FNSvalue

Blockchain Secure Authentication (BSA) SDK Implementation for Native Apps

...

Mobile SDK Walkthrough

Passwordless Blockchain Technology

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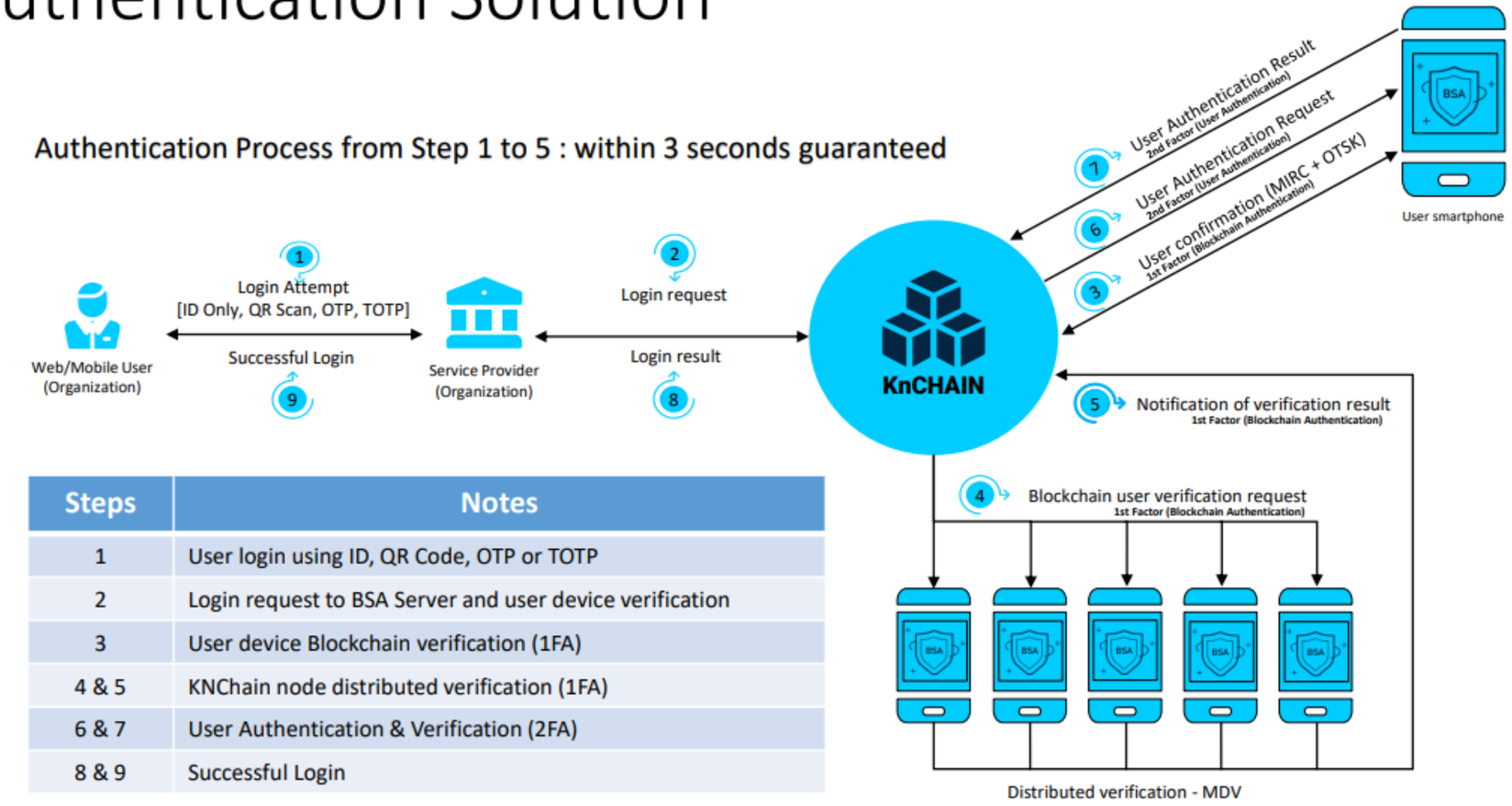
BSA: Secure, Trust and Convenient User Authentication Solution

Authentication Process from Step 1 to 5 : within 3 seconds guaranteed



Steps	Notes
1	User login using ID, QR Code, OTP or TOTP
2	Login request to BSA Server and user device verification
3	User device Blockchain verification (1FA)
4 & 5	KNChain node distributed verification (1FA)
6 & 7	User Authentication & Verification (2FA)
8 & 9	Successful Login

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BSA SDK is a software development kit, equips developers with the necessary tools to integrate BSA authentication into their native applications

The goals is to implement Blockchain Secure Authentication Technology as user identifier and verification using Passwordless Blockchain, hence preventation security issues

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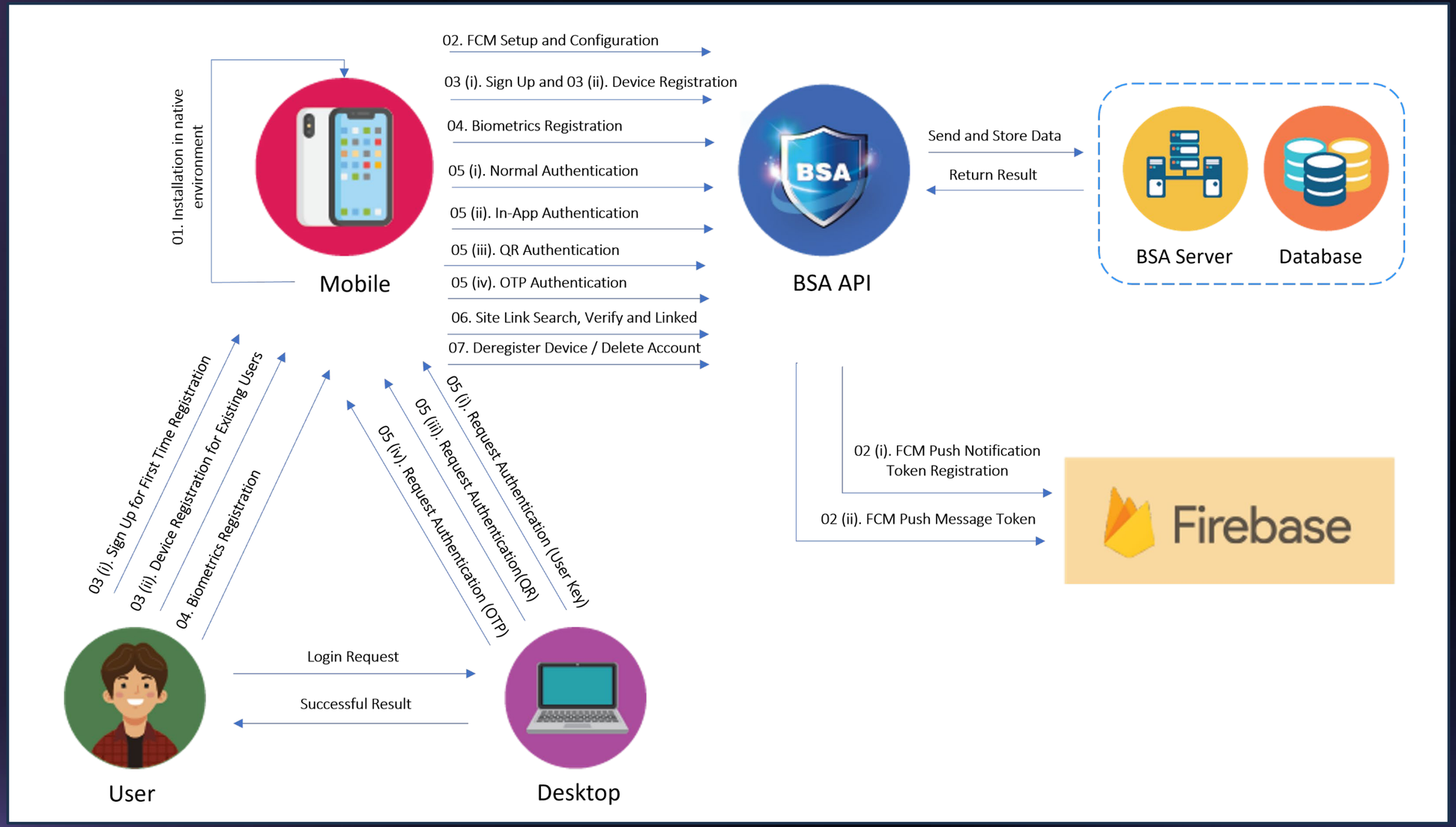
Flow of BSA Authentication process with the necessary component, as reference for the developer to integrate with the BSA SDK



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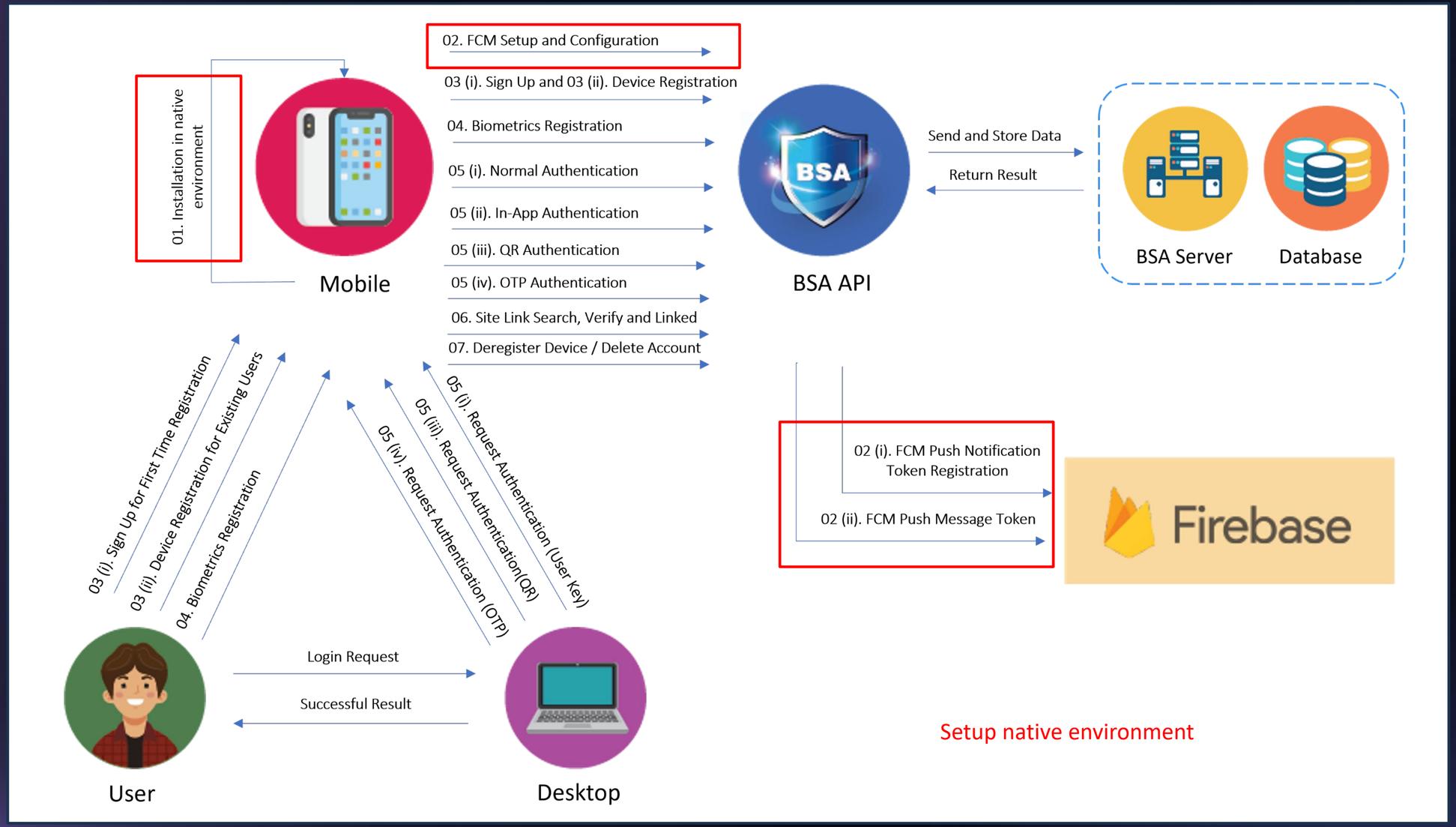

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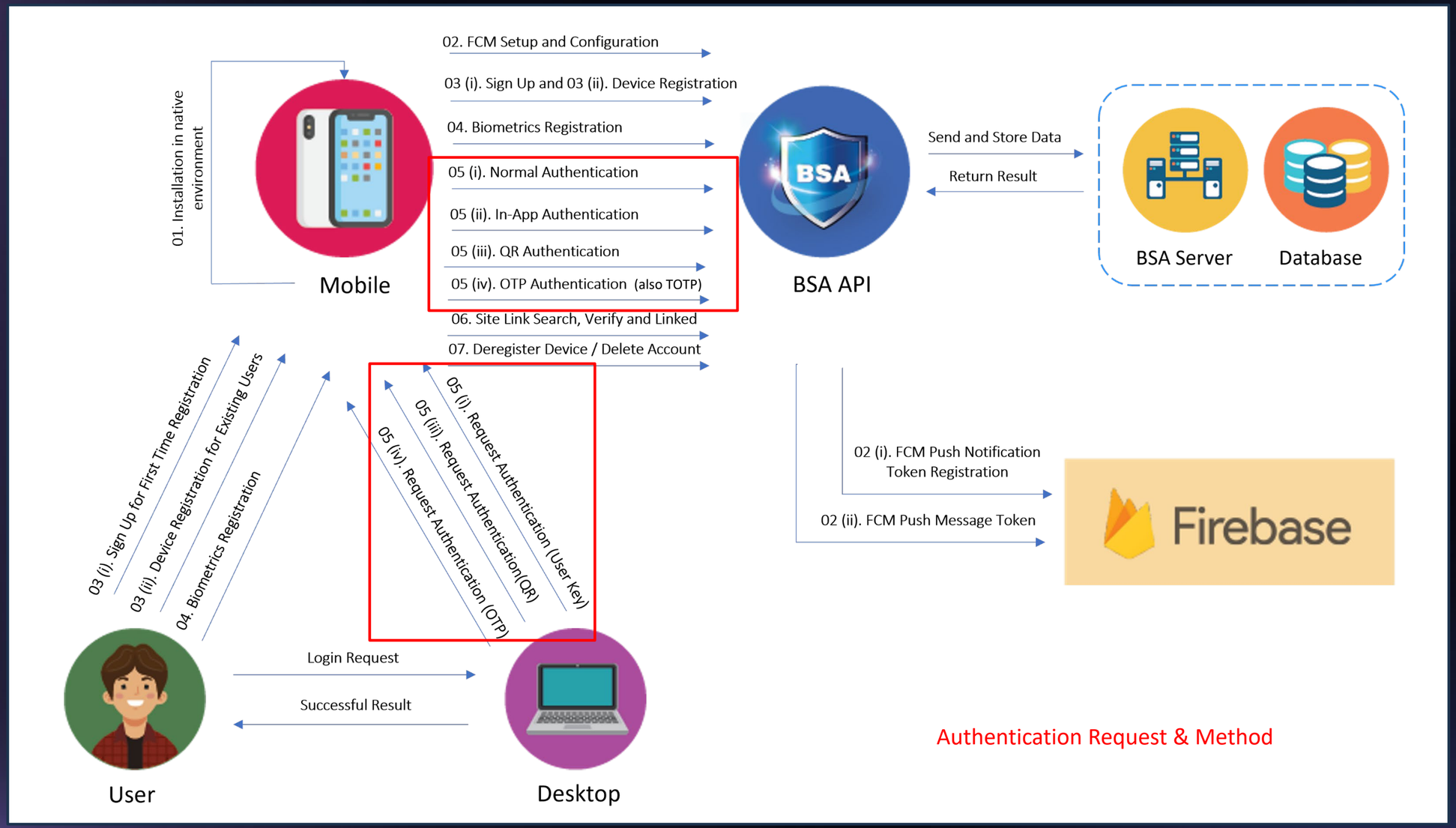

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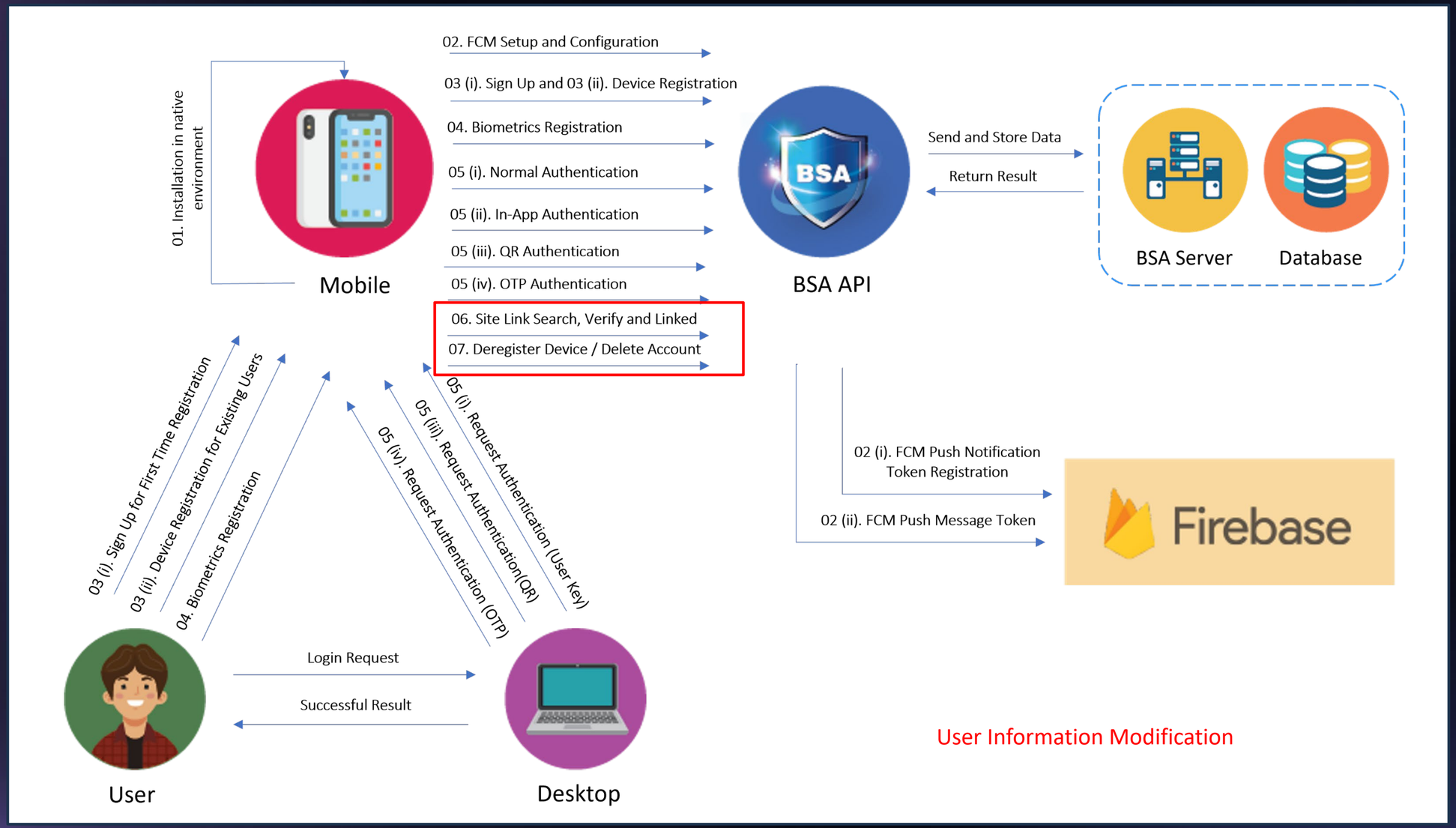

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04. SDK UI Component & Functionality

SECTION		UI COMPONENT	SDK FUNCTIONALITY
User Registration		Input Field for user ID, Name, Email and Phone Number	1. Duplicate Check for these input 2. registerUser() to register the user information
Authentication Method		1. Button QR Scanner, TOTP Request and OTP Request for authentication method 2. Button “Cancel” for cancel authentication process	Each type of Authentication method called
User Information Modification	Change User Authentication Type	Button with 3 different user authentication type (Normal Authentication, Biometric/Face ID Authentication and PIN/Password Authentication)	1. resetBiometricChange() to reset previous User Authentication Type Infformation 2. registerBiometric() or authDeviceCredential() to re-register the update User Authentication Type
	De-Register Device	Button “De-Register Device” or “Sign Out”	1. unRegisterDevice() to de-register device 2. reRegisterUserDevice() to re-register the device again
	Delete Account	Button “Delete Account”	1. deleteUser() 2. Once this function being called, all the user information in the database will be deleted permanently

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Prerequisites:

	Minimum	Target
Gradle	Version 6.0.0	Version 8.1.2
Android Version	Android 6.0 Marshmallow (API Level 23)	Android 13 Marshmallow (API Level 33)

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Installation :

Step 1	Step 2	Step 3	Step 4	Step 5
Declare SDK repository in the gradle project level	Add dependencies required on gradle app level	Add permission configuration on the Manifest	Add JAVA 8 configuraton at gradle App Level	Initialization the SDK by adding the Client Key and API Server URL

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Installation :

Step 1

Declare BSA SDK repository in the Gradle project level :

```kotlin
dependencies {
    implementation 'com.bsa.sdk:BsaAuthentication:1.0.8@aar'
}
```

For latest version update, kindly refer here

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Installation :

Step 2

Add dependencies required on Gradle app level :

```kotlin
dependencies {
    // retrofit2
    implementation 'com.squareup.okhttp3:logging-interceptor:3.14.9'
    implementation 'com.squareup.retrofit2:retrofit:2.9.0'
    implementation 'com.squareup.retrofit2:converter-gson:2.9.0'

    implementation 'com.google.code.gson:gson:2.8.6'

    // websocket
    implementation 'com.github.NaikSoftware:StompProtocolAndroid:1.6.4'

    // biometric
    implementation "androidx.biometric:biometric:1.0.1"

    implementation group: 'io.reactivex.rxjava2', name: 'rxjava', version: '2.2.5'
    implementation 'com.warrenstrange:googleauth:1.4.0'
}
```

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Installation :

Step 3

Add permission configuration on the Manifest :

```kotlin
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.sample">

<uses-permission android:name="android.permission.INTERNET" />
<uses-permission android:name="android.permission.ACCESS_NETWORK_STATE" />
<uses-permission android:name="android.permission.CAMERA"/>
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"/>
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />
<uses-permission android:name="android.permission.VIBRATE"/>
<uses-permission android:name="android.permission.WAKE_LOCK"/>
<uses-permission android:name="android.permission.CHANGE_WIFI_STATE" />
<uses-permission android:name="android.permission.READ_PHONE_STATE" />
<uses-permission android:name="android.permission.ACCESS_WIFI_STATE" />
<uses-permission android:name="android.permission.BLUETOOTH" />
<uses-permission android:name="android.permission.BLUETOOTH_ADMIN" />
<uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"/>

<uses-permission android:name="android.permission.USE_FULL_SCREEN_INTENT"/>
<!-- Android 13 Notification Runtime -->
<uses-permission android:name="android.permission.POST_NOTIFICATIONS"
    android:minSdkVersion="33"/>

    ....

</manifest>
```

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Installation :

Step 4

Add JAVA 8 configuration at Gradle App Level :

```java
android {
    compileOptions {
        sourceCompatibility JavaVersion.VERSION_1_8
        targetCompatibility JavaVersion.VERSION_1_8
    }
    ....
}
```

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Installation :

Step 5

Initialization the SDK by adding the Client Key and API Server URL :

```kotlin
class GlobalApplication : Application() {
    override fun onCreate() {
        super.onCreate();

        BsaSdk.getInstance().init(
        applicationContext,
        "{Client Key}",
        "{API SERVER URL}"
        )

    }
}
```

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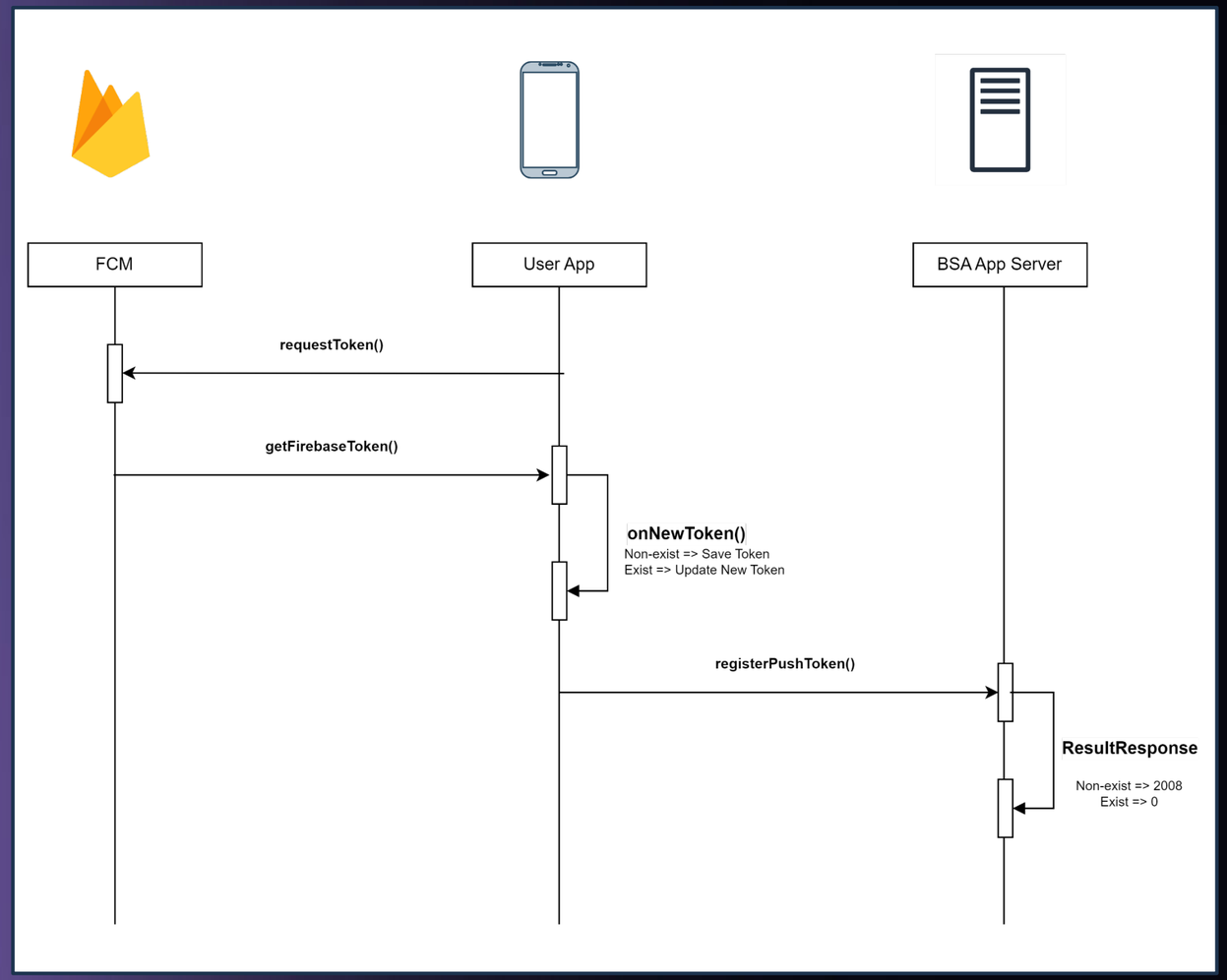
FCM Setup & Configuration :



1. **Create a Google Cloud Project:**
   Participants should start by creating a Google Cloud project to configure Firebase services, including Firebase Cloud Messaging.

2. **Generate google-services.json:**
   After creating the project, participants need to set up Firebase within their application by generating a google-services.jsonfile. This file contains crucial configuration details specific to the Firebase project.

3. **Share google-services.json:**
   Participants must then share the google-services.jsonfile with the ITU team responsible for managing the BSA App Server.

4. **Configure FCM on BSA App Server:**
   The ITU team will utilize the provided google-services.jsonfile to configure Firebase Cloud Messaging on the BSA App Server. This involves setting up the necessary credentials to facilitate the sending of notifications to the participant's application.

5. **Testing Notification Delivery:**
   Once the configuration is complete, participants can proceed to test whether they receive notifications from the BSA App Server. This testing phase includes sending a test notification from the server to the participant's application and verifying its successful reception.

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SDK Integration :

Kotlin

```kotlin
BsaSdk.getInstance().sdkService.isDuplicateUserKey(userKey, object:
SdkResponseCallback<CheckDuplicateUserKeyResponse> {
    override fun onSuccess(result: CheckDuplicateUserKeyResponse) {
        // Code to run if user ID is not duplicated
        ...
    }
    override fun onFailed(errorResult: ErrorResult?) {
        // Code to run if user ID is duplicated or connection failed
        ...
    }
})
```

Java

```java
BsaSdk.getInstance().sdkService.isDuplicateUserKey(userKey, new
SdkResponseCallback<CheckDuplicateUserKeyResponse>() {
    @Override
    public void onSuccess(CheckDuplicateUserKeyResponse result) {
        // Code to run if user ID is not duplicated
        // ...
    }

    @Override
    public void onFailed(ErrorResult errorResult) {
        // Code to run if user ID is duplicated or connection failed
        // ...
    }
});
```

BsaSdk'sisDuplicateUserKey() to check if there is a duplicate user ID.

Param : userKey

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1. Debugging log

You may use debugging feature (timber, print, log etc) to print the error code or parameter pass to see if it is success or not.

2. Crashes or unexpected behavior in the app

Whenever you interact with SDK function, and the apps is crashes, this maybe due to incorrect SDK initialization steps, incorrect permission configurations or incorrect API Parameters Called. Please double-check it. Including FCM.

3. Integration Errors and Incompatibilities

The SDK integration results in conflicts with existing libraries used in the app. Please check whether there are any known compatibility issues between BSA SDK and other current libraries used. Please used the specific version dependencies.

** You may also check the Error Code provided

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1. Follow the SDK documentation guideline meticulously and comprehensively
2. Evaluate SDK suitability and compatibility with your project
3. Implement Error Handling for user interaction and Debug Logging for developer
4. Understanding Error Code in BSA SDK and how to troubleshoot
5. Test thoroughly, document it, have a contingencies plan and always do a back up of your development

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BSA SDK Flexibility Use Case

It is principle.

Banking Sector

FNSPay Demo

Implementation on each transaction process

HR Sector

BSA HR Demo

Implementation on attendance checking in and out, applicant request leave and approval with e-KYC

Lawyer Sector

Digital Signature System (DSS) Demo

Implementation on creating digital signature, user verification, and signing the documents

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SDK Documentation

Click here

FCM Setup

Click here

FNSPay Demo App

Click here

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Integration is not merely the merging of code; it's the harmonious convergence of vision, creativity, and execution.

May your integrations inspire, your solutions empower, and your journey continue to unfold.

Thank You

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