. Project Management concepts and applications KA2. risk and impact of not following defined procedures/work instructions KA3. escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures ,fire and power failures KA4. records to be maintained and implications of non-maintenance of the same KA5. SHE and OHS guidelines and regulations as per company's norms

B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Object Oriented Programming KB2. Java Programing (OOPS, Classes and Objects, Multithreading, Inheritence, AWT, Networking etc) KB3. Eclipse (Installation, using Eclipse Interface for creating Java Applications) KB4. Creating Android User Interface Elements KB5. SQL Essentials

Skills (S)

C. Core Skills/ Generic Skills	**Basic Reading & Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. fill up appropriate technical forms, activity logs in required format of the company SA2. maintain proper records as per given format SA3. read and understand manuals, work orders, health and safety instructions, memos, reports etc.
	Communication Skills
	The user/ individual on the job needs to know and understand how to: SA4. courteous to the customers SA5. Liaisioning and coordination skills SA6. communicate with supervisor and peers
D. Professional Skills	**IDE installation/Task Management Skills**
	The user/individual on the job needs to know and understand how to: SB1. Installing Java, Android SDK and Eclipse SB2. Work systematically with required attention to detail and adherence to all safety requirements
	Technical Skills
	The user/individual on the job needs to know and understand how to: SB3. Read and comprehend/understand equipment installation manual SB4. Interpreting Application Requirements SB5. Interpreting UI requirements
	Basic Reading & Writing Skills
	The user/ individual on the job needs to know and understand how to: SB6. fill up appropriate technical forms, activity logs in required format of the company SB7. maintain proper records as per given format SB8. read and understand manuals, work orders, health and safety instructions, memos, reports etc.

NOS Version Control

NOS Code	TEL /N2303		
Credits NSQF	TBD	**Version number**	**1.0**
Industry	**Telecom**	**Drafted on**	23-06-2014
Industry Sub-sector	**Handset**	**Last reviewed on**	24-06-2014
		Next review date	26-12-2016

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PERFORMANCE CRITERIA	
Job Role	: Telecom Terminal Equipment Application Developer- Android
Qualification Pack	: TEL/Q2300
Sector Skill Council	: Telecom

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Individual assessment agencies will create unique question papers for theory and skill practical part for each candidate at each examination/training center.
4. To pass the Qualification Pack , every trainee should score a minimum of 40% in every NOS and overall 50% Pass percentage
5. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

Assessment Outcome	Assessment Criteria	Total Mark (400)	Out Of	Theory	Skills Practical
TEL/N2300 Understanding the Android Application Development Framework	PC1. Differentiate various Mobile operating Systems , key features and benifits		4	4	0
	PC2. Identify key features for various versions of Android		4	4	0
	PC3. Identify the various tools and softwares required for developing an Android Application		4	4	0
Setting up Android Application Development Environment	PC4. Install Java and Android SDK		3	2	1
	PC5. Install Eclipse IDE		3	1	2
	PC6. Configure Android Development Tool		3	1	2
	PC7. Create Android Virtual Devices		3	1	2
	PC8. Identifying the components of an Android Project		3	2	1
Creating Android Projects	PC9. Creating an Android Project		4	3	1
	PC10. Identifying the role of .src, Android Library, gen, assets, res, AndroidManifest.xml		4	2	2
Creating Android User Interface Elements	PC11. Understanding activities and Intents	100	3	3	0
	PC12. Applying Styles and theames to activities		5	2	3
	PC13. Creating Dialog window and Process Dialog		3	1	2
	PC14. Linking Activities using Intents		3	1	2
	PC15. Creating built in Application using Intents		4	1	3
	PC16. Using Intent Object, Intent Filters and Categories		3	1	2
	PC17. Displaying Notifications		4	1	3
	PC18. Understanding the components of a Screen, Views and viewGroups		4	2	2
	PC19. Understanding Absolut Layout, Linear Layout, Table Layout, Relative Layout, Fram Layout and Scroll Layout		5	2	3
	PC20. Adapting to Display orientation using anchoring views , resizing and repositioning. Managing Screen Orientation		5	2	3
	PC21. Creating User Interfaces programmatically		4	1	3
	PC22. Listening for UI Notifications		3	1	2
	PC23. Creating Basic Views (TestView, Button, ImageButton, EditText, CheckBox, ToggleButton, RadioButton, RadioGroup, ProgressBar, AutoCompleteTestView, TimePickerView, DatePickerView, ListView, SpinnerView		5	2	3
	PC24. Displaying Pictures using Imageview, ImageSwitcher and GridView		5	2	3
	PC25. Using Menus , Helper Methods, Options Menu and Context Menu		5	2	3
	PC26. Working with Android camer		4	1	3
			100	**49**	**51**
TEL/N2301 Data Handling	PC1. Implementing Data Persistence		5	2	3
	PC2. Sharing and Loading user Preferences		4	2	2
	PC3. Storing Data to internal Storage, External Storage (SD Card) and static resources		3	2	1
	PC4. Storing Data in Cloud		3	1	2
	PC5. Using Database SQL Lite		3	2	1
	PC6. Applying SQL commands		6	3	3
	PC7. Using Contacts with Database		5	2	3
	PC9. Using Content Providers		2	1	1
	PC8. Bundling Database with Application		3	1	2
Messaging and Networking	PC10. Sending SMS messages programmically		3	1	2
	PC11. Sending SMS using Intent		3	1	2
	PC12. Receiving SMS and Processing SMS		3	1	2
	PC13. Sending Email		2	1	1
	PC14. Understanding Networking Fundamentals		6	3	3
	PC15. Working with Bluetooth		3	1	2
	PC16. Downloading Text Files, Binary Data, Accessing Web Services		2	1	1
	PC17.Performing Asynchronous Call	100	3	1	2
Location Based Services	PC18. Understanding the MAP concept for Android and Creating a MAP Project		4	3	1
	PC19. Obtaining the Maps API Keys, Displaying the Map		3	1	2
	PC20. Controlling the Zoom abd changing the Views		3	1	2
	PC21. Navigating to specific locations		3	1	2
	PC22. Adding Markers		3	1	2
	PC23. Getting a locations that was touched		3	1	2
	PC24. Geo coding and reverse Geocoding		4	1	3
	PC25. Monitoring Locations		3	1	2
Developing Android Services	PC26. Creating your Own Android Services		3	2	1
	PC27. Performing Long-Running tasks, Repeated Tasks, Asynchronous Tasks in a Service		3	1	2
	PC28. Using Multi Threading		3	2	1
	PC29. Communicating between a Service and Activity		3	1	2
	PC30. Building Activities into Services		3	1	2
			100	**43**	**57**
TEL/N2302 Creating Android User Interfaces for Tablet App	PC1. Differentiate between creating an App for Smartphone and Tablet		10	5	5
	PC2. Understanding the components of an Android App for Tablet		10	7	3
	PC3. Workign with Activities, Fragments, Action Bars		15	7	8
	PC4. Creating Android User Interface Elements (Views, ViewGroupss, Layouts, Basic Views, Fragments, Buttons, Menu, Boxes)		15	7	8
	PC5. Working with Events		10	5	5
		100			
Creating VAS Applications for Android Tablets	PC6. Working with Database and Data storage		10	5	5
	PC7. Working with Emails		5	2	3
	PC8. Working with SMS		5	2	3
	PC9. Working with Networking and Bluetooth Devices		5	2	3
	PC10. Working with MAPS and creating Location Based Services		10	4	6
	PC11. Creating custom Services		5	3	2
			100	**49**	**51**
TEL/N2303 Android Application Testing	PC1. Testing fundamentals, Types of Testing		8	5	3
	PC2. Testing Android Application using Unit Testing		8	3	5
	PC3. Functional /Usability Testing Android Applications		8	3	5
	PC4. UI Testing		8	3	5
	PC5. Performance Testing		8	3	5
	PC6. Localization issues & Battery Impact		8	5	3
Securing Android Applications	PC7. Application Security Testing	100	10	5	5
	PC8. Security Best Practices for Android VAS Applications		10	7	3
Publishing Android Applications	PC9. bundle application for release on app store		10	6	4
	PC10. Google licensing		4	4	0
	PC11. Using Admob SDK for ad		10	5	5
	PC12. Backward compatibilty strategies		8	4	4
			100	**53**	**47**