

Becoming a Pro

IN Mobile Applications Testing



Mobile Test Industry Standards

Testing Strategies for Mobile Apps : LETS PRACTICE

HOMEWORK

Write as many Test Cases you can for this simple app on Mobile device with three buttons (A, B and C) that making different sounds upon tapping on it.

A - for Audio 1

B - for Audio 2

C - for Audio 3

You are free to create conditions and Rules for each button , but be consistent.

Write Test Cases (use previous slides for hints).

HAVE FUN !

main page

My Application Features



Mobile Test Industry Standards

Testing Strategies for Mobile Apps : **LETS PRACTICE**

HOMEWORK REVIEW

main page

My Application Features

A

B

C

Functional Test

| Case | Description | Result |
|-----------------------------------|--|---|
| Button A | Verify that when Button A is pressed, sound tone A appeared | When button A is pressed the sound tone A should be audible |
| Button B | Verify that when Button B is pressed, sound tone B appeared | When button B is pressed the sound tone B should be audible |
| Button C | Verify that when Button C is pressed, sound tone C appeared | When button C is pressed the sound tone C should be audible |
| Combination of buttons and sounds | Verify that when A,B,C buttons are pressed consecutively, the specific sound A,B,C is appeared | When buttons A,B, C are pressed consecutively, the audible tones A, B, C should be observed |

Mobile Test Industry Standards

Testing Strategies for Mobile Apps : **LETS PRACTICE**

HOMEWORK REVIEW

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My Application Features

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UI Test

| Case | Description | Result |
|--|---|---|
| Panning (sliding horizontally left-right) Swiping | Verify that when main Page is panned/swiped, the sound buttons A,B,C remains in the same order, the same position on the page screen, and do not make sound | The buttons A,B,C, should not loose the order or make any sound during panning/swiping gestural input procedures |
| Rotation | Verify that when device is rotated, Buttons ABC should not loose it's order and make any sound | During device's rotation Buttons ABC should not loose it's order and make any sound |
| Zooming | Verify that buttons A,B, C should not loose the order or make any sound during the Zooming gestural procedure | Buttons A,B,C should not loose the order or make and sound during the Zooming procedure |

Mobile Test Industry Standards

Testing Strategies for Mobile Apps : LETS PRACTICE

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Interruption Test

| Case | Description | Result |
|--------------------------------------|--|--|
| Phone Call Interruption | Verify that when Phone Call is initiate, buttons ABC are in “pause” mode and do not perform assigned sound tones. | When Phone Call is occurred, the Buttons ABC should be saved in ‘pause” mode and do not perform assigned sound tone. |
| Text message interruption | Verify that when SMS notifications/ message appears, the main app page will response with safe, end session | When SMS action occurs, proper error message should be displayed and app will be closed gracefully with saved information |
| Verge App Notification (w/ TuneTone) | Verify that when TechNews Notification with the Ringtone occurs, buttons ABC will pause and perform assigned sound tones after Notification Ringtone is done. | When TechNews Notification (w/Ringtone) occurs the Buttons ABC should be pause until Ringtone tune are done, and continue to perform ABC assigned sound after no more than 3 sec delay. |

Mobile Test Industry Standards

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Connectivity Test

| Case | Description | Result |
|--|---|--|
| Flight Mode of Mobile Device | Verify that when Device has Flight Mode ON, the Buttons ABC are still active and performing sound | Buttons ABC should be active and perform assigned sounds when Mobile Device is in Offline Mode. |
| Bluetooth Connection active with Wearable Device | Verify that when Wearable Device BT connected and play Music, the Buttons ABC are still active and performing sound | Buttons ABC should be active and perform assigned sounds when Mobile Device is in active Bluetooth Mode. |
| Low bandwidth Network | Verify that when Device is in Frequently changed "hopping" area the Buttons ABC are still active and performing sound | Buttons ABC should be active and perform assigned sounds when Mobile Device is in the "hopping mode" |

Mobile Test Industry Standards

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Performance Test

| Module | Description | Result |
|--|--|---|
| Define the maximum amount of load that a system can handle | Verify that when 10,000 Users press A,B,C buttons pressed simultaneously, the designed combination of three sound tone is appeared | When buttons ABC are pressed simultaneously the tune combined of three sounds should appeared |
| The number of concurrent user that application can handle | Verify that when 10,000 User concurrently press Buttons A, there is not drop in functionality and sound quality. | When 10,000 User concurrently press Button A it should be not affect the functionality or sound quality |
| Check application scalability | Verify that during the Device OS/Firmware/ Native App upgrades application can run without drop in performance | When Device OS/or Phone Firmware/or Phone Native App upgrades occurs the application runs without significant performance degradation |

Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : **GAMES**

Mobile game testing differs from the regular mobile app testing.

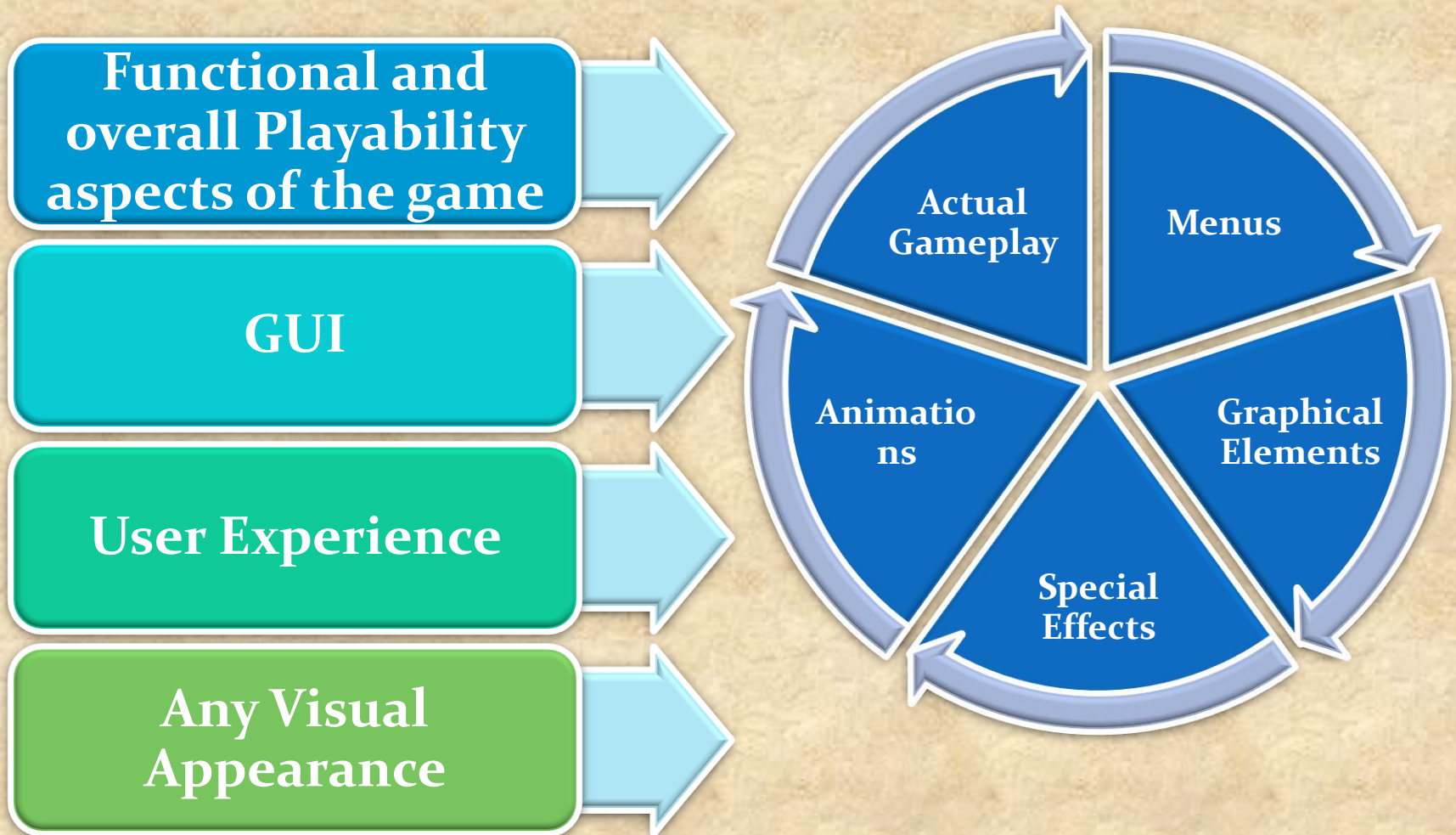
Effective mobile game testing derives from a well-structured and systematic approach, use of test automation framework and seamless integration with your agile process.



Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : **GAMES**

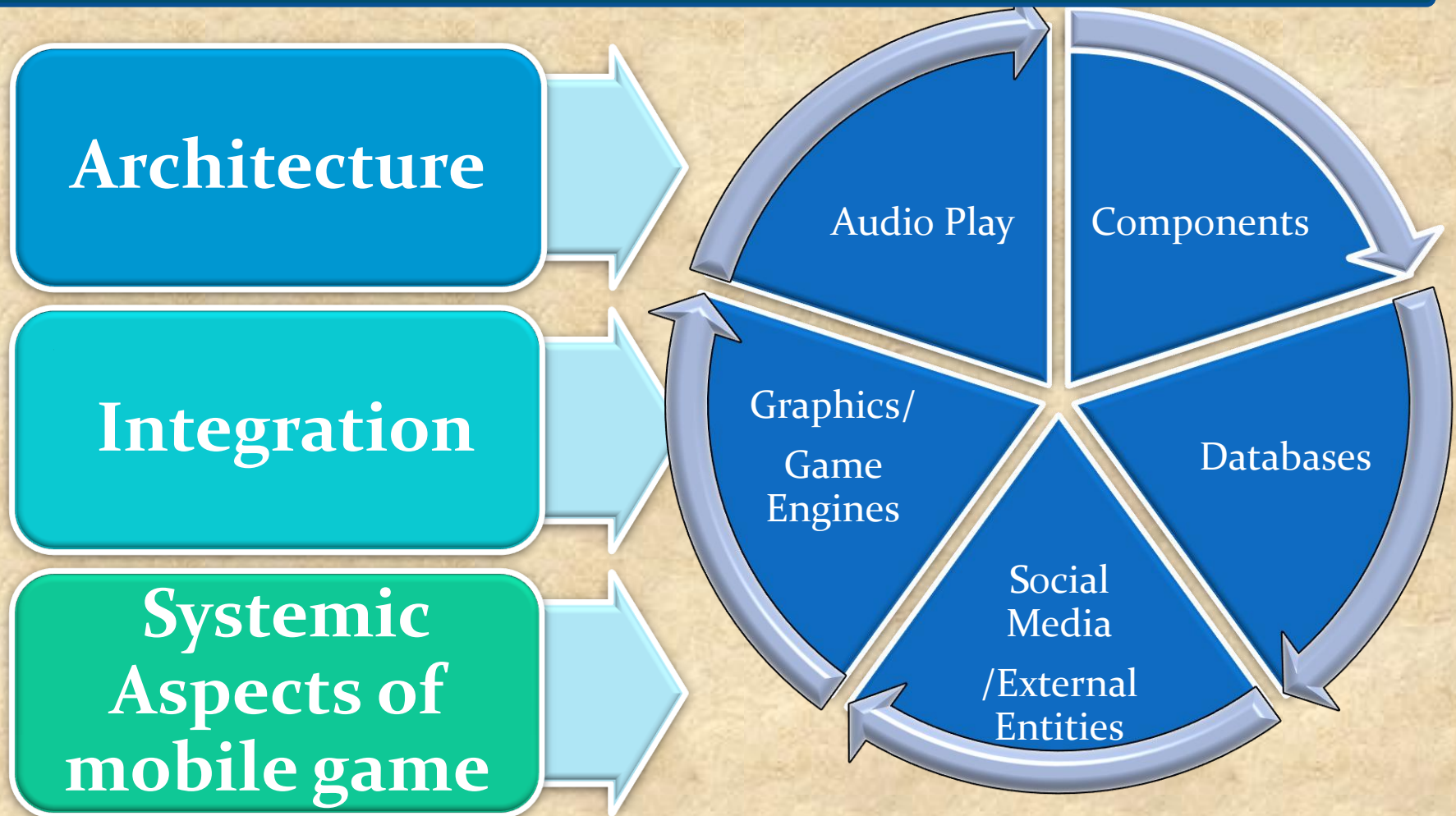
Black-Box Testing Approach focuses on :



Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : **GAMES**

White Box Testing Approach focuses on :



Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : **GAMES**

| Test Type | Purpose |
|-----------------------------|--|
| <i>Functional</i> | reveal issues related to user interface (and graphics), stability, game flow/mechanism, and integration of graphics assets. |
| <i>Compatibility</i> | reveal incompatibility issues with any parts of the game, its third-party components or integrations with those actual devices that end-users use. |
| <i>Performance</i> | important to understand how used device ecosystem varies and what are actual requirements of the game for its users. |
| <i>Localization</i> | your game titles, texts and content needs to be translated and tested with devices in multiple languages. |
| <i>Regression</i> | needs to happen when anything changes in software : server-client interaction, requiring a login, uploading of data (e.g. results) and downloading of data (e.g. data, images). |
| <i>Load</i> | tests the limits of a system, such as the number of players on a server, the graphic content on the screen (e.g. frames per second, FPS), or memory consumption (allocation and deallocation of it). |

Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : GAMES

KEY AREAS IN MOBILE GAME TESTING

**User
Interface and
Functionality**

**Graphics
Performance**

**Usability and
User
Experience**

**Multi-
player/User
Features**

**Social
Integrations**

**Security and
Liabilities**

Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : **Banking**

Banking applications are considered to be one of the most complex applications in development and testing industry.

What makes Banking application so complex?

What approach should be followed in order to test the complex workflows involved?



Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : **Banking**

BANKING DOMAIN in TESTING

Traditional
Banking sector



Core Banking
Corporate Banking
Retail Banking

Service based
Banking sector



Core
Corporate
Retail
Loan
Trade Finance
Private Banking
Consumer Finance
Islamic Banking
Customer Delivery
Channels/Front End Delivery

Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : Banking

Why Domain Knowledge Matters?



It reduces the training time

It helps in quick defect tracking

It gives good idea on UI features and back-end processing

It gives good hold over workflow, business process and rule

It helps to understand easily the technical terminology

Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : **Banking**

12 most important characteristics of a Banking application

It should support thousands of concurrent user sessions

A banking application should integrate with other numerous applications like trading accounts, Bill pay utility, credit cards, etc.

It should process fast and secure transactions

It should include massive storage system.

To troubleshoot customer issues it should have high auditing capability

It should handle complex business workflows

Need to support users on multiple platforms (Mac, Linux, Unix, Windows)

It should support users from multiple locations

It should support multi-lingual users

It should support users on various payment systems (VISA, AMEX, MasterCard)

It should support multiple service sectors (Loans, Retail banking etc.)

Foolproof disaster management mechanism

Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : **Banking**

Banking applications have multiple tiers involved in performing an operation. For Example, a banking application may have:

Web Server to interact with end users via Browser

Middle Tier to validate the input and output for web server

Data Base to store data and procedures

Transaction Processor which could be a large capacity Mainframe or any other Legacy system to carry out Trillions of transactions per second.

Requirement Analysis

Requirement Review

Business Reqs Documentation

Database Testing

Integration Testing

Functional Testing

Security Testing

Usability Testing

User Acceptance Testing

Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : Banking

Requirement Gathering

Requirement gathering phase involves documentation of requirements either as Functional Specifications or Use Cases

Requirement Review

The deliverable of Requirement Gathering is reviewed by all the stakeholders such as QA Engineers, Development leads and Peer Business Analysts

Business Scenario Preparation

In this stage QA Engineers derive Business Scenarios from the requirement documents (Functions Specs or Use Cases);

Functional Testing

Test Case Preparation, Review, and Execution

Database Testing

involves complex transaction which are performed both at UI level and Database level

Security Testing

entire Application testing cycle as this stage ensures that application complies with Federal and Industry standards

User Acceptance

User testing should be based on the pre agreed test scenarios or acceptance criteria.

Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : Banking Security

Many banks failed when it came to proper SSL encryption, authentication and secure feature implementation.



90% of tested apps initiated connections without proper SSL encryption



70% didn't have alternative authentication solutions



50% used an iOS feature called UIWebView (designed to display web content in native apps) insecurely



40% didn't validate the authenticity of digital certifications received from a server



20% were complied without using features designed to limit the risk of memory corruption attacks



Many apps exposed sensitive information through iOS system logs and crash logs

Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : Banking Security

Sample Test Cases For Banking Application (OVERVIEW)

| | |
|---|--|
| 1 | Verify that user is able to login with valid username and password |
| 2 | Verify that user is able to perform basic financial transactions |
| 3 | Verify that user is able to add a beneficiary with valid name and account details |
| 4 | Verify that user is able to make financial transactions to added beneficiary |
| 5 | Verify that user is able to add decimal number into amount (limited by 2 numbers) |
| 6 | Verify that user is not able to add negative number into amount field |
| 7 | Verify that user is allowed to transfer money only if there is proper account balance. |
| 8 | Verify that there is a confirmation check for financial transactions |

Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : Banking Security

| Sample Test Cases For Banking Application | |
|---|---|
| 9 | Verify that user is given an acknowledgment receipt upon successful financial transaction. |
| 10 | Verify that customer is able to send money to multiple people |
| 11 | Verify that user is allowed to change password |
| 12 | Verify that account details reflect financial transactions also. |
| 13 | Verify that user with invalid password is not allowed to login. |
| 14 | Verify that after repeated attempts to login with incorrect password(as per the limits), user should be blocked. |
| 15 | Verify that time-out feature is implemented |
| 16 | Verify that if either of the username or password is blank, user is not allowed to login. User should be given an alert also. |

Mobile Test Industry Standards :

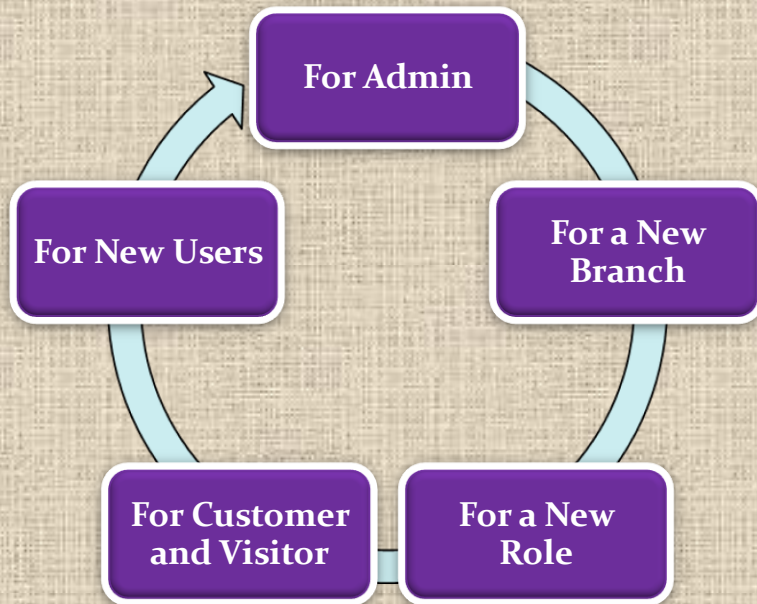
Testing Strategies for Mobile Apps : Banking Security

| | Challenges faced by QA |
|---|---|
| 1 | Getting access to production data and replicating it as test data, for testing is challenging |
| 2 | The biggest challenge in testing banking system is during the migration of the system from the old system to the new system like testing of all the routines, procedures and plans. Also how the data will be fetched, uploaded and transferred to the new system after migration |
| 3 | There may be the cases where requirements are not documented well and may lead to functional gaps in test plan Many non-functional requirements are not fully documented, and testers do not know whether to test it or not |
| 4 | The most important point is to check whether the said system follows the desired policies and procedures |
| 5 | The scope and the timelines increases as banking application are integrated with other application like internet or mobile banking |

Mobile Test Industry Standards :

Testing Strategies for Mobile Apps : **Banking Security**

Guidance For Banking Application: **Scope**



SUMMARY

- Majority of banking software are developed on Mainframe and Unix
- Testing helps to lessen possible glitches encounter during software development
- Proper testing and compliance to industry standards, save companies from penalties
- Good practices help develop good results, reputation and more business for companies
- Both manual and automated testing have respective merits and usability