

Oracle Banking Digital Experience

Mobile Application Builder Guide – Android
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Mobile Application Builder Guide – Android
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1. Preface

1.1 Intended Audience

This document is intended for the following audience:

- Customers
- Partners

1.2 Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=accandid=docacc>.

1.3 Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit

<http://www.oracle.com/pls/topic/lookup?ctx=accandid=info> or visit

<http://www.oracle.com/pls/topic/lookup?ctx=accandid=trs> if you are hearing impaired.

1.4 Structure

This manual is organized into the following categories:

Preface gives information on the intended audience. It also describes the overall structure of the User Manual.

The subsequent chapters describes following details:

- Prerequisites
- Configuration / Installation.

1.5 Related Information Sources

For more information on Oracle Banking Digital Experience Release 18.2.0.0.0, refer to the following documents:

- Oracle Banking Digital Experience Licensing Guide

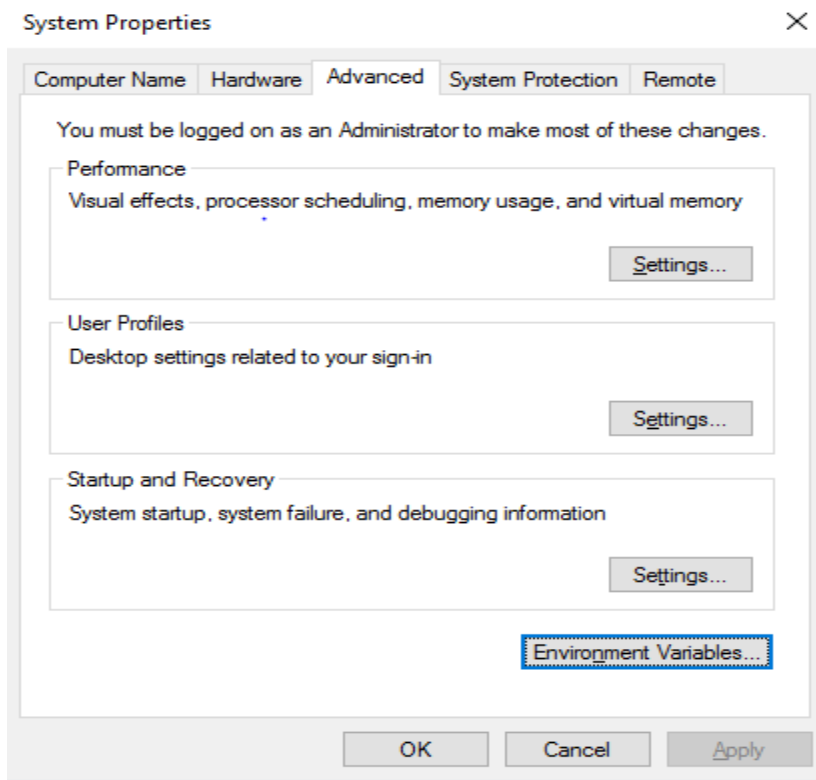
2. OBDX Servicing Application

2.1 Prerequisites

OBDX Android App is supported on Android 6 and above versions.

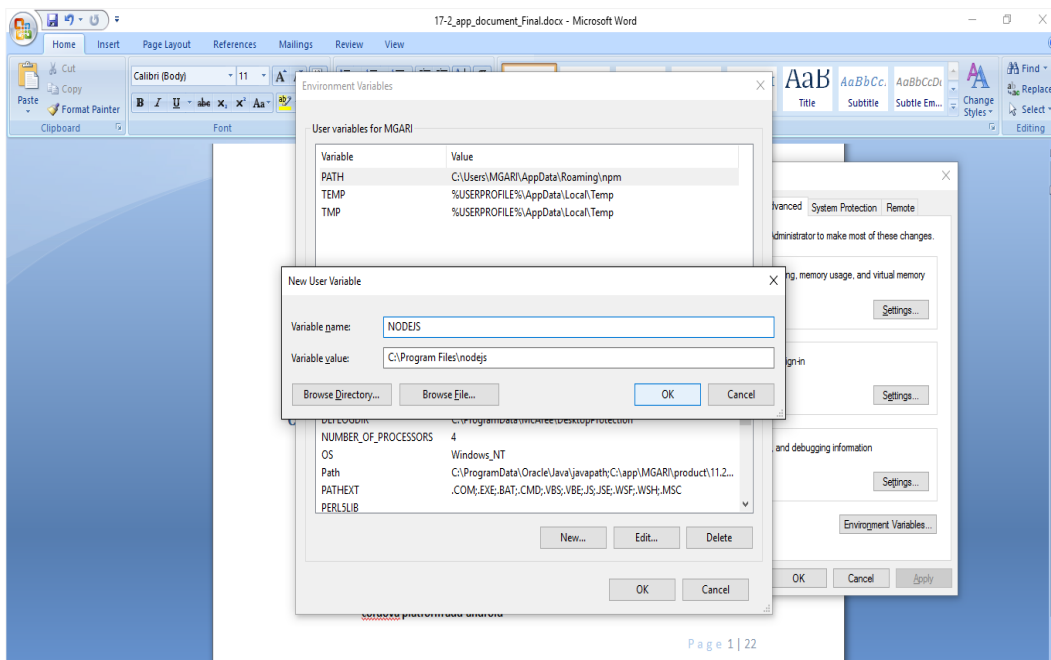
18.2 App will not work for Android 5 and below versions

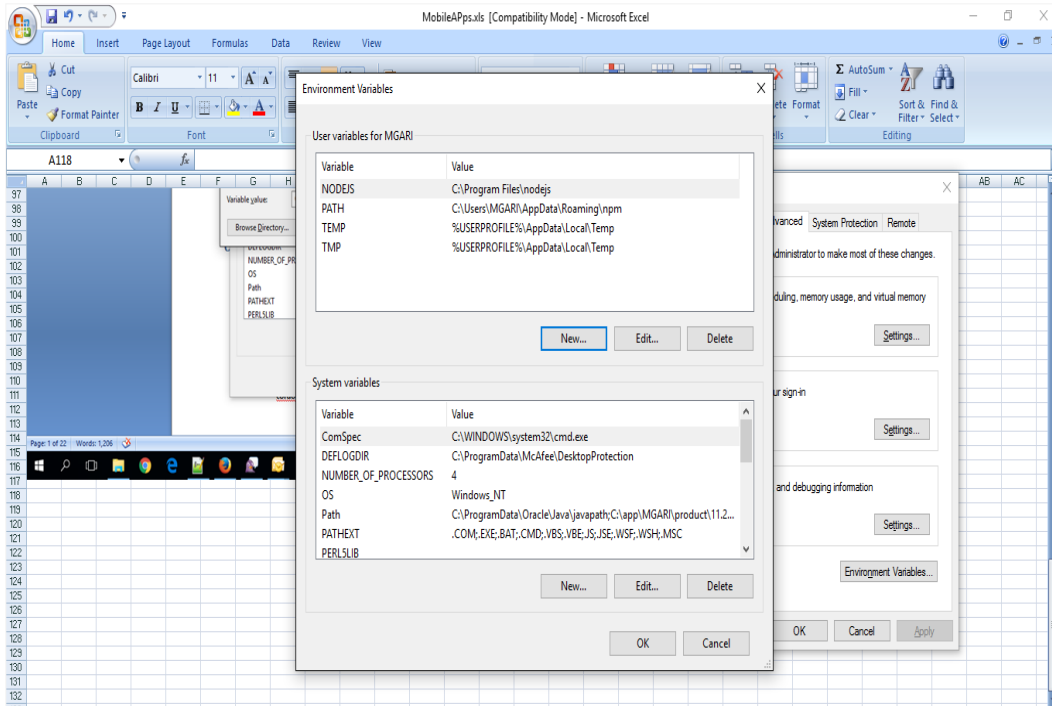
- a. **Download and Install node Js (will be downloaded to default path)**
- b. Install node js from <https://nodejs.org>
- c. **Download and Install Android Studio**
- d. Download and install Android Studio from <https://developer.android.com/studio/index.html>
- e. **Download and Install Android platforms**
- f. Update Android SDK to latest API Level.
- g. Cordova Version: 6.x
- h. Gradle Version: gradle-4.6
- i. Android Gradle Plugin Version (3.2.1): 'com.android.tools.build:gradle:3.2.1'
- j. **Set Environment variables**
- k. Set following system variables:
 1. Click on Windows key and type Environment Variables.
 2. A dialog box will appear. Click on the Environment Variables button as shown below



3. NODEJS <nodejs_path> Example: "C:\Program Files\nodejs".

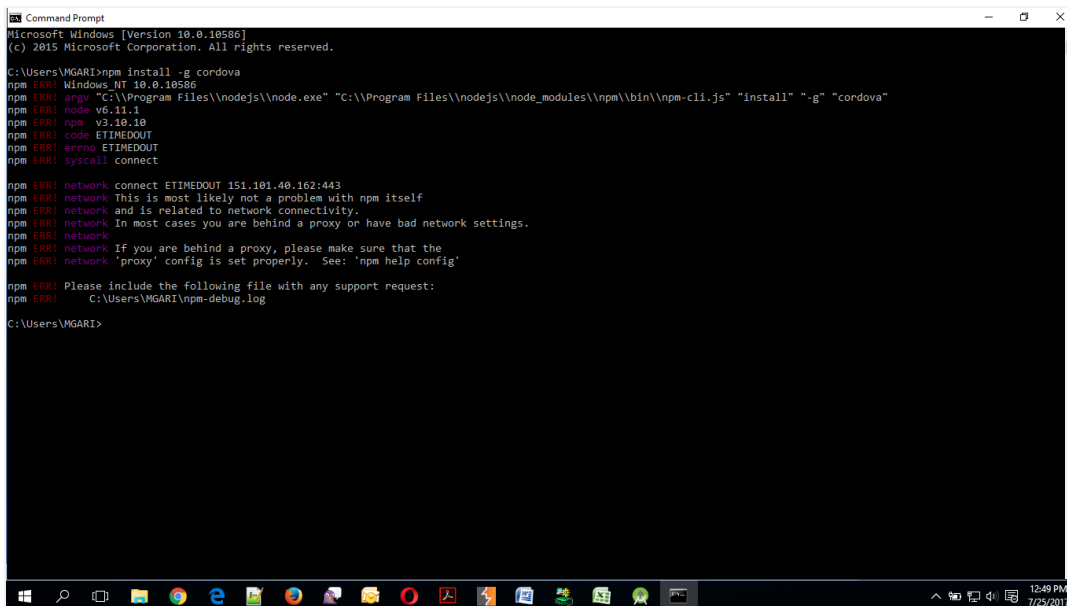
- I. Add the above variables in "PATH" system variable.





2.2 Create project

1. Install cordova using the command
npm install -g cordova



- a. If you face the above error then set proxy using following commands on command line.

npm config set proxy <provide your proxy value here>

npm config set https-proxy <provide your proxy value here>

```

Command Prompt
Microsoft Windows [Version 10.0.10586]
(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\MGARI>npm install -g cordova
npm ERR! Windows_NT 10.0.10586
npm ERR! argv "C:\\Program Files\\nodejs\\node.exe" "C:\\Program Files\\nodejs\\node_modules\\npm\\bin\\npm-cli.js" "install" "-g" "cordova"
npm ERR! node v6.11.1
npm ERR! npm v3.10.10
npm ERR! code ETIMEDOUT
npm ERR! errno ETIMEDOUT
npm ERR! syscall connect

npm ERR! network connect ETIMEDOUT 151.101.40.162:443
npm ERR! network This is most likely not a problem with npm itself
npm ERR! network and is related to network connectivity.
npm ERR! network In most cases you are behind a proxy or have bad network settings.
npm ERR! network
npm ERR! network If you are behind a proxy, please make sure that the
npm ERR! network 'proxy' config is set properly. See: 'npm help config'

npm ERR! Please include the following file with any support request:
npm ERR!   C:\Users\MGARI\npm-debug.log

C:\Users\MGARI>npm config set proxy www-proxy-idx.oracle.com:80
C:\Users\MGARI>npm config set https-proxy www-proxy-idx.oracle.com:80
C:\Users\MGARI>
    
```

```

Command Prompt

|-- win-please@1.1.1
|-- tough-cookie@2.3.2
|-- punycode@1.4.1
++-- nopt@3.0.1
|-- abbrev@1.1.0
++-- q@1.0.1
++-- update-notifier@0.5.0
++-- configstore@1.4.0
++-- is-npm@1.0.0
++-- latest-version@1.0.1
|-- package-json@1.2.0
++-- got@3.1.1
++-- duplexify@3.5.0
|   |-- end-of-stream@1.0.0
|   |-- once@1.3.2
|   |-- stream-shift@1.0.0
|   |-- infinity-agent@2.0.3
|   |-- is-redirect@1.0.0
|   |-- is-stream@1.1.0
|   |-- lowercase-keys@1.0.0
|   |-- nested-error-stacks@1.0.2
|   |-- object-assign@3.0.0
|   |-- prepend-http@1.0.4
|   |-- read-all-stream@3.1.0
|   |-- timed-out@2.0.0
|-- registry-url@3.1.0
|-- rc@1.2.1
++-- deep-extend@0.4.2
++-- ini@1.3.4
++-- minilog@1.2.0
|-- strip-json-comments@2.0.1
++-- repeating@1.1.3
|-- is-finite@1.0.2
|-- number-is-nan@1.0.1
++-- semver-diff@2.1.0
|-- string-length@1.0.1

C:\Users\MGARI>
    
```

2. Create sample project using following command
cordova create <directory name> <package name> <project name>

Eg : cordova create zigbank com.ofss.zigbank ZigBank

```

Command Prompt
|-- pinyin@1.4.1
|-- nopt@3.0.1
|-- abbrev@1.1.0
|-- q@1.0.1
|-- update-notifier@0.5.0
|-- configstore@1.4.0
|-- is-npm@1.0.0
|-- latest-version@1.0.1
|-- package-json@1.2.0
|-- got@3.3.1
|-- duplexify@3.5.0
|-- end-of-stream@1.0.0
|-- once@1.3.3
|-- stream-shift@1.0.0
|-- infinity-agent@2.0.3
|-- is-redirect@1.0.0
|-- is-stream@1.1.0
|-- lowercase-keys@1.0.0
|-- nested-error-stacks@1.0.2
|-- object-assign@3.0.0
|-- prepend-http@1.0.4
|-- read-all-stream@3.1.0
|-- timed-out@2.0.0
|-- registry-url@3.1.0
|-- rc@1.2.1
|-- deep-extend@0.4.2
|-- ini@1.3.4
|-- minimist@1.2.0
|-- strip-json-comments@2.0.1
|-- repeating@1.1.3
|-- is-finite@1.0.2
|-- number-is-nan@1.0.1
|-- semver-diff@2.1.0
|-- string-length@1.0.1

C:\Users\MGARI>cordova create ZigBank com.offss.zigbank ZigBank
? May Cordova anonymously report usage statistics to improve the tool over time? Yes

Thanks for opting into telemetry to help us improve cordova.
Creating a new cordova project.
C:\Users\MGARI>
  
```

3. All subsequent commands need to be run within the project's directory

cd <directory name>

Eg: cd zigbank

```

Command Prompt
|-- abbrev@1.1.0
|-- q@1.0.1
|-- update-notifier@0.5.0
|-- configstore@1.4.0
|-- is-npm@1.0.0
|-- latest-version@1.0.1
|-- package-json@1.2.0
|-- got@3.3.1
|-- duplexify@3.5.0
|-- end-of-stream@1.0.0
|-- once@1.3.3
|-- stream-shift@1.0.0
|-- infinity-agent@2.0.3
|-- is-redirect@1.0.0
|-- is-stream@1.1.0
|-- lowercase-keys@1.0.0
|-- nested-error-stacks@1.0.2
|-- object-assign@3.0.0
|-- prepend-http@1.0.4
|-- read-all-stream@3.1.0
|-- timed-out@2.0.0
|-- registry-url@3.1.0
|-- rc@1.2.1
|-- deep-extend@0.4.2
|-- ini@1.3.4
|-- minimist@1.2.0
|-- strip-json-comments@2.0.1
|-- repeating@1.1.3
|-- is-finite@1.0.2
|-- number-is-nan@1.0.1
|-- semver-diff@2.1.0
|-- string-length@1.0.1

C:\Users\MGARI>cordova create ZigBank com.offss.zigbank ZigBank
? May Cordova anonymously report usage statistics to improve the tool over time? Yes

Thanks for opting into telemetry to help us improve cordova.
Creating a new cordova project.
C:\Users\MGARI>cd ZigBank
C:\Users\MGARI\ZigBank>
  
```

4. Add platform android to the project using following command

cordova platform add android@6.x.x

```

C:\Windows\system32\cmd.exe

C:\Users\vpenta\Desktop\17.2 documentaion\demo app>cordova create zigbank com.ofss.zigbank ZigBank
Creating a new cordova project.

C:\Users\vpenta\Desktop\17.2 documentaion\demo app>cd zigbank

C:\Users\vpenta\Desktop\17.2 documentaion\demo app\zigbank>cordova platform add android
Using cordova-fetch for cordova-android@6.2.2
Adding android project...
Creating Cordova project for the Android platform:
  Path: platforms\android
  Package: com.ofss.zigbank
  Name: ZigBank
  Activity: MainActivity
  Android target: android-25
Subproject Path: CordovaLib
Android project created with cordova-android@6.2.3
Discovered plugin "cordova-plugin-whitelist" in config.xml. Adding it to the project
Installing "cordova-plugin-whitelist" for android

This plugin is only applicable for versions of cordova-android greater than 4.0. If you have a previous p
platform version, you do *not* need this plugin since the whitelist will be built in.

Adding cordova-plugin-whitelist to package.json
Saved plugin info for "cordova-plugin-whitelist" to config.xml
--save flag or autosave detected
Saving android@6.2.3 into config.xml file ...

C:\Users\vpenta\Desktop\17.2 documentaion\demo app\zigbank>
    
```

5. Extract Android workspace from installer and place in a folder.
 - a. Copy folders cordova & CordovaLib from sample project (created in previous step) to this workspace(zigbank\platforms\android). Merge the folders and skip (do not replace) existing files. Confirm from below screenshot

Name	Date modified	Type	Size
.gradle	12/1/2018 3:43 PM	File folder	
.idea	12/14/2018 6:52 PM	File folder	
app	12/14/2018 12:14 ...	File folder	
app-lib	12/10/2018 7:30 PM	File folder	
BarcodeScannerLib	12/12/2018 10:06 ...	File folder	
build	12/4/2018 6:01 PM	File folder	
cordova	12/1/2018 3:19 PM	File folder	
CordovaLib	12/4/2018 6:09 PM	File folder	
customizations	12/4/2018 6:09 PM	File folder	
gradle	12/1/2018 3:19 PM	File folder	
obdxcore	12/12/2018 10:06 ...	File folder	
obdxwear	12/10/2018 7:30 PM	File folder	
obdxwear-lib	12/12/2018 10:06 ...	File folder	
android.iml	12/1/2018 3:45 PM	IML File	1 KB
android.json	6/28/2018 11:19 PM	JSON File	4 KB
build.gradle	12/1/2018 6:24 PM	GRADLE File	2 KB
gradlew	4/2/2018 3:30 PM	File	6 KB
gradlew.bat	4/2/2018 3:30 PM	Windows Batch File	3 KB
keystore.jks	7/27/2018 12:01 PM	JKS File	3 KB
local.properties	12/1/2018 3:26 PM	PROPERTIES File	1 KB
project.properties	6/29/2018 1:24 AM	PROPERTIES File	1 KB
settings.gradle	12/1/2018 4:56 PM	GRADLE File	1 KB
wrapper.gradle	6/28/2018 11:17 PM	GRADLE File	1 KB

2.3 Adding UI to workspace.

Use any 1 option below

- a. Building un built UI (required in case of customizations)

Extract unbuilt UI and traverse to **OBDX_Installer/installables/ui/channel/_build** folder and perform below steps

Windows –

```
npm install -g grunt-cli
npm install
set IS_GRUNT=true
node render-requirejs/render-requirejs.js mobile
npm install cwebp-bin
```

Copy "vendor" directory from _build/node_modules/cwebp-bin/ to
_build/node_modules/gruntcwebp/node_modules/cwebp-bin

```
grunt --max_old_space_size=5120 mobilebuild --platform=android
```

Linux -

```
sudo npm install -g grunt-cli
sudo npm install
export IS_GRUNT=true
node render-requirejs/render-requirejs.js mobile
npm install cwebp-bin
```

Copy "vendor" directory from _build/node_modules/cwebp-bin/ to
_build/node_modules/gruntcwebp/node_modules/cwebp-bin

```
grunt --max_old_space_size=5120 mobilebuild --platform=android
```

- b. Using built UI (out of box shipped with installer)

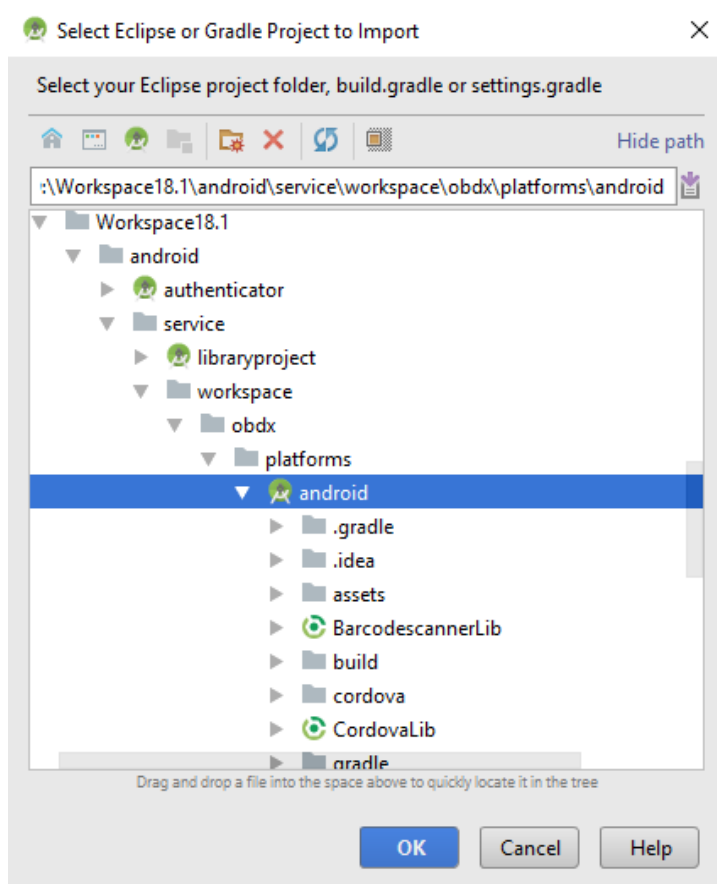
- i. Unzip dist.tar.gz **for android** from installer and copy folders(components,extensions,framework,images,json,lzn,pages,partials,resource, index.html,build.fingerprint) to workspace (platforms/android/app/android/app/src/main/assets/www/)

Delete originations folder inside images (images/originations) and ensure webhelp folder is not copied.

2.4 Importing in Android Studio

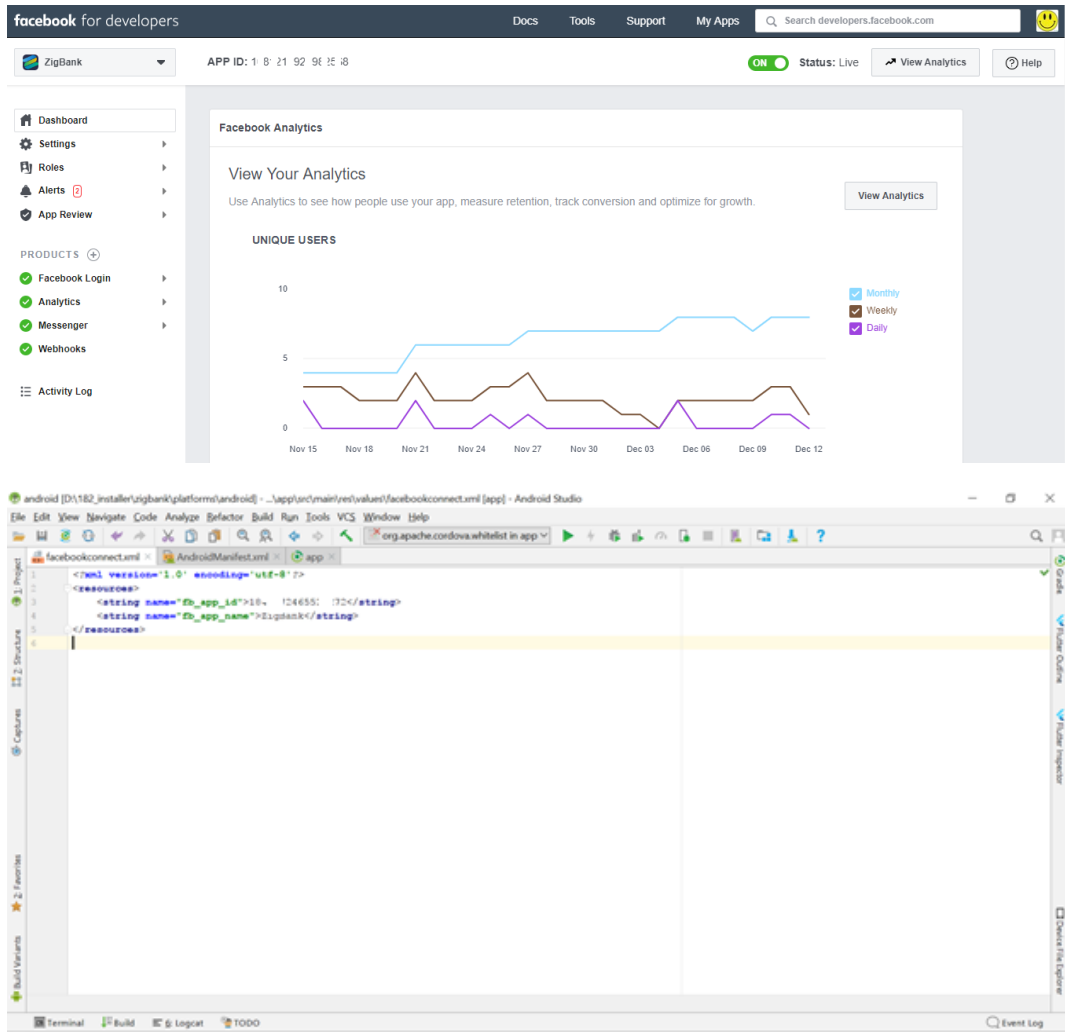
Open Android Studio

1. Import zigbank/platforms/android in android studio by clicking on Open an Existing Project.



2. For Adding Facebook (Required for social payments only)
 - a. Open facebookconnect.xml
 - b. Replace YOUR_FB_APP_ID with your fb app id generated from facebook developer console
 - c. Replace YOUR_APP_NAME with the App name

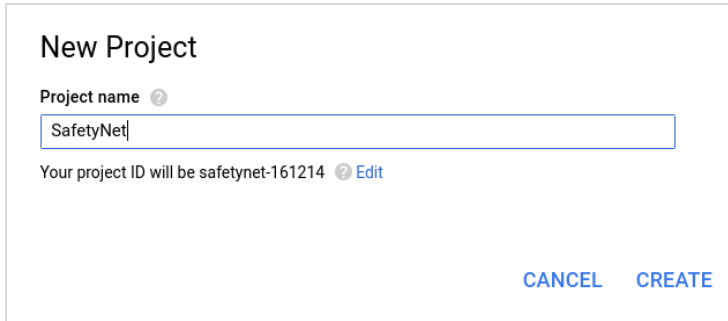
As shown below



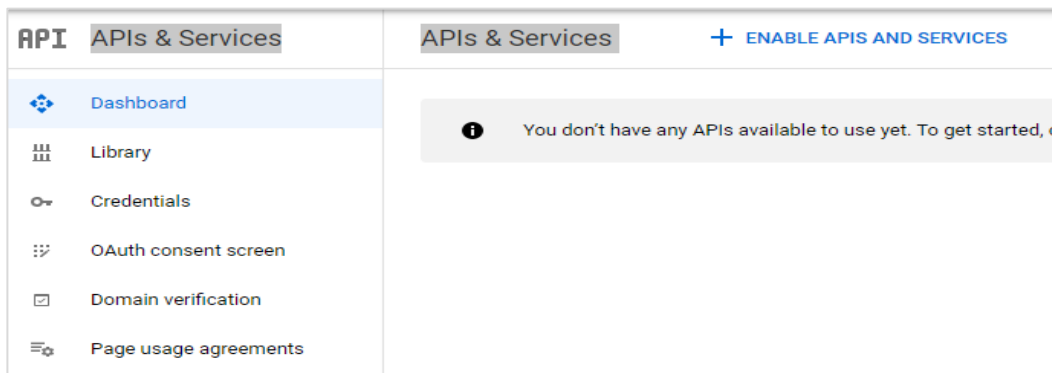
3. FCM Setup Configurations

3.1 Google Play Integrity

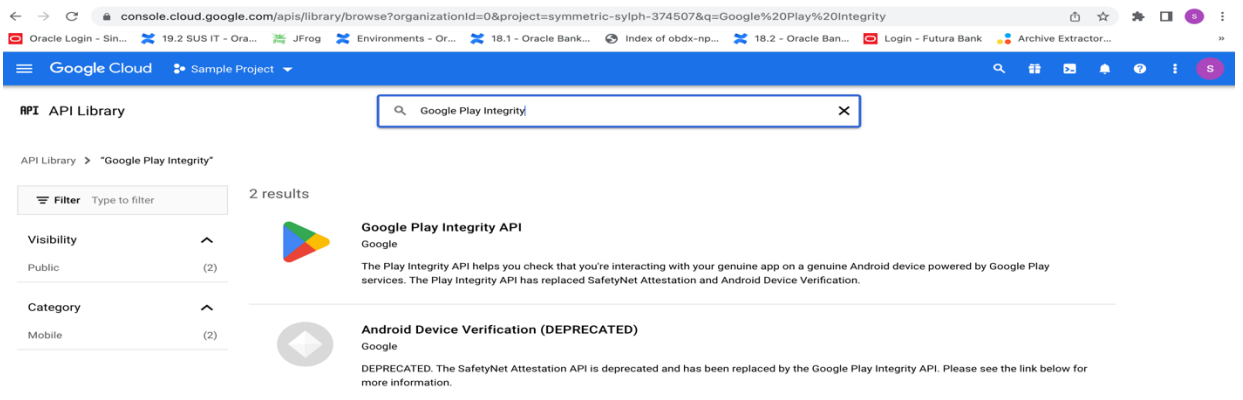
- a. Go to URL <https://console.developers.google.com/>
- b. Create a new Project and set name of you project



- c. Choose 'API's & Services' option from side bar.
- d. In API's & Services > Dashboard > Choose 'Enable APIS AND SERVICES'.



- e. This will redirect to 'Library' where we need to search 'Google Play Integrity API'.



f. Click on Google Play Integrity API and enable it.

The screenshot shows the Google Play Integrity API product details page. At the top, there is a navigation bar with "Google Cloud" and "Sample Project". Below that, the page title is "Product details". The main content area features the Google Play Integrity API logo and a description: "Check that interactions are coming from your genuine app running on a genuine Android device." There are two buttons: "ENABLE" and "TRY THIS API". Below the description, there are tabs for "OVERVIEW" and "SUPPORT". The "OVERVIEW" tab is active, showing an overview of the API and its purpose. To the right, there are "Additional details" including the type (SaaS & APIs), last updated date (23/12/2022), category (Mobile), and service name (playintegrity.googleapis.com).

g. If the application usage is high, the quota request form needs to be submitted. Please fill quota request form from below site. Also select below options.

<https://support.google.com/googleplay/android-developer/contact/piaqr>

The screenshot shows the Google Play Integrity API quota request form. The page title is "Play Integrity API". The form includes a description of the API and its purpose. Below the description, there is a section for "Please specify:" with three radio button options: "Increase maximum number of daily requests" (selected), "Provide feedback", and "Report issue". There is also a text input field for "Name of requesting organization/person".

support.google.com/googleplay/android-developer/contact/piaqr

Oracle Login - Sin... 19.2 SUS IT - Ora... JFrog Environments - Or... 18.1 - Oracle Bank... Index of obdx-np... 18.2 - Oracle Ban... Login - Futura Bank Archive Extractor...

Play Console Help Describe your issue

How are you calling the Play Integrity API? *

- My app is calling the API directly
- A third party I'm using in the app is calling the API, please specify

How often will you call the API for each user? *

- Once per day or less
- Once per hour
- Once per 15 min
- Once per 5 min or more

Is there any PII or SPII used for the nonce (e.g. user id, user name, phone number, Android ID, SSN, etc)? *

- Yes, but hashed or encrypted
- Yes, in plain-text
- No

support.google.com/googleplay/android-developer/contact/piaqr

Oracle Login - Sin... 19.2 SUS IT - Ora... JFrog Environments - Or... 18.1 - Oracle Bank... Index of obdx-np... 18.2 - Oracle Ban... Login - Futura Bank Archive Extractor...

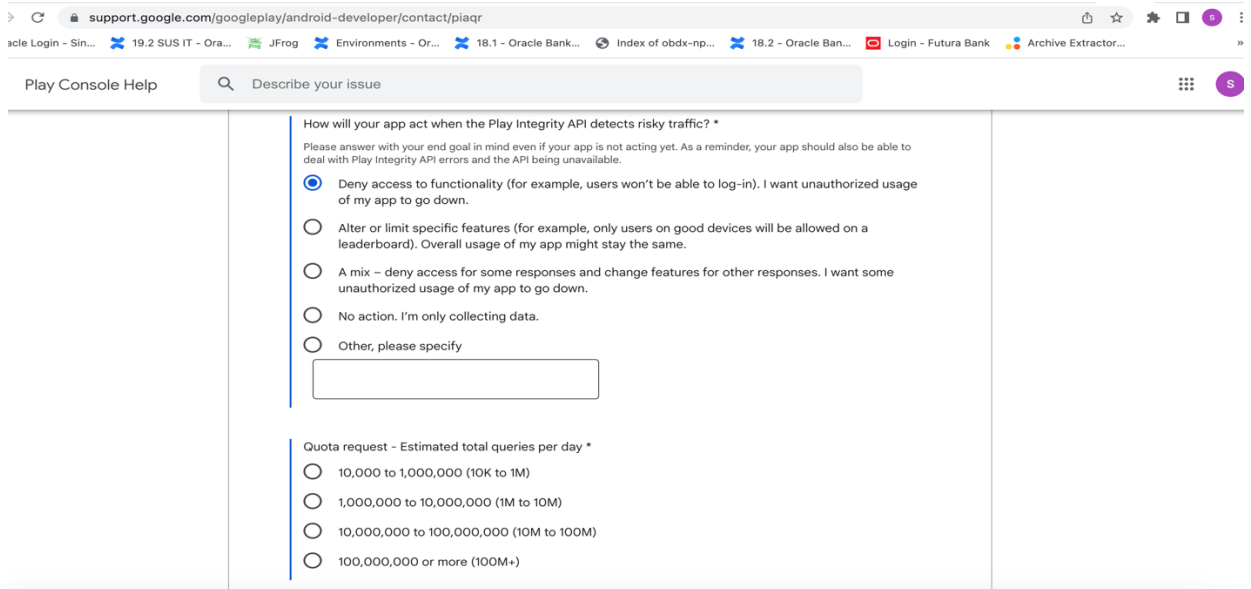
Play Console Help Describe your issue

How are you validating Play Integrity API responses? *

- Server side - by calling Play's server to decrypt and verify
- Server side - by decrypting and verifying with self-managed API keys
- In my app - by calling Play's server to decrypt and verify
- In my app - by decrypting and verifying with self-managed API keys
- Other, please specify

How does your app retry in case of Play Integrity API errors? *

- No retry
- A small number of retry attempts within a short time window
- Retry with exponential backoff
- Other, please specify

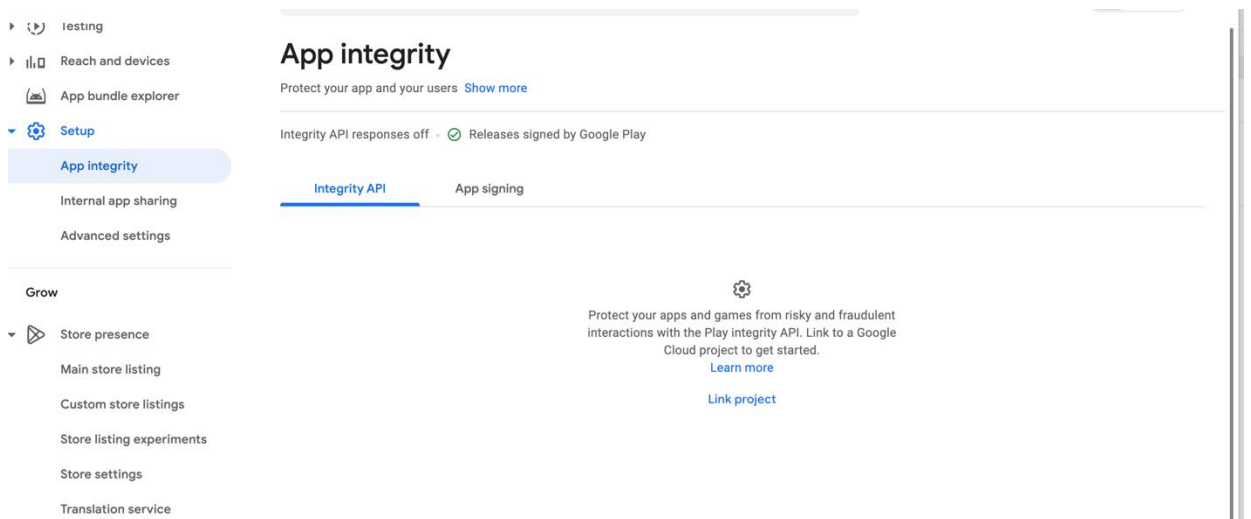


Quota request - Estimated total queries per day * → The approximate load, Play Integrity API is called once each time the app is opened

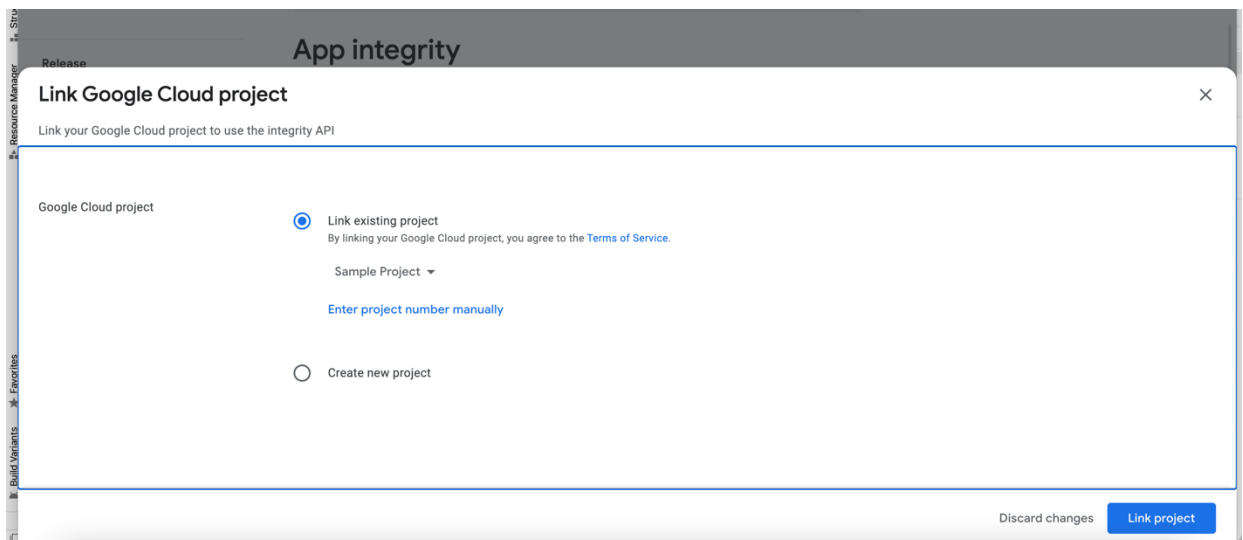
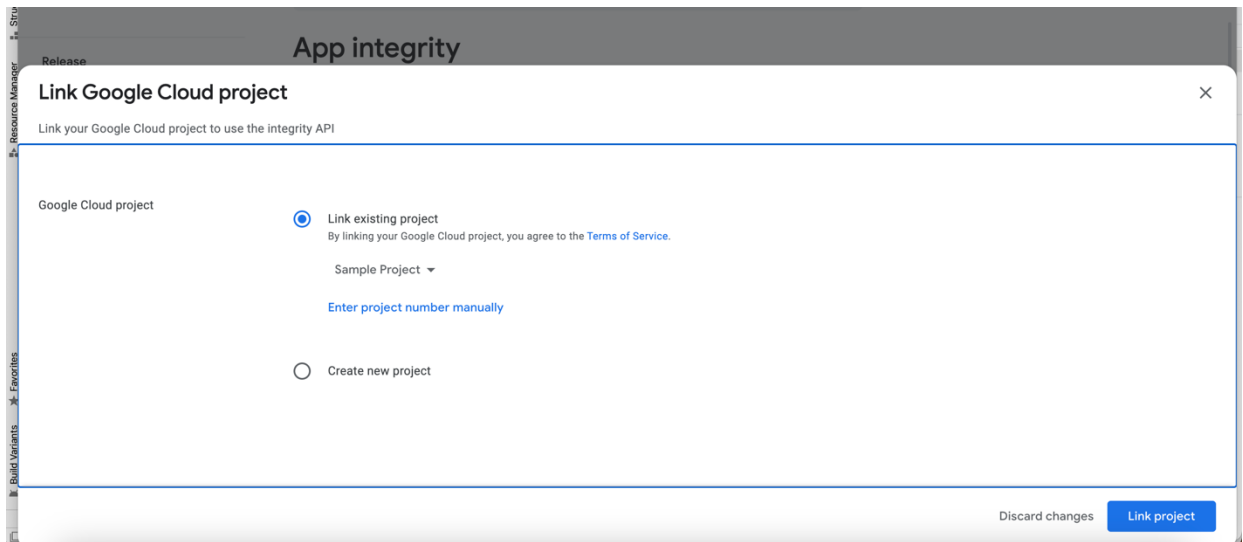
Quota request - Estimated peak queries per second → Leave blank

h. To enable Play Integrity responses please follow below steps-

Go to Google Play Console->Side Menu->Setup->App Integrity



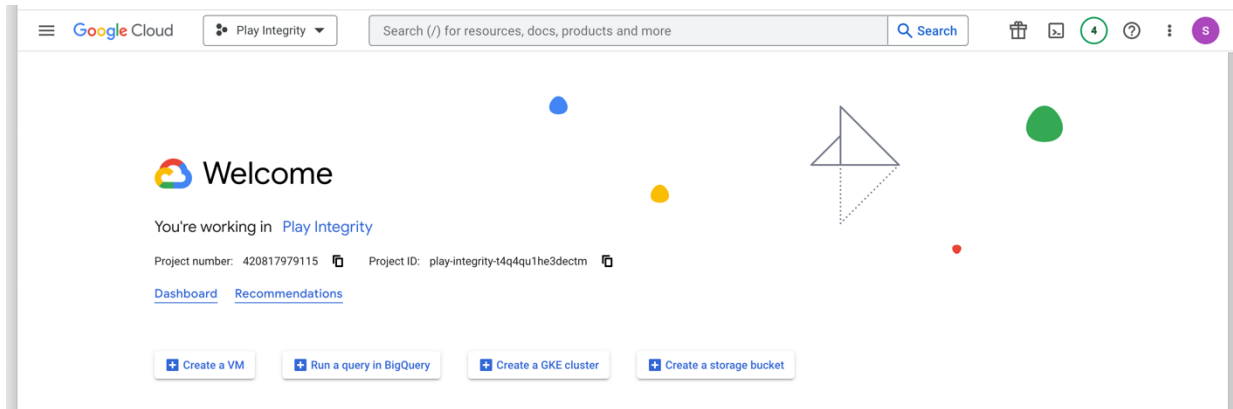
Click on **Link project** and then link your existing google cloud project. If it is not created then create new and link the same.



h. Add project number in below property of app.properties

```
<string name="GOOGLE_CLOUD_PROJECT_NO">@@GOOGLE_CLOUD_PROJECT NO</string>
```

You will get the project number on google cloud console project.

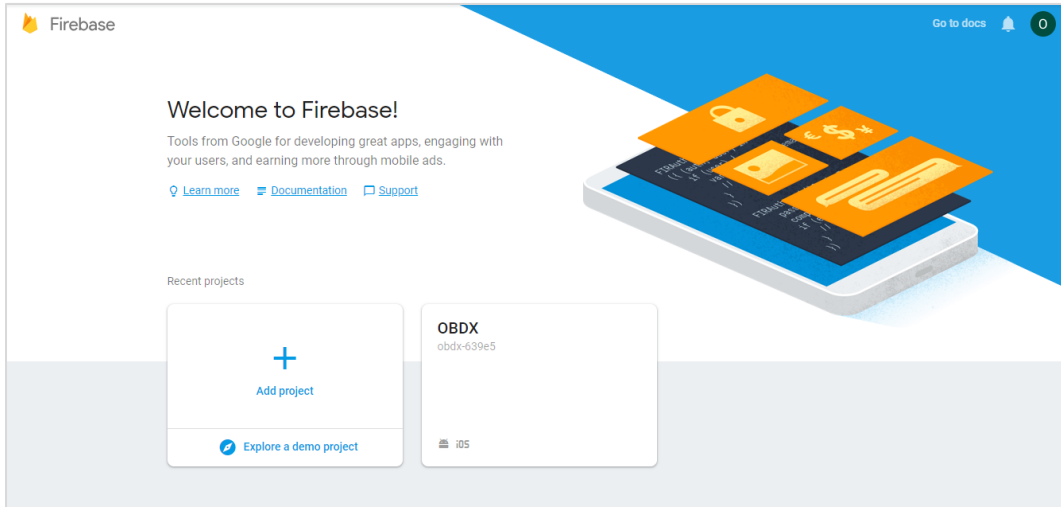


h. Mention the time in seconds to which app can hit the play integrity api. By default it is 300 seconds but you can configure as per the requirement. Please use below property in `RootCheckFlags.java(workspace_installer/zigbank/platforms/android/app/src/main/java/com/ofss/digx/mobile/android/)`

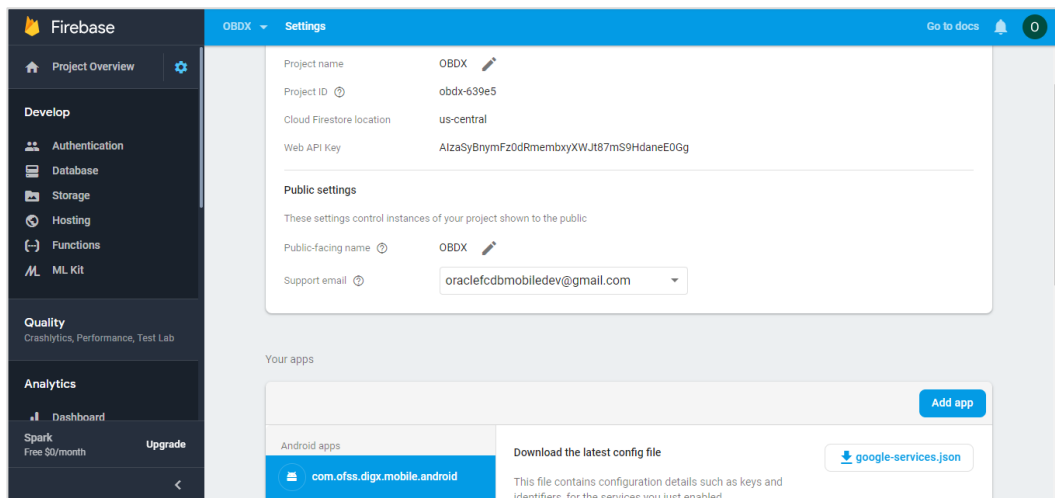
```
long playIntegrityAPICallTime = your_time_in_seconds;
```

3.2 For Push Notifications.

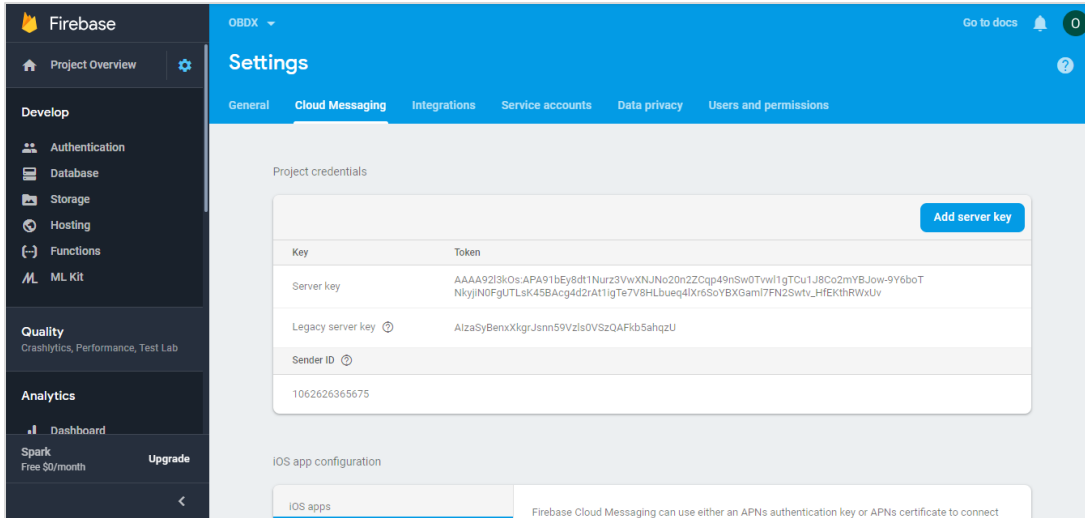
- Go to URL <https://firebase.google.com/>
- Traverse to console and create a project



- Download google-services.json from below page and save to (zigbank\platforms\android\app) directory.
- Remember to keep the projects package name and firebase package name same.



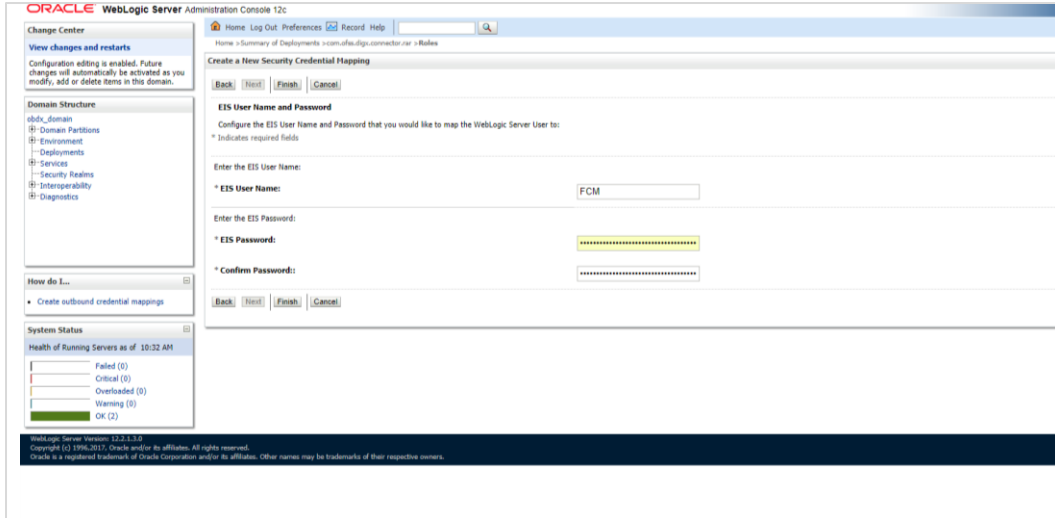
- e. Traverse to cloud messaging tab and note the server key. Add the key to OBDX table as shown below.



- f. If proxy address is to be used, provide the same in database as mentioned in point 3.

Sr. No.	Table	PROP_ID	CATEGORY_ID	PROP_VALUE	Purpose
1	DIGX_FW_CON FIG_ALL_B	FCM	DispatchData ils	<Server_Key>	Provides key for FCM noted earlier
2	DIGX_FW_CON FIG_ALL_B	FCMKeyStore	DispatchData ils	DATABASE or CONNECTOR	Specifies whether to pick server key from database or from connector. Default DB (No change)
3	DIGX_FW_CON FIG_ALL_B	Proxy	DispatchData ils	<protocol,proxy _address>	Provides proxy address, if any, to be provided while connecting to APNS server. Delete row if proxy not required. Example: HTTP,148.50.60.8

If CONNECTOR is selected in Step 2 update password as below

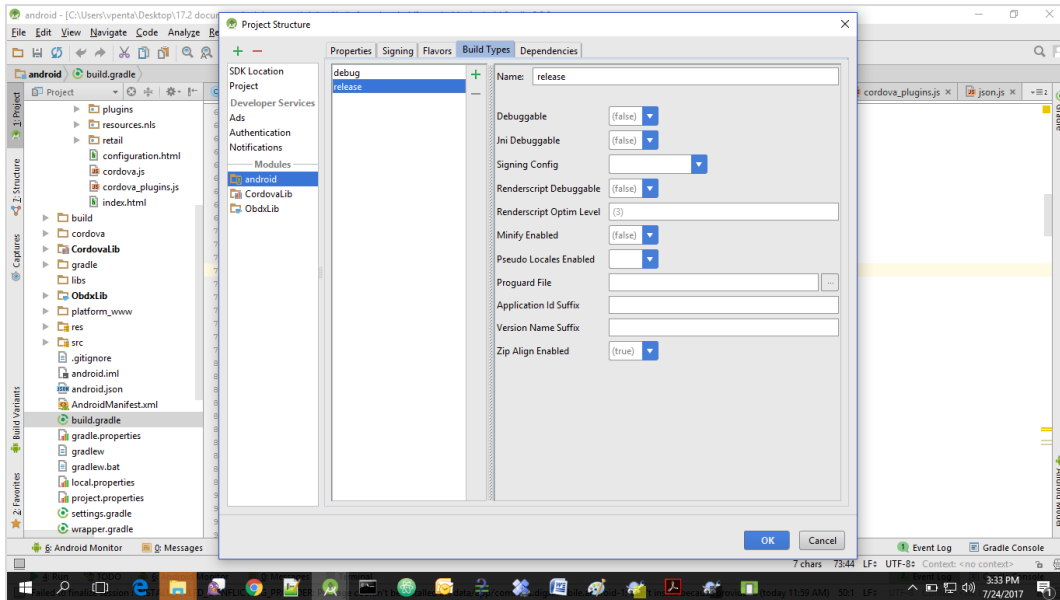


Properties for tokens to be configured as –

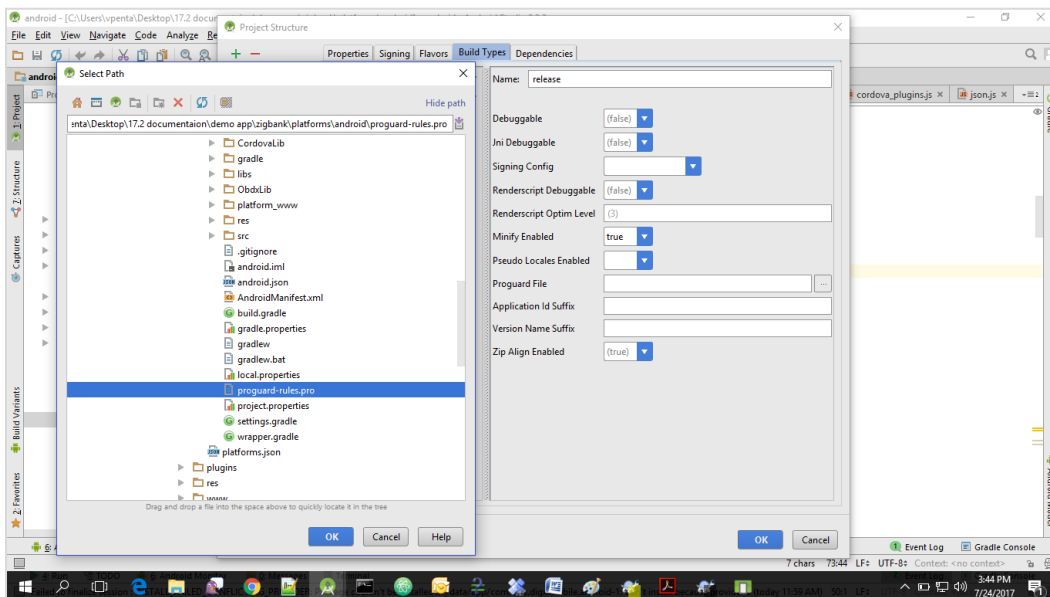
Sr . N o.	Table	PROP_ID	CATEGORY_ID	PROP_V ALUE (Default Value)	Purpose
1	DIGX_FW_CONFIG_ALL_B	APMOBAPP_EXPIRYTIME	authenticationConfig	864000	Time in secs after which user will have to reregister for alternate login in mobile app
2	DIGX_FW_CONFIG_ALL_B	APSNAPSHOT_EXPIRYTIME	authenticationConfig	1296000	Time in secs after which user will have to reregister for snapshot (for mobile app & wearable)
3	DIGX_FW_CONFIG_ALL_B	APWEARABLE_EXPIRYTIME	authenticationConfig	1296000	Time in secs after which user will have to reregister for login in wearables
4	DIGX_FW_CONFIG_ALL_B	APSIRICHATBOT_EXPIRYTIME	authenticationConfig	1296000	Time in secs after which user will have to reregister for Siri (There is no separate registration, it will happen automatically after alternate login is enabled)

4. Build Release Artifacts

1. Clean and Rebuild your project in Android Studio.
2. In Android Studio, on the menu bar Click on **Build -> Edit Build Types -> select release**



3. Set Minify Enabled -> True & click on Proguard File selection -> Navigate to proguard-rules.pro (zigbank\platforms\android)



4. Click on OK -> again click on OK

5. Adding URLs to app.properties.xml (customizations/src/main/res/values/)
- a. NONOAM (DB Authenticator setup)

SERVER_TYPE	NONOAM
KEY_SERVER_URL	Eg. http://mum00chx.in.oracle.com:3333
WEB_URL	Eg.http://mum00chx.in.oracle.com:3333
SERVER_CERTIFICATE_KEY	Refer point 6.7

- b. OAM Setup (Refer to installer pre requisite documents for OAuth configurations)

SERVER_TYPE	OAM
KEY_SERVER_URL	Eg. http://mum00chx.in.oracle.com:8003 (This URL must be of OHS without webgate)
WEB_URL	Eg.http://mum00chx.in.oracle.com:3333
KEY_OAUTH_PROVIDER_URL	http://mum00aon.in.oracle.com:14100/oauth2/rest/token
APP_CLIENT_ID	<Base64 of clientid:secret> of Mobile App client
APP_DOMAIN	OBDXMobileAppDomain
WATCH_CLIENT_ID	<Base64 of clientid:secret> of wearables
WATCH_DOMAIN	OBDXWearDomain
SNAPSHOT_CLIENT_ID	<Base64 of clientid:secret> of snapshot
SNAPSHOT_DOMAIN	OBDXSnapshotDomain
LOGIN_SCOPE	OBDXMobileAppResServer.OBDXLoginScope
SERVER_CERTIFICATE_KEY	Refer point 6.7

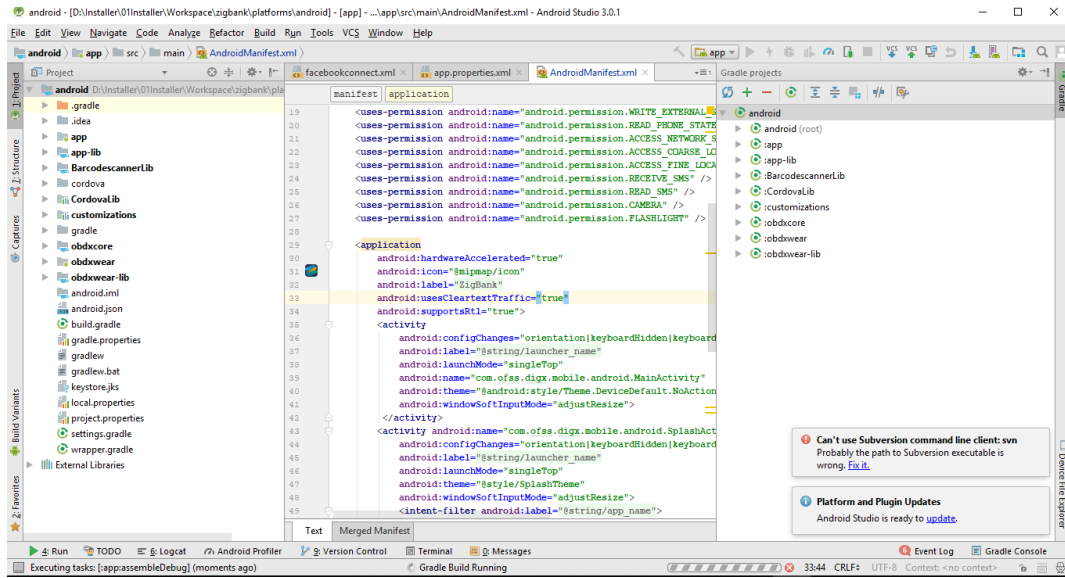
c. IDCS Setup

SERVER_TYPE	IDCS
KEY_SERVER_URL	Eg. http://mum00chx.in.oracle.com:8003 (This URL must be of OHS without webgate)
WEB_URL	Eg.http://mum00chx.in.oracle.com:3333
KEY_OAUTH_PROVIDER_URL	http://obdx-tenant01.identity.c9dev0.oc9qadev.com/oauth2/v1/token
APP_CLIENT_ID	<Base64 of clientid:secret> of Mobile App client
WATCH_CLIENT_ID	<Base64 of clientid:secret> of wearables
SNAPSHOT_CLIENT_ID	<Base64 of clientid:secret> of snapshot
LOGIN_SCOPE	obdxLoginScope
OFFLINE_SCOPE	urn:opc:idm:__myscopes__ offline_access
SERVER_CERTIFICATE_KEY	Refer point 6.7

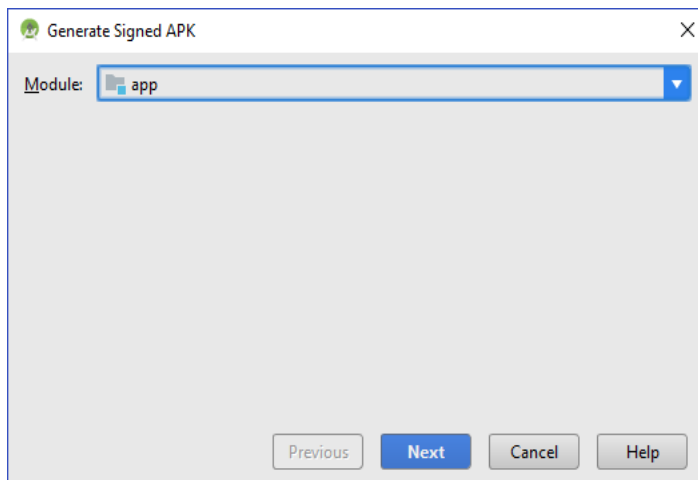
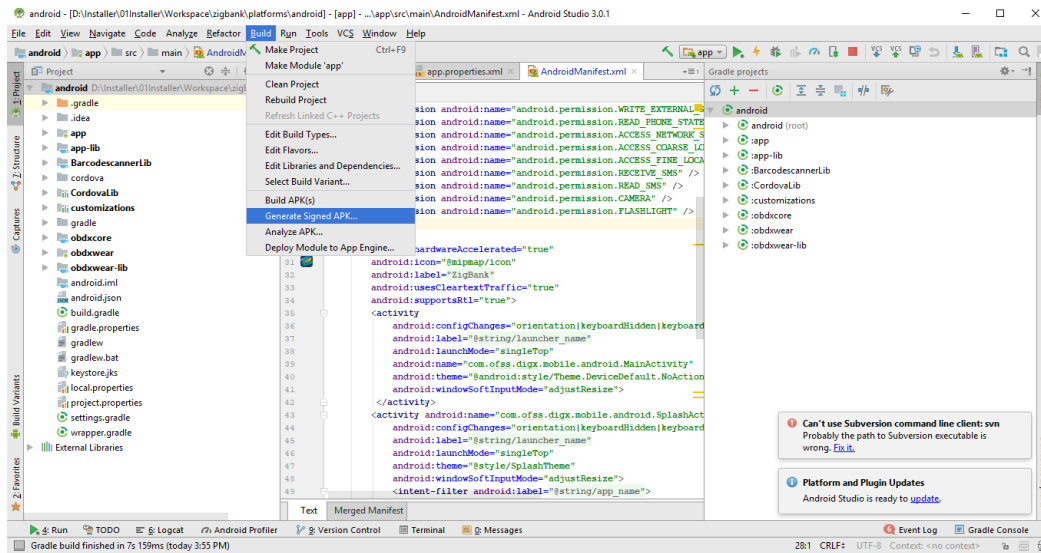
6. Adding chatbot support to mobile application (Optional)

CHATBOT_ID	The tenant ID
CHATBOT_URL	The web socket URL for the ChatApp application in IBCS

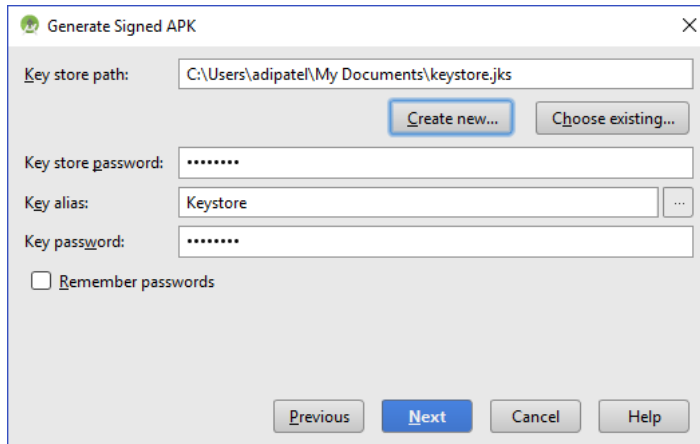
7. If using http protocol for development add (android:usesCleartextTraffic="true") to application tag of AndroidManifest.xml (on app & obdxwear target)



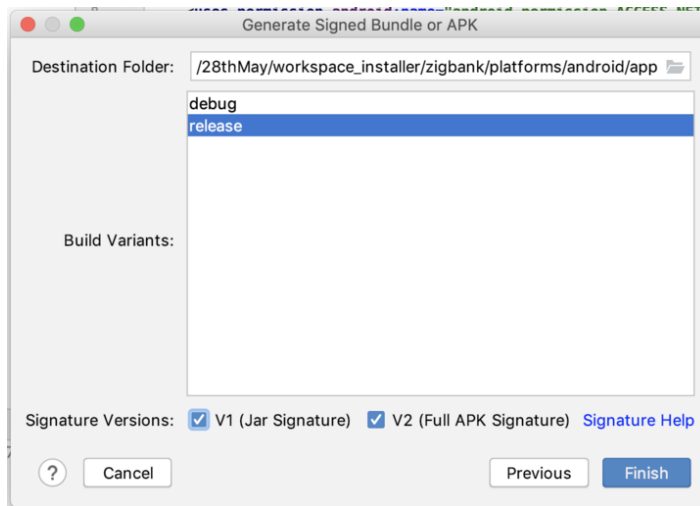
8. **For Generating Signed Apk:** To Generate release-signed apk as follows:
On menu bar click on Build -> Generate Signed Apk



9. If you have an existing keystore.jks file then select choose Existing else click on Create New

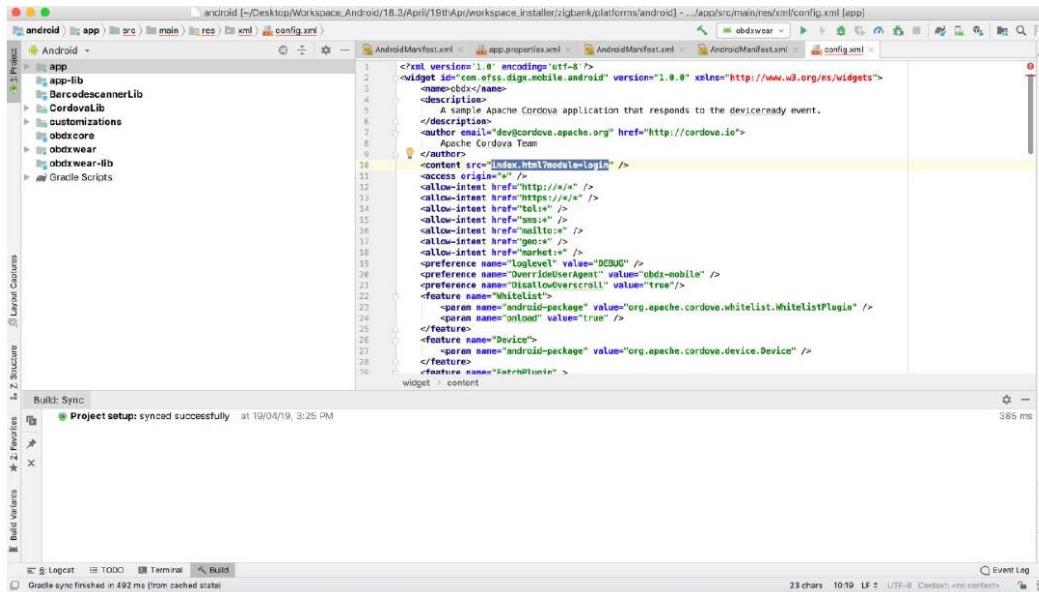


10. Select **Build Type** as **Release**, **Signature Version** as **V1 and V2(Full APK Signature)** and Change APK Destination folder if you want and click on Finish



11. This will generate APK by the given name and destination folder. Default APK Destination folder is **zigbank\platforms\android\app\release**
12. Run the App and select Device or Simulator.
13. **Repeat same steps (From step 8 and obdxwear as module) for OBDX Wear App for Release Signing.** Copy and paste proguard-rules.pro from **OBDX_Installer/installables/mobile/service/android/obdxwear** into **zigbank\platforms\android\obdxwear** using explorer. The select obdxwear as the module and follow same signing steps with same keystore.

Note: The application has config page to add URL. This is for development purpose only and can be removed using below step. (Update content src tag)



14. Application will work on https only. If you want to run application on http then set targetSdkVersion, compileSdkVersion to 30 and buildToolsVersion to 30.0.3 in app's build.gradle(zigbankplatforms\android\app) and replace below code block from obdx.conf(config/obdx.conf).

```
<IfModule mod_headers.c>
  <If "%{HTTP_USER_AGENT} =~ /obdx-mobile-android/">
    Header edit Set-Cookie ^(.*)$ $1;SameSite=None;Secure
  </If>
  <If "%{HTTP_USER_AGENT} =~ /obdx-softtoken/">
    Header edit Set-Cookie ^(.*)$ $1;SameSite=None;Secure
  </If>
</IfModule>
```

With below one as,









```
<IfModule mod_headers.c>
  <If "%{HTTP_USER_AGENT} =~ /obdx-mobile-android/">
    Header edit Set-Cookie "SameSite=Strict" ""
  </If>
  <If "%{HTTP_USER_AGENT} =~ /obdx-softtoken/">
    Header edit Set-Cookie "SameSite=Strict" ""
  </If>
</IfModule>
```

Note: We strongly recommend you to use https setup with sdk 31 only, as google play store won't allow app's below sdk 31.

5. OBDX Authenticator Application

5.1 Building Authenticator UI

1. Extract OBDX_Installer.zip and go to **OBDX_Installer/installables/mobile/authenticator/ui**. The folder structure is as shown:

<input type="checkbox"/> Name	Date modified	Type	Size
 _build	10/25/2018 2:42 PM	File folder	
 components	7/27/2018 12:02 PM	File folder	
 css	7/27/2018 12:02 PM	File folder	
 framework	7/27/2018 12:03 PM	File folder	
 images	7/27/2018 12:03 PM	File folder	
 non-oam	7/27/2018 12:03 PM	File folder	
 pages	7/27/2018 12:03 PM	File folder	
 resources	7/27/2018 12:02 PM	File folder	

2. Build UI based on selected Authentication mechanism.

a. OAM based Authentication

- Open command prompt at “OBDX_Installer/installables/mobile/authenticator/ui /_build” level.
- Run following command :

```
npm install -g grunt-cli
npm install
node render-requirejs/render-requirejs.js
grunt authenticator --verbose
```

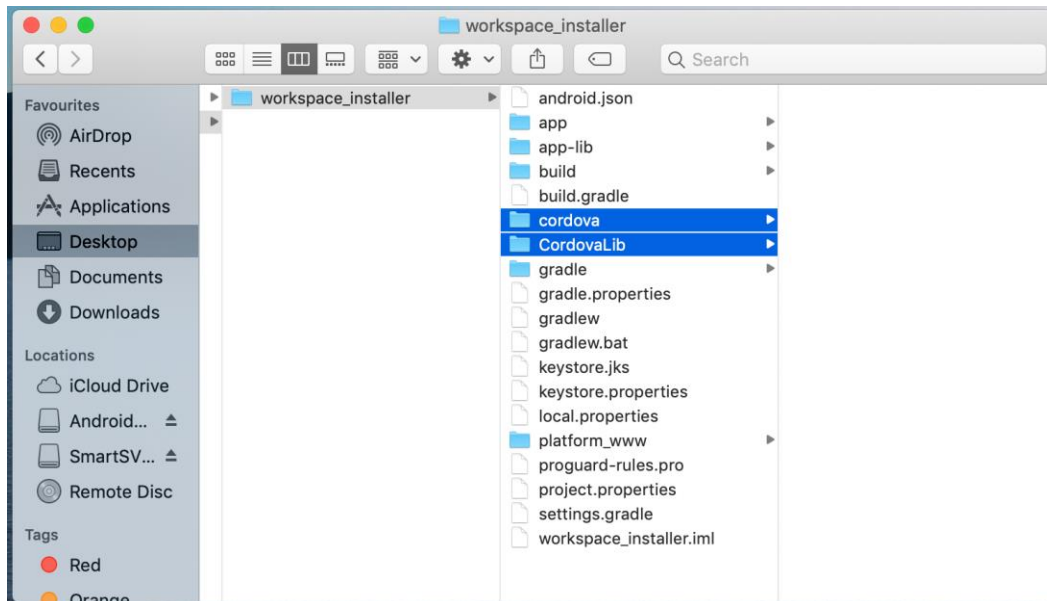
- After running above commands and getting result as “Done, without errors.” a new folder will be created in “ui” with name as “dist”.

b. NON-OAM Based Authentication

- Copy “non-oam /login” folder and paste it at location “components/modules” location. This will replace existing “login” folder.
- Open command prompt at “_build” level.
- Run following command :

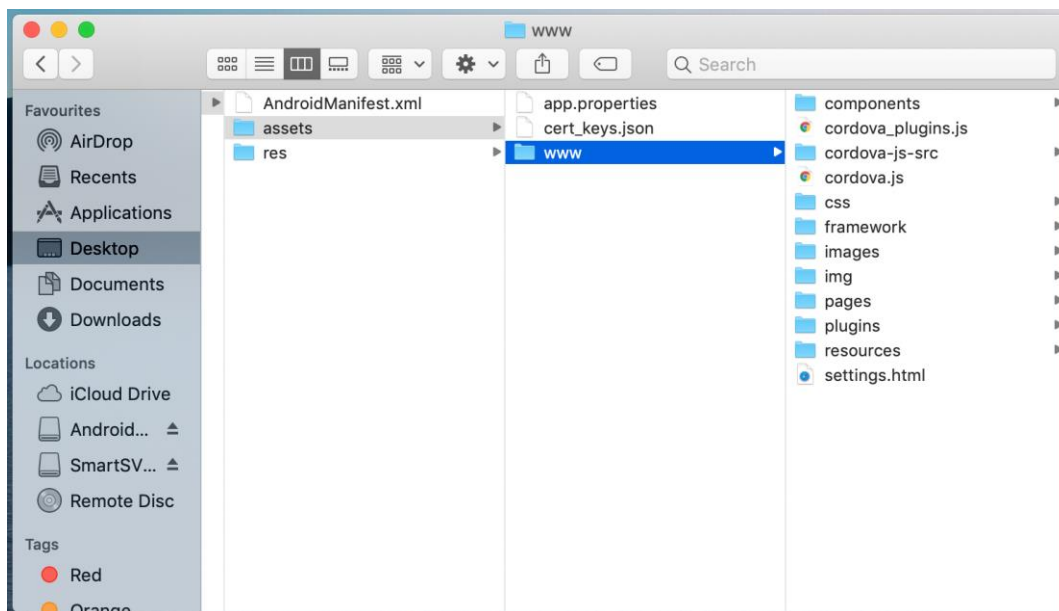
5.2 Authenticator Application Workspace Setup

1. Navigate to workspace/installer and copy cordova and CordovaLib as in **Section 2.2 Create project-Step 5**

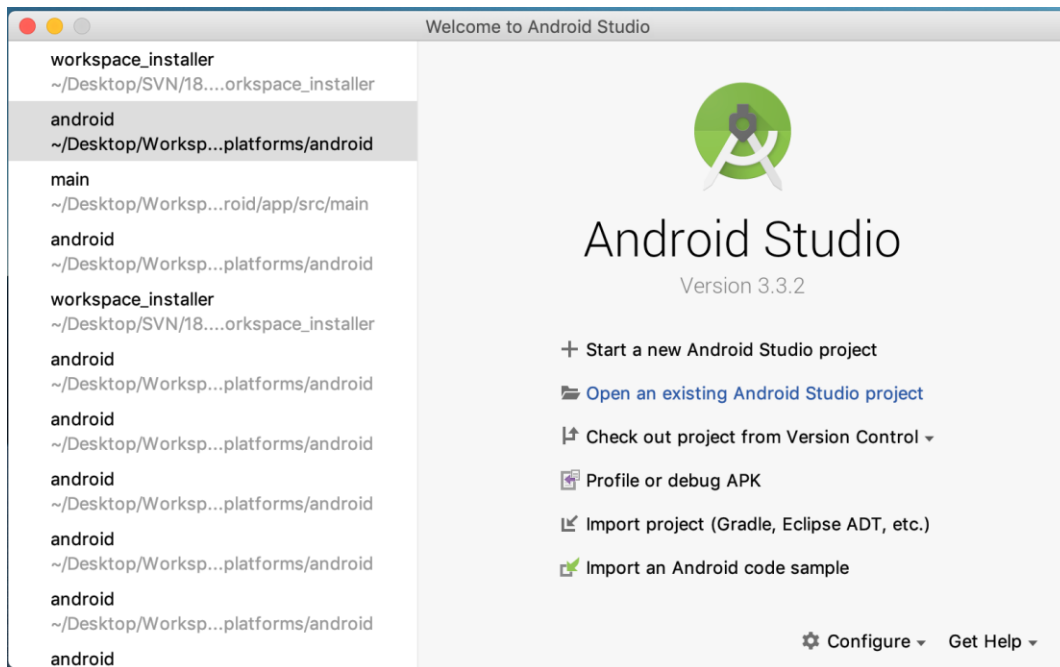


- a. Copy UI (Directories – components, css, framework, images, pages, resources) from /dist directory to workspace/installer/app/src/main/assets/www/

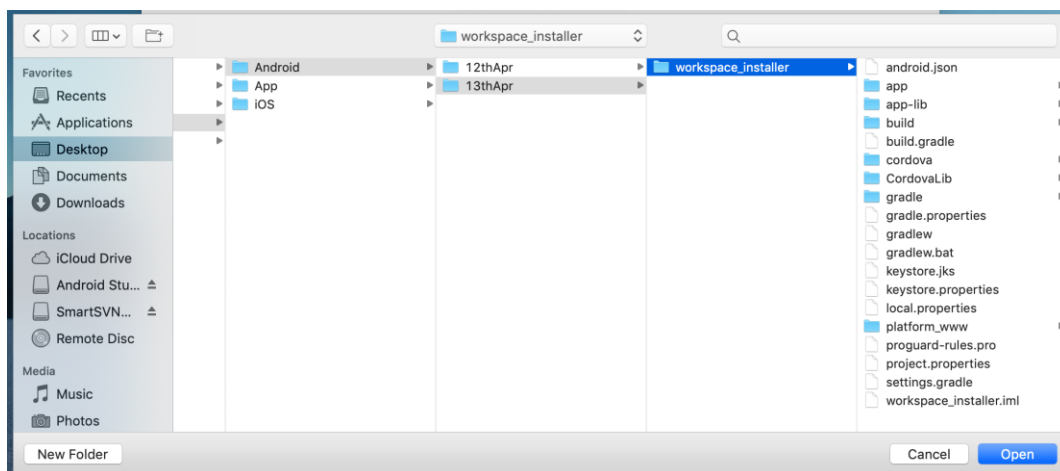
In case any popup appears, click replace



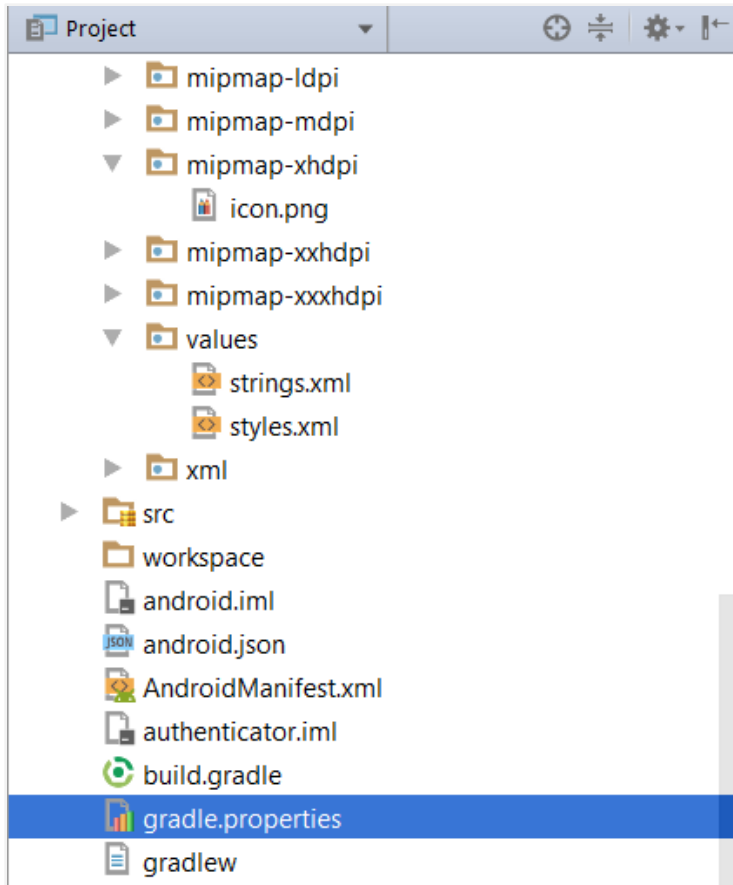
2. Launch Android Studio and open existing project



3. Open OBDX_Installer/workspace_installer folder in Android Studio.

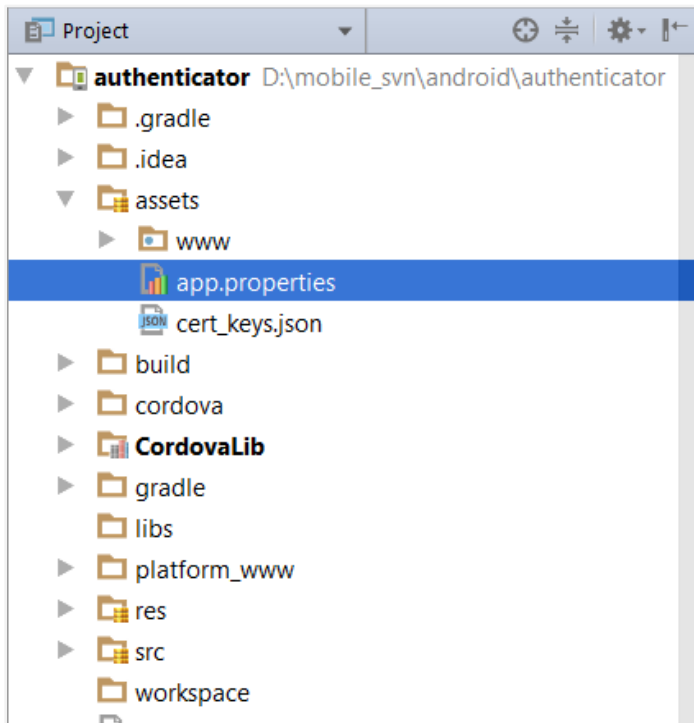


4. Open gradle.properties file and update following properties with relevant proxy address if required



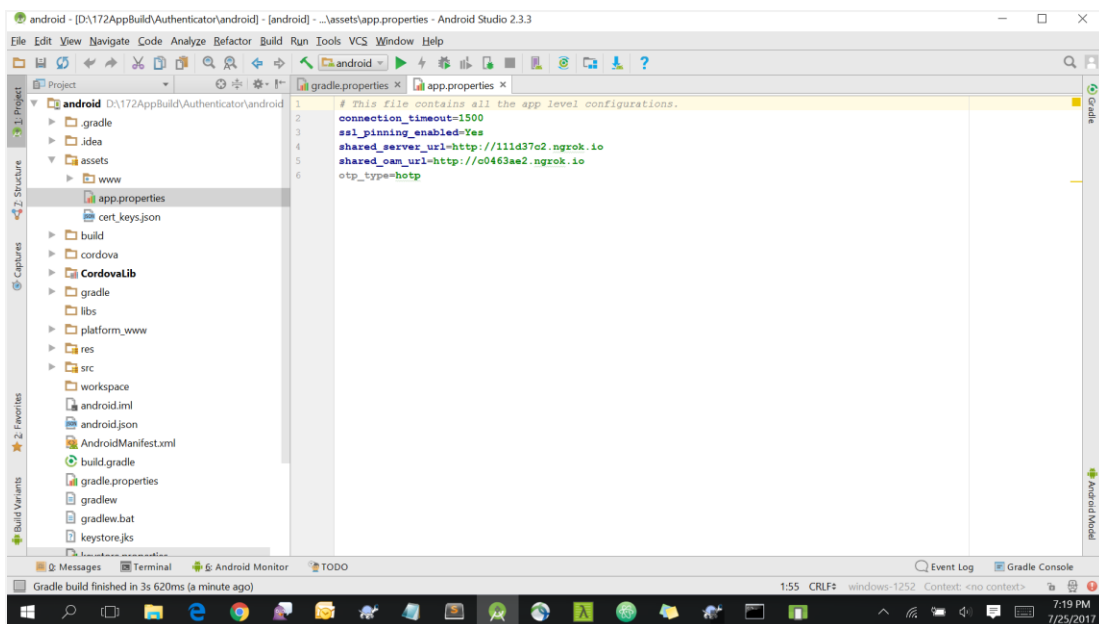
```
systemProp.http.proxyHost = <proxy_address>  
systemProp.https.proxyPort = <port_number>  
systemProp.https.proxyHost = <proxy_address>  
systemProp.http.proxyPort = <port_number>
```

- Open “assets\app.properties” file and update following properties as per requirement



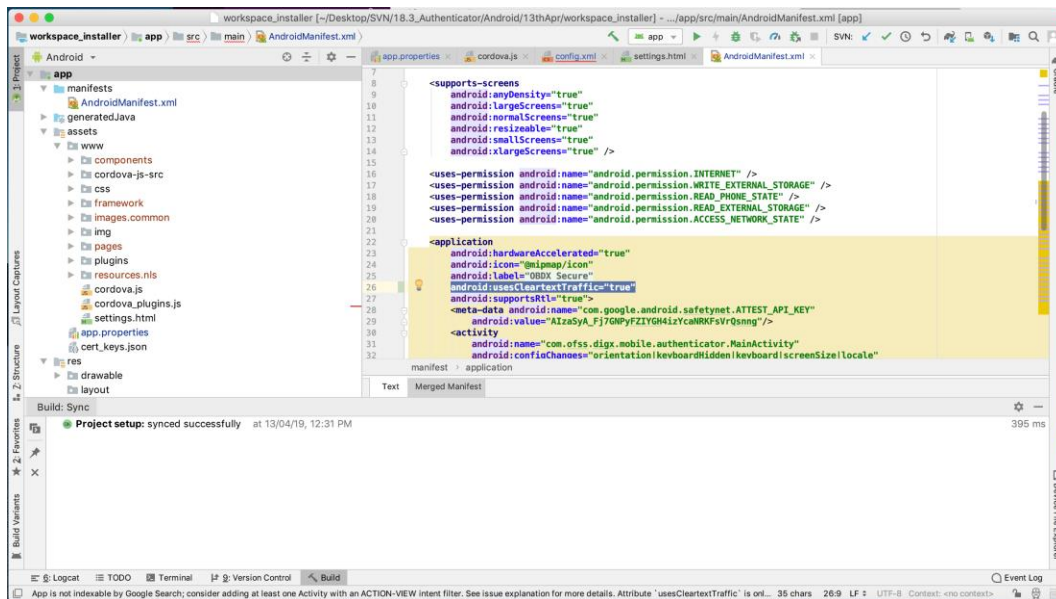
```

connection_timeout = <timeout_in_milliseconds>
ssl_pinning_enabled = <YES or NO>
shared_server_url = <server_url>
shared_oam_url = <oam_url>
otp_type = <HOTP or TOTP>
    
```

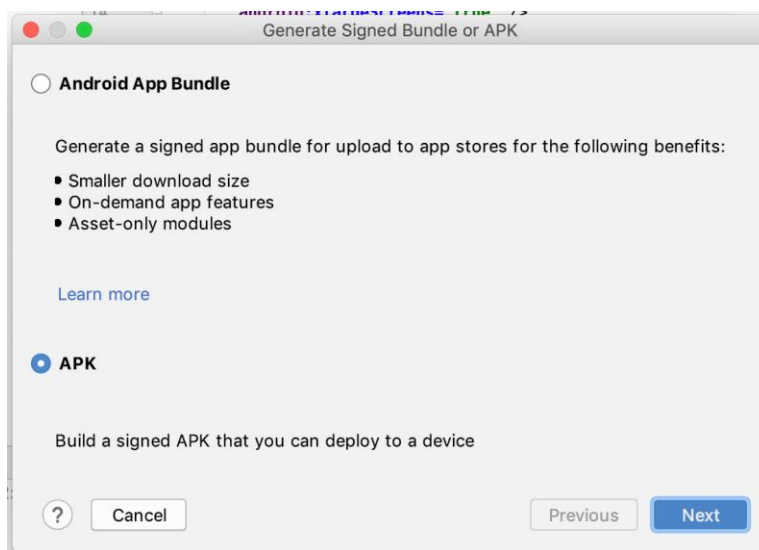


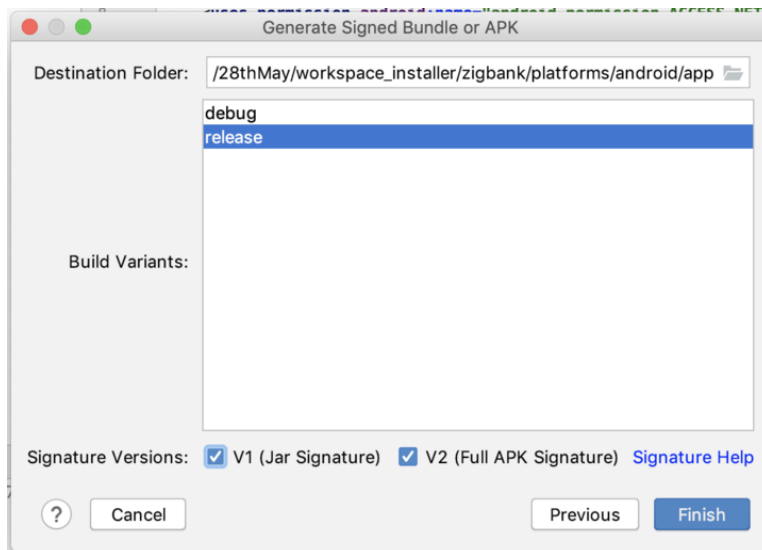
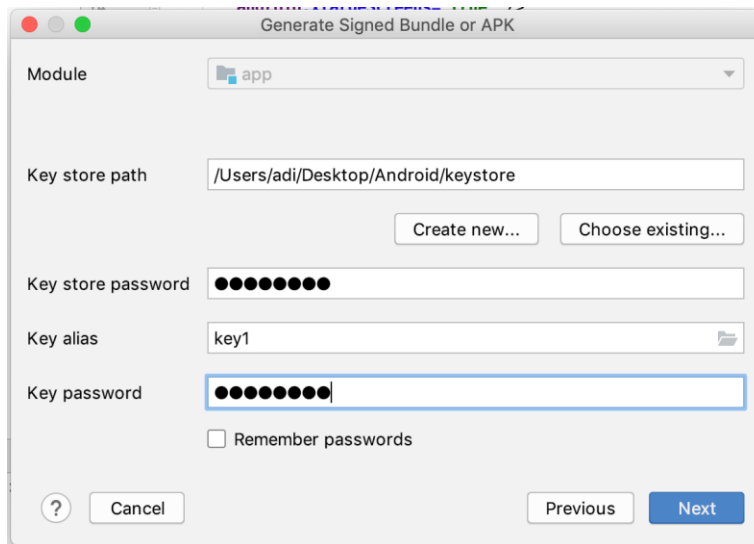
Note: If selected authentication mechanism is not OAM based then remove “*shared_oam_url*” property.

6. Click Build → Clean & Build → Rebuild project in Android Studio.
7. Click on Build → Edit Build Type → app → release
Enable minify → true
Add proguard file from workspace_installer/proguard-rules.pro
Click OK
8. If using http protocol for development add (android:usesCleartextTraffic="true") to application tag of AndroidManifest.xml



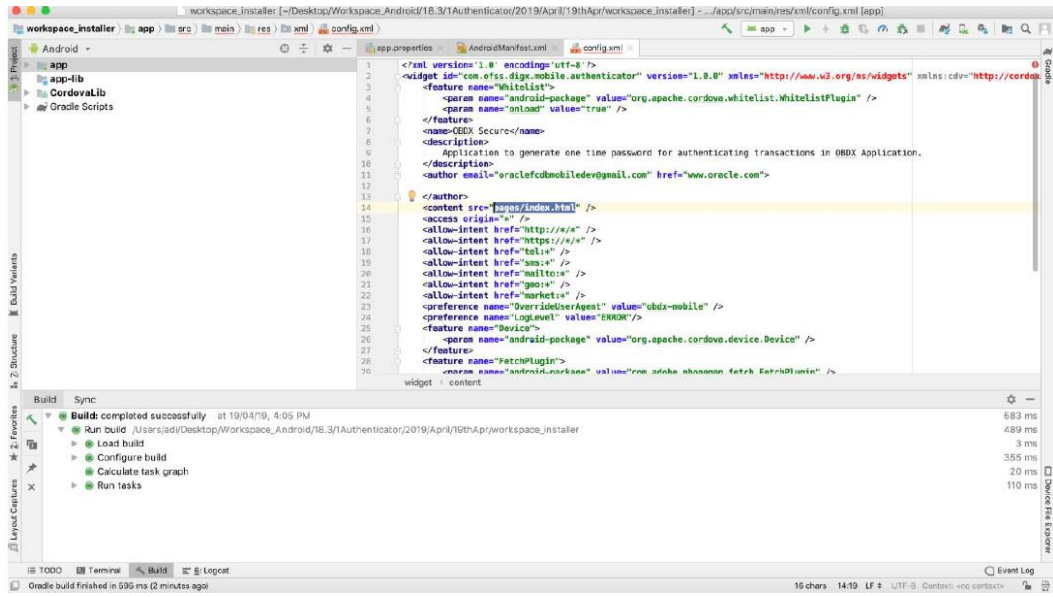
9. **For Generating Signed Apk:** To Generate release-signed apk as follows:
On menu bar click on Build -> Generate Signed Apk





Click Finish to generate .apk

Note: The application has config page to add URL. This is for development purpose only and can be removed using below step. (Update content src tag)



6. Application Security Configuration

Root Check → Ensure Step 3.1 is completed

1. Open google developer console. Select your app then navigate to

Setup-> App Integrity-> change option of Response Encryption

In the window that appears, click Manage and download my response encryption keys and follow below steps to generate response encryption keys-

- a. Create a new private-public key pair. RSA key size must be 2048 bits using below command-

```
openssl genrsa -aes128 -out your_path/private.pem 2048
```

Then use your password phrase for creating private.pem and also use the same password for verifying the private.pem. Then hit the below command.

```
openssl rsa -in your_path/private.pem -pubout -out your_path/public.pem
```

Enter the same password which you have used while creating private.pem. These two files will now appear on your mentioned path. Then upload the public.pem file on the window which was appeared after clicking on Manage and download my response encryption keys option. Once you upload the public.pem file it will automatically download your_app_pkg_name.enc file. Then hit below command as,

```
openssl rsautl -decrypt -oaep -inkey your_path/private.pem -in your_app_pkg_name.enc -out your_path/api_keys.txt
```

Enter the password for private.pem. It will create api_keys.tx file on your path. It must be consist of VERIFICATION_KEY and DECRYPTION_KEY.

2. Maintain this VERIFICATION_KEY and DECRYPTION_KEY in **DIGX_FW_CONFIG_ALL_B** table corresponding to the following keys respectivel:

PLAY_INTEGRITY_ENCRYPTION_KEY and **PLAY_INTEGRITY_DECRYPTION_KEY**

An example query will be:

```
update DIGX_FW_CONFIG_ALL_B set prop_value = 'YOUR_DECRYPTION_KEY' where prop_id = 'PLAY_INTEGRITY_DECRYPTION_KEY';
```

```
update DIGX_FW_CONFIG_ALL_B set prop_value = 'YOUR_ENCRYPTION_KEY' where prop_id = 'PLAY_INTEGRITY_ENCRYPTION_KEY';
```

3. Similarly, Obtain the same keys for authenticator app by using above step 1 and then maintain those in **DIGX_FW_CONFIG_ALL_B** table corresponding to the following keys respectivel:

PLAY_INTEGRITY_ENCRYPTION_KEY_AUTHENTICATOR and **PLAY_INTEGRITY_DECRYPTION_KEY_AUTHENTICATOR**

An example query will be:

```
update DIGX_FW_CONFIG_ALL_B set prop_value = 'YOUR_DECRYPTION_KEY' where prop_id = 'PLAY_INTEGRITY_DECRYPTION_KEY_AUTHENTICATOR';
```

1.

```
update DIGX_FW_CONFIG_ALL_B set prop_value = 'YOUR_ENCRYPTION_KEY' where prop_id = 'PLAY_INTEGRITY_ENCRYPTION_KEY_AUTHENTICATOR';
```

- Similarly, we also have to maintain package names of Servicing and Authenticator app in the same table, i.e. **DIGX_FW_CONFIG_ALL_B** corresponding to the following keys respectively:

ANDROID_SERVICING_PACKAGE and ANDROID_AUTHENTICATOR_PACKAGE

An example query will be:

```
insert into digx_fw_config_all_b (PROP_ID, CATEGORY_ID, PROP_VALUE,
FACTORY_SHIPPED_FLAG, PROP_COMMENTS, SUMMARY_TEXT, CREATED_BY,
CREATION_DATE, LAST_UPDATED_BY, LAST_UPDATED_DATE, OBJECT_STATUS,
OBJECT_VERSION_NUMBER) values ('ANDROID_SERVICING_PACKAGE', 'mobileconfig',
'com.ofss.zigbank', 'N', '', 'Stores device id in OUD', 'ofssuser', sysdate, 'ofssuser', sysdate,
'Y', 1,);
```

SSL Pinning

- Get the list of Base 64 encoded SHA256 hashed certificates' public keys of server's valid certificates. Use below command to generate this hash for your certificate. Replace '<certificate.der>' with the path to your certificate.

```
openssl x509 -inform der -in <certificate.der> -pubkey -noout | openssl pkey -pubin -outform der | openssl dgst -sha256 -binary | openssl enc -base64
```

- Add the hashed keys generated in point 6 to **zigbank\platforms\android\customizations\src\main\res\values\app.properties.xml** file in 'certificate_public_keys' array. Append this key to 'sha256/' in an <item> tag as shown below. Multiple certificate keys can be added to 'certificate_public_keys' array by adding them in <item> tags.

Eg.:

```
<string-array name="certificate_public_keys">
  <item>sha256/5kJvNEMw0KjrCAu7eXY5HZdvyCS13BbA0VJG1RSP91w=</item>
</string-array>
```

Eg. for multiple certificates (In case OAM/IDCS is used):

```
<string-array name="certificate_public_keys">
  <item>sha256/5kJvNEMw0KjrCAu7eXY5HZdvyCS13BbA0VJG1RSP91w=</item>
  <item>sha256/3rgsgghoqrDegekpkgk92Fgw1w7exyYCS1okef9Oo1w=</item>
</string-array>
```

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