Do-it-yourself Mobile Application Testing

from Indus Net Technologies Mobile Test Lab

Published by:

INDUS NET®
TECHNOLOGIES
savesmarter growfaster

Indus Net Technologies is an innovative, enterprise & consumer mobility solution provider, offering custom application development, testing & digital marketing services to enable future ready businesses for our clients.

With deep industry experience of 16+ years and technological expertise across all major business functions, Indus Net Technologies helps corporations and Governments across the globe embrace the "Nexus of Forces" – Cloud/Web based custom application development, Mobility and Digital Marketing Services.

Indus Net Technologies Pvt. Ltd.
#532, SDF Building, Sec V, Salt Lake, Kolkata 700091, India
www.indusnet.co.in | info@indusnet.co.in | +91 33 23576070

Do-it-yourself Mobile Application Testing

from Indus Net Technologies Mobile Test Lab

Preface

The increasing importance of mobile testing is highlighted when one takes into account the particular issue of users deleting an app if it displays even the slightest problem or malfunctioning. Most likely, the user will never install the application again and worse, the user may leave a bad review which will affect future sales as well.

In order to avoid this unpleasant scenario, it is very important to test an application for malfunctioning, difficulty of use and avoidable errors from the user's point of view.

from Indus Net Technologies Mobile Test Lab

Do-it-yourself (DIY) mobile app testing helps developers, first line users and reviewers to test an application before it hits the market to rule out even the slightest error that could bring down an otherwise excellent application.

We have compiled a list of 54 tips that help developers, reviewers and users to rule out problems, malfunctioning, and difficulty of use. Moreover, the tips will help you focus on increasing user experience and satisfaction.

Simple Device Compatibility Tests

01

The first and foremost step is to test the App* in multiple devices to make appropriate choices for mobile OS.

If we have an iOS App which is expected to support all devices above iOS 4.0, then one must test it on an iPhone 3G/iPhone 3GS/iPhone 4/iPhone 4S/iPhone 5/iPhone 5C/iPhone 5S. Similarly, various versions of the iPad need to be tested, including the iPad Mini.

Release of iOS version 7 has come up with User Interface look and feel changes such as borderless buttons, translucent bars, etc. So its manditory to test a native application in iOS7 as well as its lower versions in order to confirm that the designs are compatible in all versions.

In Android and Windows OS, the device list increases as there are a number of manufacturers and varied number of available devices with multiple configurations.

** App—This keyword refers to the mobile application which is under test.*

Consistency

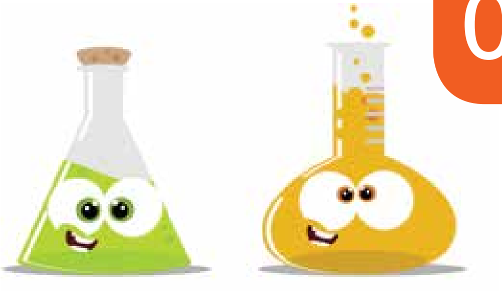
02

Navigate through the App UI by browsing from one screen to another and look for a common series of

- Actions (tap, double tap)
- Action sequences
- Terms
- Layouts
- Soft button definitions and
- Sounds those are clear and understandable.

Ensure that the above features have a commonality in them throughout the application.

Perform Actions while the Application is Rendering



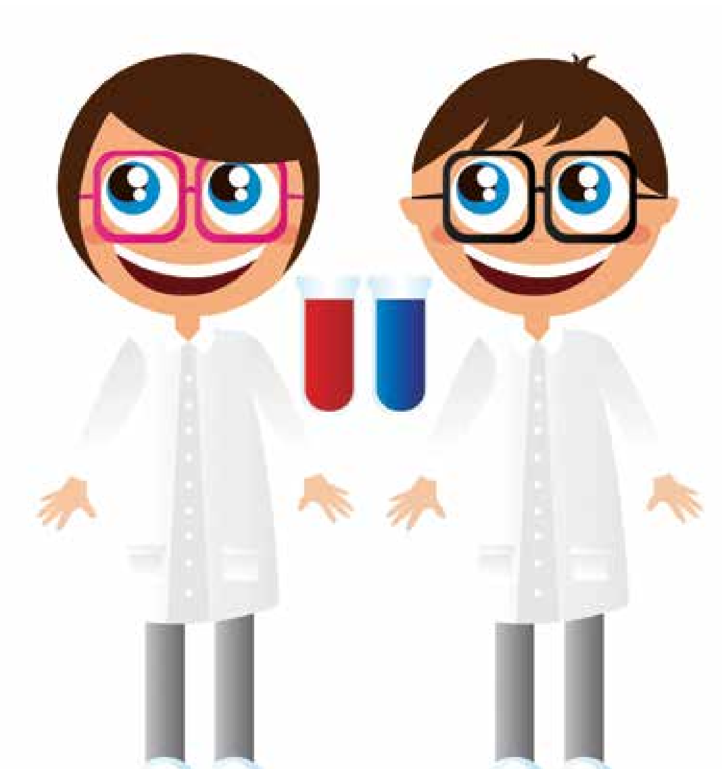
The most important criteria for testing a mobile application is to ensure that the application does not crash or freeze at any point of time. In order to determine the cause of application crashes, the following action items can be tested:

When the application is rendering, perform random actions:

- Provide an user input
- Connect or remove charger
- Tap on the back button of the device
- If it is a non-touch device, tap on the device keys randomly

Ensure that App completes the rendering process successfully instead of crashing or freezing unexpectedly.

Network Connections



Determine App behavior when:

- Only Wi-Fi connection is available
- Only 2G/3G/4G connection is available
- With no SIM Card available in the device
- In Airplane Mode (all connections are disabled)
- Using the network through a USB connection in PC
- User walks out of Wi-Fi range while running the application.
- User walks from 2G Network to 3G Network while running the application and vice versa.
- User walks from 3G Network to 4G Network while running the application and vice versa.
- User rides an elevator where network changes (by going up and down) while running the application.
- No network connection available.

Note: Application should provide suitable alert message and not crash or stop abruptly.

SD Card Interactions

05

If the App is dependent on SD cards for storing data, following action items can be tested:

- Remove the SD card and check if suitable alert messages are given to determine that SD card is not present and thus, the application cannot run properly.
- Keep SD card in the device and ensure the application runs smoothly
- In devices where SD card can be removed without removing the back cover of the device, check for application behavior by removing the SD card in the midst of an operation.

Touch Screens

If the App is installed on a touchscreen device, the following actions items can be tested:

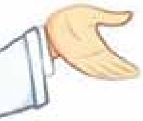
- Ensure the App is able to respond properly either by single or multi touch.
- Ensure the App distinguishes between long touch and short touch & responds appropriately. E.g. the application might be designed to open or launch only on long touch and not on short touch.
- Ensure the buttons and icons present in the application are large and far enough from the edges of the screen to be easily clicked by a large finger tip. If the button is not large enough to be pushed by a finger tip, a stylus can be used to access it.
- Ensure the App uses adequate wizards with multiple choice selections like radio buttons and checkboxes to save time of users while typing.
- If your touchscreen device has other input methods such as a trackball or a hard keyboard, it is important to make sure that simultaneous inputs from all the methods do not interfere with each other.

INDUS NET®
TECHNOLOGIES

leverage mobilepower

Trackball

07



If the App is installed on a non-touch device then the following actions should be taken:

- If the device where the application is tested uses trackball to navigate, the user should feel comfortable while navigating through the application screens using it.
- While composing text, check if the trackball correctly places the cursor at the place where the user intends to position it.
- After selecting a menu or application icon, check if the trackball is pressed the user can navigate to the next page.

Spinners

If the App has a spinner, then the following action items can be tested:

- Ensure that in a default view, a spinner should show the currently selected value.
- Ensure that when a spinner is touched, a dropdown menu displays all the other available values, from which the user can select a new one.
- Spinners are sometimes used in action bars to switch between views. However, if switching views is going to be frequent, then it is advisable not to use a spinner.

Segmented Control

09

If the App contains segmented control then the following action items can be exercised:

- Ensure that each segment can be easily tapped.
- Ensure that consistency is maintained in the size of each segment’s content.
- Ensure that the image and text are not mixed in a single segmented control.

Switch

10

from Indus Net Technologies Mobile Test Lab

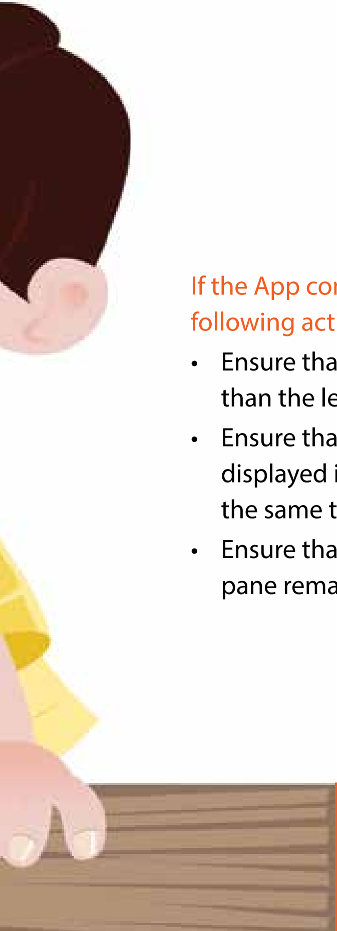
If the App contains a Switch then the following action items should be exercised:

- Ensure that users are able to tap or slide a switch to change states.
- Ensure that the switch is used in a table row.

Split View

11

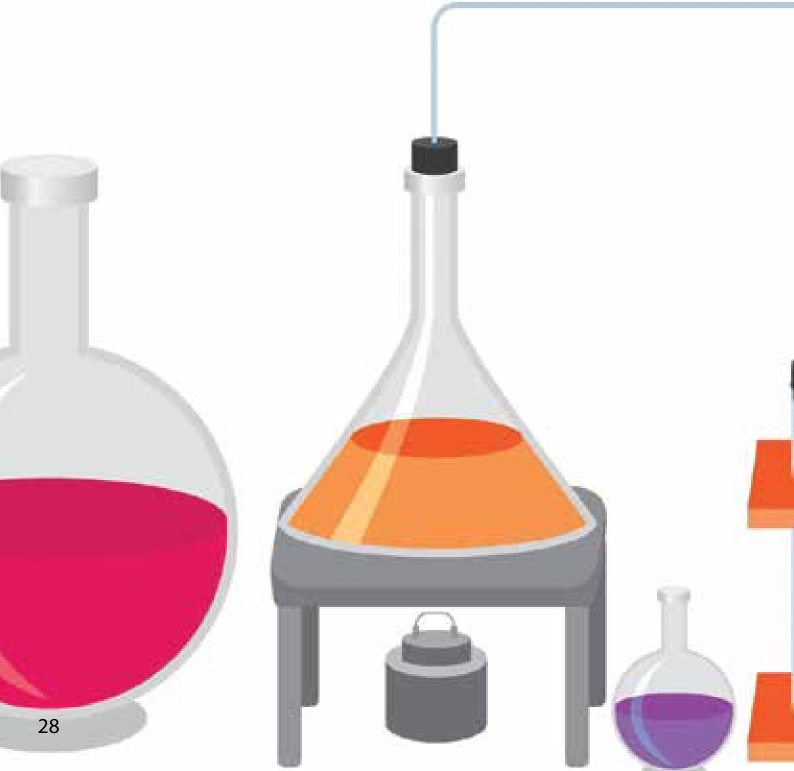
from Indus Net Technologies Mobile Test Lab



If the App contains split view then the following action items can be exercised:

- Ensure that the right pane is not narrower than the left pane.
- Ensure that the navigation bar is not displayed in both the left and right panes at the same time.
- Ensure that under general conditions the left pane remains selected in a consistent way.

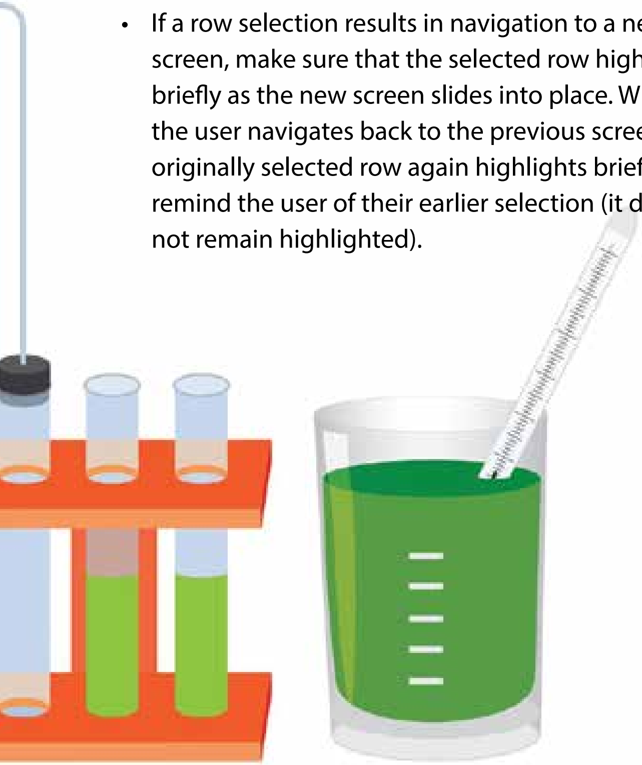
Table View



12

If the App contains table view then the following action item can be exercised:

- If a row selection results in navigation to a new screen, make sure that the selected row highlights briefly as the new screen slides into place. When the user navigates back to the previous screen, the originally selected row again highlights briefly to remind the user of their earlier selection (it does not remain highlighted).



from Indus Net Technologies Mobile Test Lab

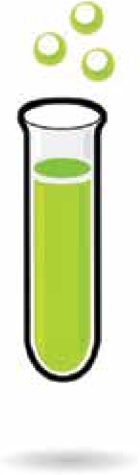
Text View

13

from Indus Net Technologies Mobile Test Lab

If the App contains text view then the following action item can be exercised:

- Ensure that text view supports scrolling when the content is too large.
- Ensure if the text view supports user editing, a keyboard appears when the user taps inside the text view. The keyboard's input method and layout are determined by the user's language settings. When users tap the button labeled ".?123," the keyboard changes to display numbers, punctuation marks, and a few common symbols.



Phone Calls Interruptions

Determine App behavior while:

- An incoming call is received while app is running and caller hangs up the call.
- An incoming call is received while app is running and receiver hangs up the call.
- App is interrupted in order to place an outgoing call and caller hangs up the call.
- App is interrupted in order to place an outgoing call and receiver hangs up the call;

In all these scenarios app should not crash but resume from the same point where it was left or some logical re-starting point.

SMS Interruptions

15

from Indus Net Technologies Mobile Test Lab

Determine App behavior while:

- The App is running and the user receives an SMS.

App should not crash or have an adverse effect in its functionality.

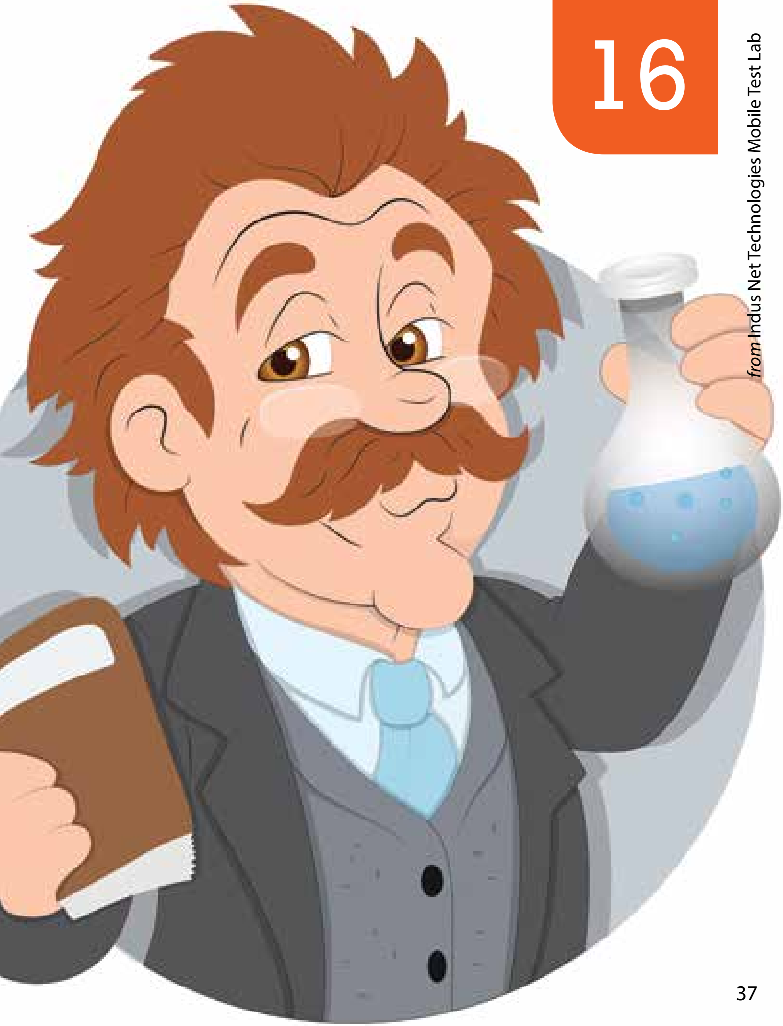
Social Media Notification Interruptions

Determine App behavior while:

- The app is running, social media notifications appear.

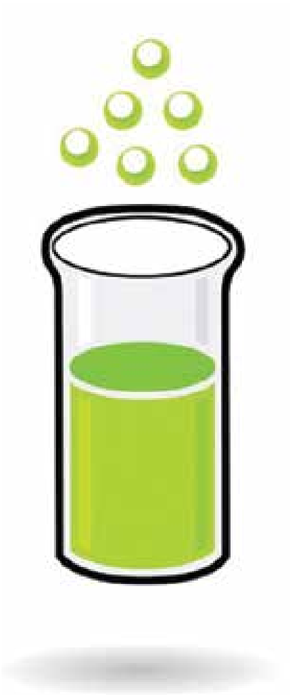
Ensure that these notifications do not crash or produce an adverse impact on the App.

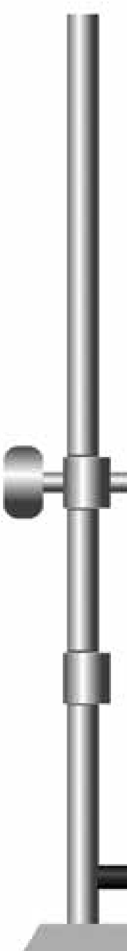
16

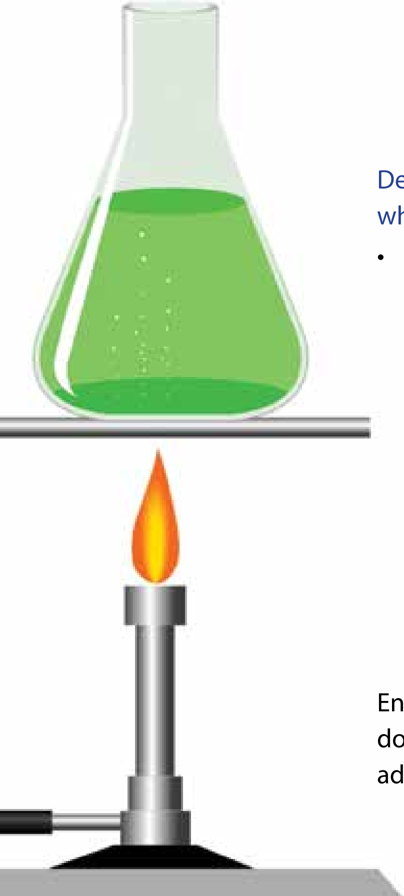


from Indus Net Technologies Mobile Test Lab

Low Battery Notifications







Determine App behavior while:

- Application is running, device produces low battery notification. Application should provide adequate alert messages if it is not able to run due to lack of power and gracefully exit. Application should also save the last stored information in case the device gets switched off due to lack of power.

Ensure that these notifications do not crash or produce an adverse impact on the App.

Calendar Event Pop up

18

from Indus Net Technologies Mobile Test Lab

Determine App behavior while:

- The App is running and calendar events pop up.

Ensure that these events do not crash or produce and adverse effects on the functioning of the App.

Alarm Clock Interruptions

19

Determine App behavior while:

- The App is running and an alarm rings

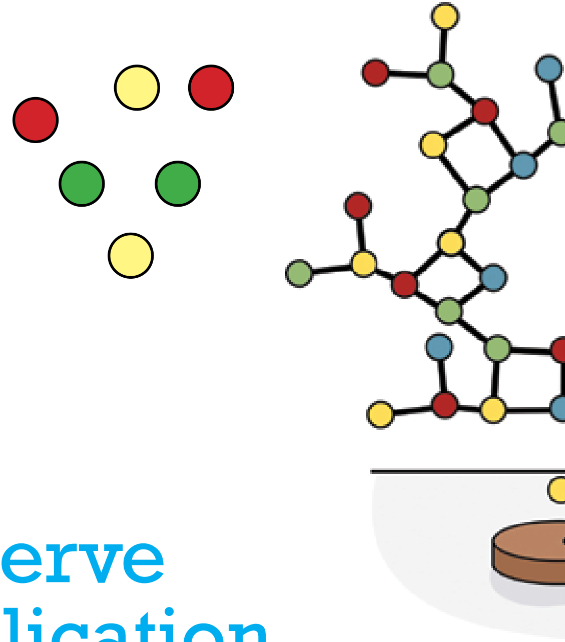
Ensure that these events do not crash or produce adverse effects on the functioning of the App.

Observe Application Behavior when Phone Memory Usage Is High

Determine App behavior while phone memory usage is high.

- In order to do so, run all the applications (including App under test) available in the device such that this consumes the phone memory significantly. If memory is insufficient to run the App, it should give relevant alert message.

Ensure the App does not crash or freeze.



Observe Application Behavior by Performing Random Actions

Determine App behavior by:

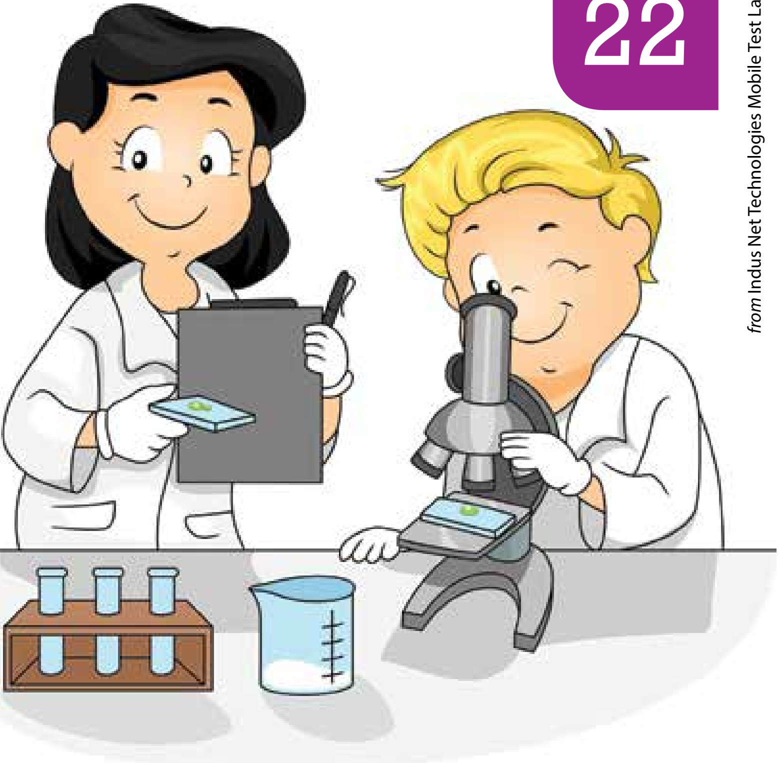
- Tap the screen randomly and with a high frequency.
- Send random keystrokes.

Ensure that at any point of time the App should not crash or freeze.

Observe Application Behavior by Performing Random Similar Operations

22

from Indus Net Technologies Mobile Test Lab



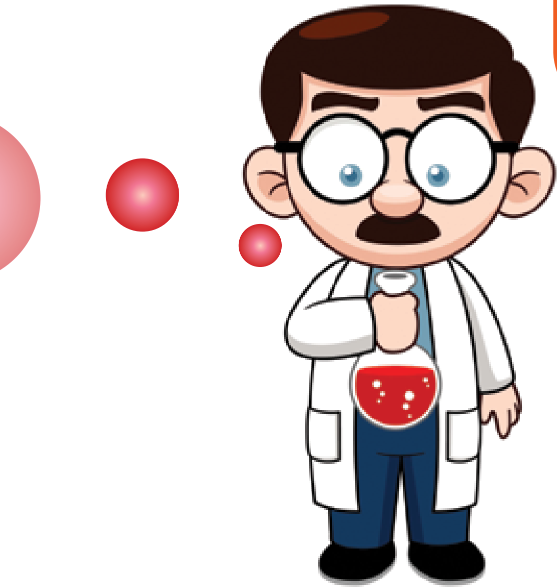
Determine App behavior by:

- Performing same operations repeatedly, especially those operations that load large amounts of data.

Ensure that the App does not crash or freeze.

Observe Application Behavior while it is Running for a Long Duration

23



Determine the App behavior while:

- It is running for a long period of time. During this period it can either interact with the device or sit idle or perform some automatic jobs that take a long time.

Ensure that the App does not crash or stop functioning when run for such long durations.

Observe Application Behavior while Performing Repeated Operations at Different Speeds

Determine App behavior while:

- Repeated operations (e.g. Uploading an image) are performed at varying speeds.

Ensure that the App does not crash or freeze.

Observe Application Behavior while Transitioning between Different Applications

25

from Indus Net Technologies Mobile Test Lab

Determine App behavior while:

- Multiple Apps are running on the device. Switch frequently between App under test and other applications running in the device..

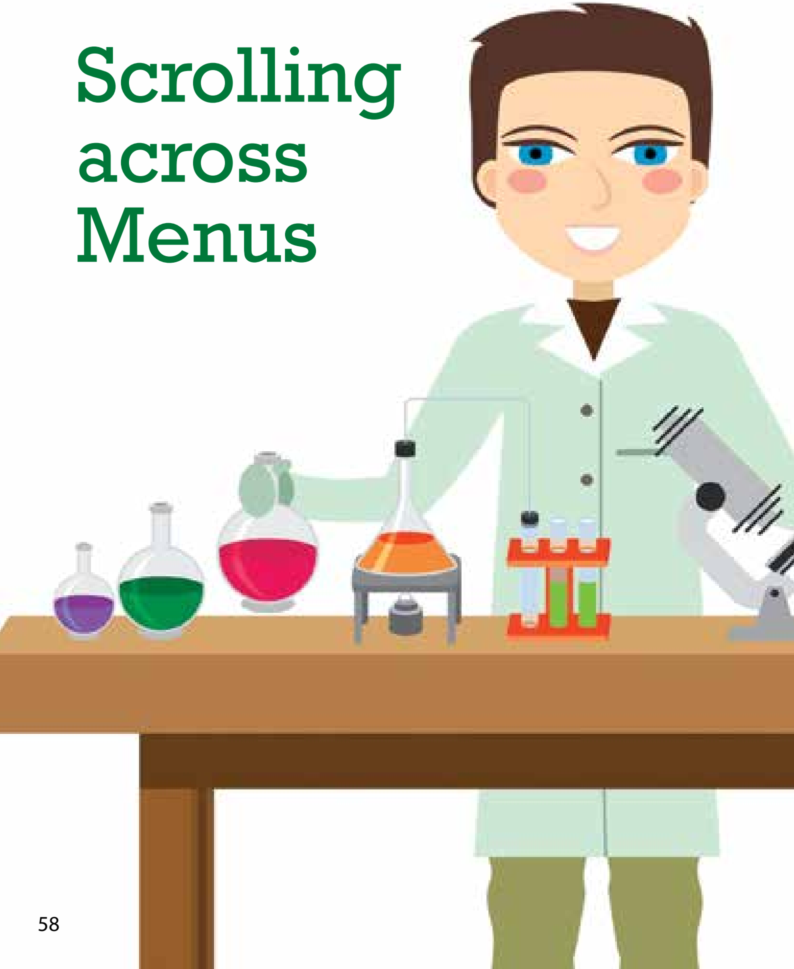
Ensure that the App does not crash or freeze.

- Check that the application does not run longer than it is required.
- Check the application does not use too much memory.
- This will have an impact on the battery life.

INDUS NET®
TECHNOLOGIES

optimizing mobility innovation

Scrolling across Menus



26

from Indus Net Technologies Mobile Test Lab

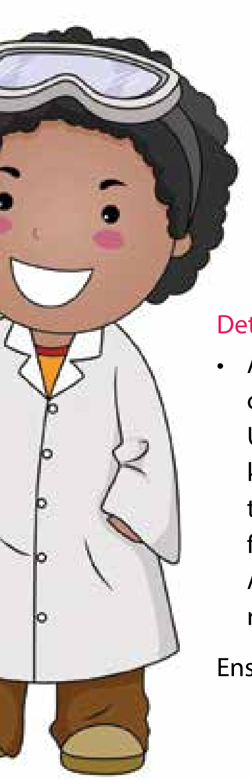
Determine App behavior:

- After Launching the App use keypad to scroll vertically and (if applicable) horizontally in the Menu list.

Ensure that scrolling does not crash or freeze the App.

Simultaneous Key Press

27



Determine App behavior when:

- After launching the App, press a combination of keys simultaneously (e.g.) UP, DOWN, CENTER and all other available keys, except any key that can forcefully terminate or exit the App, or launch a function that would invalidate this test. Any alert message generated should be relevant to this scenario.

Ensure that the App does not crash or freeze.

Application Behavior after Force Closure

28

Determine App behavior when:

- Device is forcefully closed by removing the battery while the App is running.

Ensure that when the device is restarted and the App is launched it is in usable condition and preserves sufficient state of information within it before it was shut down.

(E.g.) Exercise a functionality of the App where some information is saved. Return to Home State and ensure the App is paused. Next remove the battery of the mobile device to instantly kill the App. Next restart the device and check the App if it is in usable state and has also retained the information.

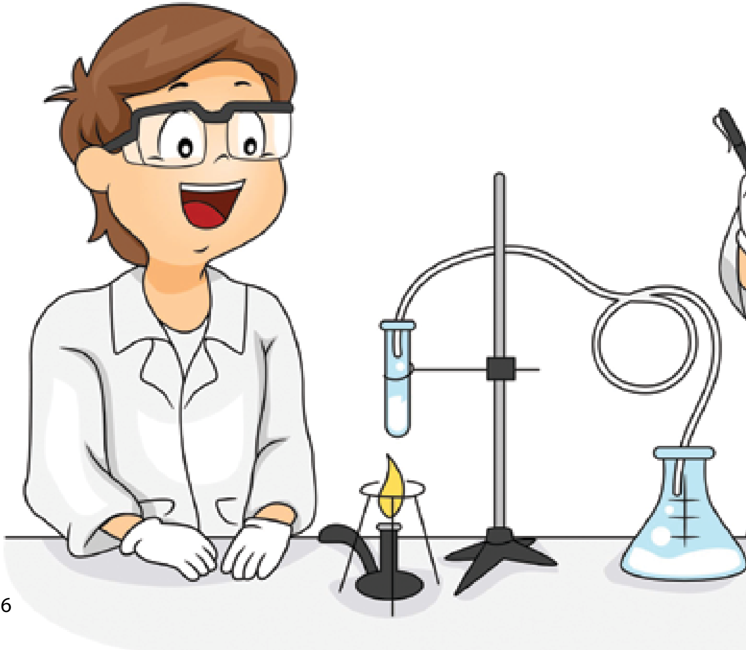
Spelling Errors

29

There should be no spelling errors in the textual content of the App. Following context areas should be given special preference for probable occurrence of spelling errors:

- Splash/Title/Logo/Loading Screen
- Application Main Menu and all its subsidiary menus
- Help/Instructions Screen(s)
- About Screen

Application Screen Blinking



30

Determine App screens are correctly repainted in following situations:

- While dismissing a dialog box, there should not be any blinking of moving objects in the background.
- While a page is loading, there should not be any blinking in the background.

Multiple Format Input Handling

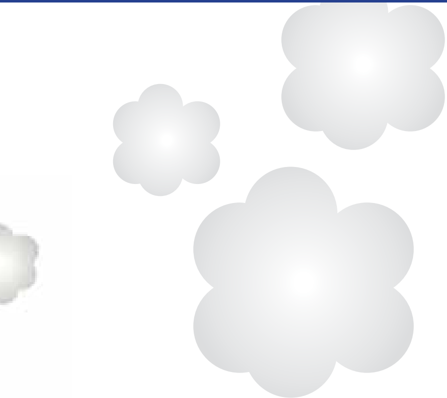
31

from Indus Net Technologies Mobile Test Lab

The App should be able to accept inputs using the following formats:

- Touch screen
- QWERTY layout

Technical Text Errors



32

from Indus Net Technologies Mobile Test Lab

The App should be free from technical text display issues such as:

- Text Cut Off/ Text Overlapping
- Menu item text/labels correctly aligned with cursor
- Button text label did not overrun or get truncated so that it lost its meaning
- Text did not overrun or get truncated in other bounded text display areas (e.g. speech bubbles, user interface elements etc.)
- Text is getting wrapped properly at the edge of the screen so that words are not cut off
- Text is not cut horizontally

Screen Orientation

33

Determine App behavior while:

- The phone is flipped between portrait and landscape and vice-versa, check if there is any distortion in the readability of the content. The App should best fit to the layout.
- If a statement/phrase is truncated in portrait mode due to lack of space, after flipping the device to landscape the statement/phrase should display to maximum length.

Function Progress

34

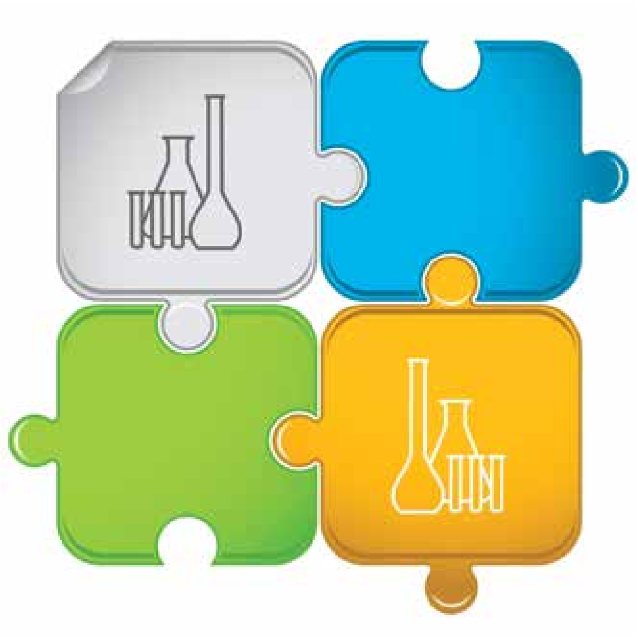
from Indus Net Technologies Mobile Test Lab

Ensure proper visual indication is provided while the application is running like:-

- Prompting for user inputs
- Displaying text such as "Please wait…"

This indication increases the usability index of an application making them more user-friendly and acceptable.

Soft Keyboard



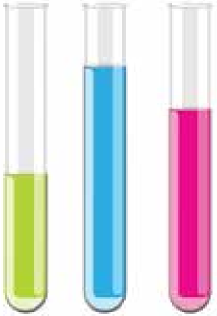
35

If the App contains soft keyboard feature then following action items can be exercised:

- Ensure that the soft keyboard automatically appears if the user's main action is to enter some text.
- Ensure that the soft keyboard can be dismissed and redisplayed easily.
- Ensure that the keyboard includes '@' and '.com' keys for better usability.
- Ensure that a long touch on a soft character key brings up several different character choices for that input.
- Ensure that the soft keyboard and device keys can be used interchangeably(if the device has both options)
- When a password field is entered using soft keyboard it should be displayed as '*****' (encrypted form) in order to ensure security.

Device Keypad

36



If the App accepts input from the device keypad then the following action item can be exercised:

- The device keys/hard keys should interact with the App in the same way as it does for native applications.

Launcher Icon

37

from Indus Net Technologies Mobile Test Lab

The launcher icon is the most important visual representation of the application on Home Screen. While testing launcher icons following action items can be exercised:

- Ensure that the Launcher Icon of the App is clearly visible on any type of background, since users have a tendency to change wall papers and themes of their devices.
- It is advisable that launcher icons represent a three dimensional front view so that users can comprehend some depth.

Gestures

Testing different gestures within the application is a formidable test one has to do. The list below determines the different type of gestures one can use to test the App.

- **Touch** - Triggers the default functionality for a given item. Using finger press on an App item and lift.

- **Long Press** - Enters data selection mode. Allows user to select one or more App items in a view and act upon the data using a contextual action bar. Avoid using long press for showing contextual menus. Using finger long press on an App item, wait and lift.
- **Swipe** - Scrolls overflowing content, or navigates between views in the same hierarchy. Using finger swipe on an item, move and lift.
- **Drag** - Rearranges data within a view, or moves data into a container (e.g. folders on Home Screen). Using finger drag on an App item, move and lift.
- **Double touch** - Zooms into content. Also used as a secondary gesture for text selection. Touch twice on an App item in quick succession.
- **Pinch open** - Zoom in to content. Using 2 fingers press on an App item, move outwards and lift.
- **Pinch close** – Zoom out of content. Using 2 fingers press on an App item, move inwards and lift.

Back Button

39

from Indus Net Technologies Mobile Test Lab

Determine if the following action items are exercised when one taps on Back button:

- Users can navigate through the history of screens in reverse chronological order.
- Floating windows (dialogs, popups) are dismissed.
- Contextual action bars are dismissed and highlight from the selected items are removed.
- Hides the onscreen keyboard.

UP Button

40

Determine if the following action item is exercised when the user taps on UP button:

- Users should be able to navigate within the App based on the hierarchical relationships between screens.

Note:-This feature is available in Android OS 4.0 and above.

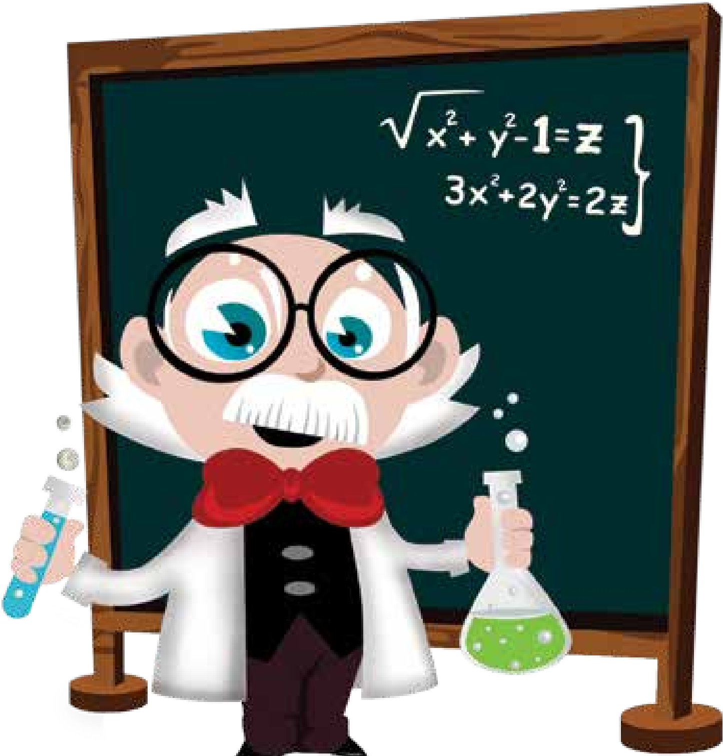
Media

41

If the App has media settings then following action items should be exercised:

- Ensure that the settings are clearly understandable.
- Ensure these settings also do not impair the functionality of the remaining application.

Activity Integrator



42

If the App has activity integrators then ensure that the following action items are exercised:

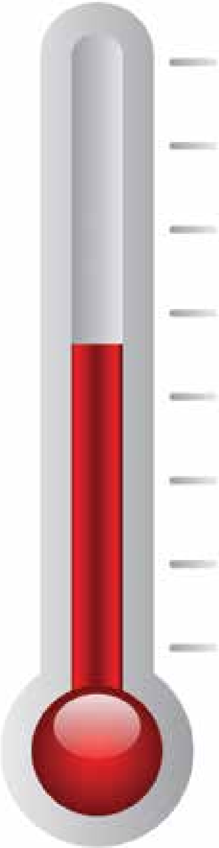
- The activity integrator spins while a task is progressing and disappears when the task completes.
- A stationary activity integrator is never displayed as user might associate this with a stalled process.
- Ensure that activity integrator is used in a situation where it is important to reassure users that their task or process has not stalled than it is to suggest when processing will finish.

Date and Time Picker

If the App contains a date and time picker then the following action items can be exercised:

- Ensure that the date format is valid with contrast to the local region or client specification.
- Ensure that the picker works against touch up/ down, swipe and is also able to take value from keyboard.

Slider



44

If the App uses Slider as an UI element then the following action items should be exercised:

- Ensure the slider is displayed either horizontally or vertically.
- The width of the slider should best fit with the User Interface of the application.
- Ensure that the users can understand clearly that the slider is active.
- Supply images to appear at the both end of the slider to help users understand what the slider does. (e.g.)These images correspond to the minimum and maximum values of the value range that the slider controls. A slider that controls font size, for example, could display a very small character at the minimum end and a very large character at the maximum end.

Stepper

If the App uses a stepper (to increase or decrease a value) then the following action items should be exercised:

- Ensure user knows which value they are changing since a stepper does not display any value.
- The value that the stepper effects should change by a constant amount.

Pop Over

46

from Indus Net Technologies Mobile Test Lab

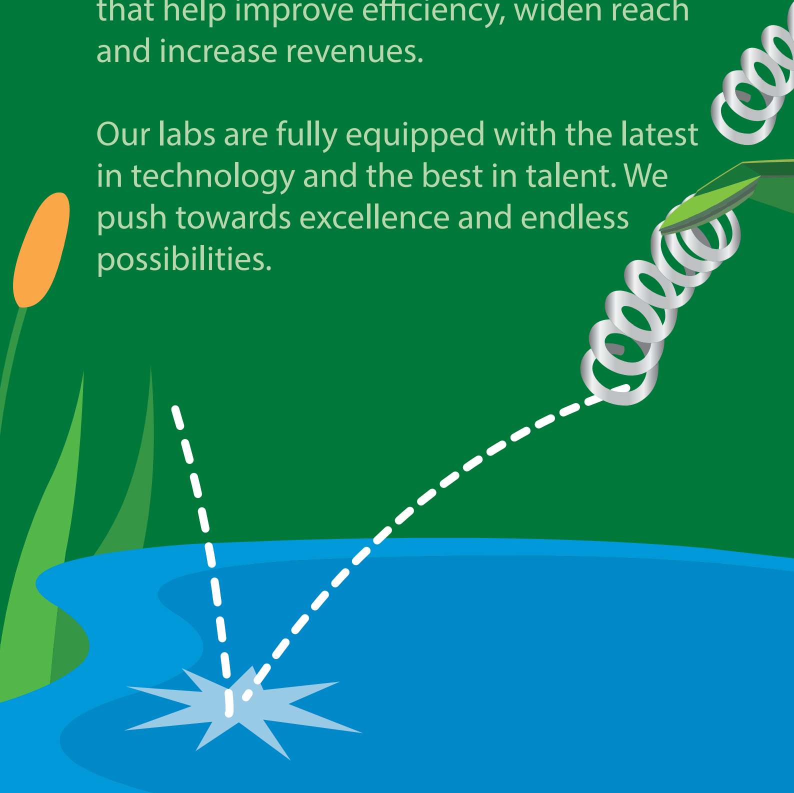
If the App uses a Pop Over (transient view that is revealed when people tap a control or an onscreen area) then the following action items should be exercised:

- A pop over should close automatically when its presence is no longer necessary.
- A user's work should be saved if tapped outside the pop over's border.
- Ensure that the pop over arrow points as directly as possible to the element that revealed it.
- Ensure user can use a pop over without seeing the application content behind it.
- Ensure that only one pop over is visible onscreen at a time.
- Ensure that only one pop over is visible onscreen at a time.

INDUS NET® TECHNOLOGIES

We develop innovative mobile technologies that help improve efficiency, widen reach and increase revenues.

Our labs are fully equipped with the latest in technology and the best in talent. We push towards excellence and endless possibilities.



push the
boundaries
of possibilities
www.indusnet.co.in

Modal View

If the App under test uses a modal view then the following action items should be exercised:

- Ensure modal view is used when application need to offer the ability to accomplish a self-contained task related to the application's primary function. The modal view should occupy the entire application screen.
- Ensure that a modal view does not get displayed over a Pop Over.

Label

48

If the App uses a Label then the following action items should be exercised:

- Ensure that the Label displays only static text.
- Ensure that the Label is legible.
- Ensure that the clarity of the text inside label is not lost due to rich colors or designer fonts.
- Ensure that the Label displayed is relevant to the context of the App.

Action Sheet

49

If the App contains an action sheet then the following action items can be exercised:

- Ensure that an action sheet allows users to provide a range of choices that make sense in the context of the current task.
- Ensure for iPhone Apps that an action sheet always emerges from the bottom and hovers over the views of the App.
- An action sheet can cause a pop over to appear, or it might appear within a popover i.e. already open.
- Ensure that an action sheet always contains at least two buttons that allow users to choose how to complete their task. When users tap a button, the action sheet disappears.
- Ensure that an action sheet should not include a title or explanatory text, because it appears in immediate response to a user action.
- Ensure that a user should not scrolls through an action sheet for a better usability.

Alerts

50

Every App displays alert messages. These messages provide important information to users about their usage of the App. The following action items can be exercised for alerts:

- Ensure that an alert is always meaningful and short.
- Ensure that a user is able to dismiss the alert before continuing to run the application.
- Ensure that an alert always contains at least one button, which users tap to dismiss the alert. By default, an alert should display a title and might also display a message that provides additional information.
- An alert can contain one or two text fields, one of which can be a secure text-input field. The background appearance of an alert is system-defined and cannot be changed.
- Ensure that the alert best fits to the layout of the application in both the orientations.

Connections

51

The following action item can be exercised for connections:

- Ensure that usage of Bluetooth or other connection types (e.g. Microsoft Direct Push in Windows Mobile Devices) does not adversely affect the smooth functioning of the App.

Purchases

52

from Indus Net Technologies Mobile Test Lab

- Check the amount and the currency format.
- After successful payment if all the necessary data are retrieved to our application.
- Check what happens if payment process fails such as if there is no internet connection.
- Check if the applications displays correct transactions performed.
- Check if payment gateway has a mobile interface.

Basic Security Checks

53

- Verify valid and invalid passwords - Standard password rules advise that passwords cannot be less than 6 characters and that user id and password cannot be the same.
- Verify that sensitive information such as ID numbers, credit card numbers, should not get displayed in the input box. They should be encrypted and display in asterix format.

Printing Framework

54

In print enabled apps the following can be tested:

- Ensure that available printers are discovered.
- Choose specific pages to print.
- Change paper sizes.
- Ensure it prints document, image and file.
- Ensure before printing your app needs to generate a properly paginated PDF version of your content.

Notes

To outsource your mobile app testing, contact us.
info@indusnet.co.in

our capabilities

HTML 5

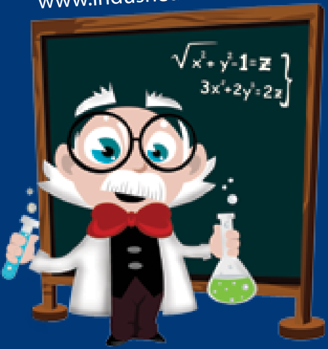
Appcelerator Titanium PhoneGap Corona
PHP Ruby on Rails .NET Framework

eDetailing ePublishing mCRM
mCommerce Mobile dashboard Augmented Reality Mobile Social Media Mobile Games

Prodctivity Apps Business Apps Finance Apps
Health & Fitness Apps Sports Apps Travel Apps Weather Apps
Entertainment Apps Music Apps Photo & Video Apps
Utilities Apps

www.indusnet.co.in

www.indusnet.co.in



connect with us

http://www.indusnet.co.in/blog/

http://www.facebook.com/IndusNetTechnologies

http://twitter.com/indusnettech

http://in.linkedin.com/company/indus-net-technologies

INDUS NET®
TECHNOLOGIES

www.indusnet.co.in | info@indusnet.co.in | +91 33 23576070