NHS Wales Injectable Medicines Guide

Report Name	Test Results
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This document will provide the result for any testing that was carried out on the application. It will include the results of the unit tests, the results of the intergration tests and the results of stress testing the application.

1 Intergration Tests

To test that the application works as expected a list of integration tests were made and then ran on two devices, one device running API version 19 and the other running API version 8 Using two devices, with varying ages increases the accuracy of the results. To further increase the accuracy of the results the tests would be executed on more devices.

Test	Expected result	API 8 result	API 19 result
Login Activity			
Enters invalid password and attempt to login	User is notified via toast that username is incorrect	**PASS**	**PASS**
Attempt to login whilst in flight mode	User is notified of connection error	**PASS**	**PASS**
Attempt to login using correct details	Download activity is launched	**PASS**	**PASS**
		PASS	**PASS**
Download activity		**PASS**	**PASS**
User presses back button	Return to login screen	**PASS**	**PASS**
User minimises application and re-enters	Download continues in background	**PASS**	**PASS**
Calculator download fails	Dialog asking the user whether they would like to retry is displayed	**PASS**	**PASS**
Index download fails	Dialog asking the user whether they would like to retry is displayed	**PASS**	**PASS**
Drug information download fails	Dialog asking the user whether they would like to retry is displayed	**PASS**	**PASS**
User clicks the retry button	The appropriate download task is restarted	**PASS**	**PASS**
User clicks cancel button	User is logged out and login activity is displayed	**PASS**	**PASS**
Main activity			
User presses back button	Close application	**PASS**	**PASS**
Check last update date is set correctly	The date within the last updated TextView contains the date the database was last updated	**PASS**	**PASS**
Browse drugs button press	Open the browser drugs activity	**PASS**	**PASS**
Browse calculator button presses	Open the browser calculator activity	**PASS**	**PASS**
Update button pressed	Open the download activity	**PASS**	**PASS**

Browse drugs			
Drugs are displayed properly	Full list of available drugs are displayed within the list	**PASS**	**PASS**
User enters text into the search box	The lists of drugs are filtered by the inputted text	**PASS**	**PASS**
User clicks drug	View drug activity is launched for that drug	**PASS**	**PASS**
Browse calculators			
Drugs are displayed properly	Full list of drugs with calculators are displayed within the list	**PASS**	**PASS**
User enters text into the search box	The lists of drugs are filtered by the inputted text	**PASS**	**PASS**
User clicks drug	Calculator is launched for that drug	**PASS**	**PASS**
View drug activity			
The correct drug is displayed	The drug selected by the user is displayed	**PASS**	**PASS**
User clicks on header helper button	The helping information for the header is displayed.	**PASS**	**PASS**
User clicks calculator button	The calculator activity is opened	**PASS**	**PASS**
Calculator test			
A dosage calculation using correct values is performed by the user	The results of the calculation and an explanation for the equation used is displayed to the user	**PASS**	**PASS**
An infusion rate calculation using correct values is performed by the user	The results of the calculation and an explanation for the equation used is displayed to the user	**PASS**	**PASS**
User enter 0kg for weight	Error about weight is displayed to user	**PASS**	**PASS**
User leaves weight field empty	Error about weight is displayed to user	**PASS**	**PASS**
User enters weight of 5kg	A warning is displayed to the user regarding the weight	**PASS**	**PASS**
User enters weight of 500kg	A warning is displayed to the user regarding the weight	**PASS**	**PASS**
User enters 0 for dosage	Error about dosage is displayed to user	**PASS**	**PASS**
User leaves dosage field empty	Error about dosage is displayed to user	**PASS**	**PASS**
User enters 0 for time	Error about time is displayed to user	**PASS**	**PASS**

User leaves time field empty	Error about time is displayed to user	**PASS**	**PASS**
User enters 0 for concentration	Error about concentration is displayed to user	**PASS**	**PASS**
User leaves concentration field empty	Error about concentration is displayed to user	**PASS**	**PASS**
Common			
Exit menu item pressed	Application is terminated	**PASS**	**PASS**
Logout menu item pressed	User is logged out and then the login activity is opened	**PASS**	**PASS**
Home menu item pressed	The main activity is launched	**PASS**	**PASS**
Update item pressed	The download activity is launched	**PASS**	**PASS**
Update item pressed	The download activity is launched	**PASS**	**PASS**
Browse drugs item pressed	The browse drugs activity is launched	**PASS**	**PASS**
Browse calculator pressed	The browser calcualtor activity is launched	**PASS**	**PASS**

2 JUnit test results

Unit tests were written for every class of the application, testing each public and protected method. Most tests contained multiple assertions, testing that the expected output was returned when correct information is entered and that an error is raised when the incorrect data is entered.

The following pages contain the results of the Unit tests.

Tests: 107 total, 107 passed 16.40 s

1.19 s

com.fewstera.injectablemedicinesguide.database.tests.DatabaseHelperTest

testCreateDrug	passed	126 ms
testCreateDrugCalcInfo	passed	127 ms
testCreateDrugIndex	passed	126 ms
testGetAllDrugIndexes	passed	76 ms
testGetAllDrugsWithCalcs	passed	101 ms
testGetDrugCalcInfoFromDrugId	passed	102 ms
testGetDrugFromId	passed	102 ms
testGetDrugInformationsFromDrugId	passed	100 ms
testTruncateAll	passed	126 ms
testTruncateCalcs	passed	102 ms
testTruncateIndexs	passed	100 ms

0 ms

com.fewstera.injectablemedicinesguide.models.DrugCalculatorInfoTest

testGetConcentrationUnits	passed	0 ms
testGetDoseUnits	passed	0 ms
testGetDrugId	passed	0 ms
testGetInfusionRateLabel	passed	0 ms
testGetInfusionRateUnits	passed	0 ms

25 ms

com.fewstera.injectablemedicinesguide.models.tests.DrugCalculatorInfoTest

testConstuct	passed	0 ms
testGetAndSetConcentrationUnits	passed	0 ms
testGetAndSetDoseUnits	passed	0 ms
testGetAndSetDrugId	passed	0 ms
testGetAndSetFactor	passed	0 ms
testGetAndSetInfusionRateLabel	passed	0 ms
testGetAndSetInfusionRateUnits	passed	0 ms
testGetAndSetTimeRequired	passed	0 ms
testGetAndSetWeightRequired	passed	25 ms

com.fewstera.injectablemedicinesguide.models.tests.DrugIndexTest — 0 ms

testConstuct	passed	0 ms
testGetId	passed	0 ms
testGetName	passed	0 ms

com.fewstera.injectablemedicinesguide.models.tests.DrugInformationTest — 0 ms

testConstuct	passed	0 ms
testGetHeaderHelp	passed	0 ms
testGetHeaderText	passed	0 ms
testGetSectionText	passed	0 ms

com.fewstera.injectablemedicinesguide.models.tests.DrugTest — 0 ms

testAddAndGetDrugInformation	passed	0 ms
testConstuct	passed	0 ms
testEmptyDrugInfos	passed	0 ms
testGetAndSetId	passed	0 ms
testGetAndSetName	passed	0 ms
testToString	passed	0 ms

com.fewstera.injectablemedicinesguide.tests.AuthTest — 254 ms

testConstuct	passed	0 ms
testIsLogged	passed	25 ms
testIsValid	passed	204 ms
testLogout	passed	0 ms
testPrepareUrl	passed	0 ms
testSaveCredentialsAndGetters	passed	25 ms
testSetCredentials	passed	0 ms

com.fewstera.injectablemedicinesguide.tests.BrowseDrugsActivityTest — 1.70 s

testListOnScreen	passed	483 ms
testListSize	passed	407 ms
testPreconditions	passed	482 ms
testSearchOnScreen	passed	328 ms

com.fewstera.injectablemedicinesguide.tests.CalcDrugSelectActivityTest — 1.86 s

testListOnScreen	passed	532 ms
testListSize	passed	433 ms
testPreconditions	passed	358 ms
testSearchOnScreen	passed	532 ms

com.fewstera.injectablemedicinesguide.tests.CalculateActivityTest — 3.97 s

testButton	passed	510 ms
testConcentration	passed	510 ms
testDose	passed	407 ms
testDrugHeader	passed	433 ms
testInfusionRate	passed	431 ms
testPreconditions	passed	357 ms
testSpinner	passed	483 ms
testTime	passed	430 ms
testWeight	passed	406 ms

com.fewstera.injectablemedicinesguide.tests.CalculatorTest — 1 ms

testAdrenalineCalcualtions	passed	0 ms
testGlycerylTrinitrate	passed	0 ms
testMidazolamCalcualtions	passed	0 ms
testSetAndGetConcentration	passed	1 ms
testSetAndGetDose	passed	0 ms
testSetAndGetInfusionRate	passed	0 ms
testSetAndGetTime	passed	0 ms
testSetAndGetType	passed	0 ms
testSetAndGetWeight	passed	0 ms
testValidateConcentration	passed	0 ms
testValidateErrorDose	passed	0 ms
testValidateErrorInfusionRate	passed	0 ms
testValidateErrorWeight	passed	0 ms
testValidateSuccess	passed	0 ms
testValidateTime	passed	0 ms
testValidateWarnWeight	passed	0 ms

com.fewstera.injectablemedicinesguide.tests.DownloadDataActivityTest — 1.45 s

testHeader	passed	306 ms

testMessage	passed	281 ms
testPreconditions	passed	280 ms
testProgressBar	passed	280 ms
testProgressMessage	passed	305 ms

com.fewstera.injectablemedicinesguide.tests.DrugTest 0 ms

testAddDrugInformation	passed	0 ms
testGetDrugInformations	passed	0 ms
testGetId	passed	0 ms
testGetName	passed	0 ms
testToString	passed	0 ms

com.fewstera.injectablemedicinesguide.tests.LoginActivityTest 1.09 s

testLoginButton	passed	279 ms
testPasswordTextView	passed	306 ms
testPreconditions	passed	305 ms
testUsernameTextView	passed	204 ms

com.fewstera.injectablemedicinesguide.tests.MainActivityTest 2.26 s

testBrowseButton	passed	429 ms
testCalculatorButton	passed	331 ms
testPreconditions	passed	460 ms
testUpdateButton	passed	381 ms
testUpdateText	passed	306 ms
testWelcomeText	passed	358 ms

com.fewstera.injectablemedicinesguide.tests.PreferencesTest 52 ms

testDelete	passed	26 ms
testDownloadCompleteBool	passed	0 ms
testSetAndGetString	passed	26 ms

com.fewstera.injectablemedicinesguide.tests.ViewDrugActivityTest 2.54 s

testDrugInfoContent	passed	432 ms
testDrugInfoHeaders	passed	407 ms
testDrugInfoHelper	passed	432 ms
testHeaderTextView	passed	434 ms
testPreconditions	passed	460 ms
testTitle	passed	380 ms

3 Exerciser monkey stress text

Exerciser Monkey is a tool provided with the Android SDK, which is used for stress testing Android applications. The tool simulates a set amount of random events on the device, such as button presses, screen presses, volume changes and screen rotations. The tests are used to ensure that applications run well under stressful tasks and that parts of the application do not throw errors.

It was planned that the application would be installed on a device, then using Exerciser Monkey, execute 5000 random events to the device.

Below is the result of executing 5000 random events to the device.

```
$ adb shell monkey -p com.fewstera.injectablemedicinesguide 5000
    // activityResuming(com.fewstera.injectablemedicinesguide)
    // activityResuming(com.fewstera.injectablemedicinesguide)
    // activityResuming(com.fewstera.injectablemedicinesguide)
    // activityResuming(com.fewstera.injectablemedicinesguide)
    // activityResuming(com.fewstera.injectablemedicinesguide)
    // activityResuming(com.android.launcher)
    // activityResuming(com.android.launcher)
    // activityResuming(com.android.launcher)
    // activityResuming(com.android.launcher)
    // activityResuming(com.android.launcher)
Events injected: 5000
## Network stats: elapsed time=11069ms (0ms mobile, 11065ms wifi, 4ms not connec
```

The tests results show that the test was successful as no time-out warnings, exceptions or errors were thrown by the debugging console.