

## Lecture 2

**Android Debug Bridge (adb)** is a versatile command-line tool that lets you communicate with a device. The adb command facilitates a variety of device actions, such as installing and debugging apps. adb provides access to a Unix shell that you can use to run a variety of commands on a device. It is a client-server program that includes three components:

- **A client**, which sends commands. The client runs on your development machine. You can invoke a client from a command-line terminal by issuing an adb command.
- **A daemon (adb)**, which runs commands on a device. The daemon runs as a background process on each device. The daemon on the Android device connects with the server on the host PC over USB or TCP, which connects to the client that is used by the end-user over TCP.
- **A server**, which manages communication between the client and the daemon. The server runs as a background process on your development machine. The default port number on which the adb server runs is 5037.

adb is included in the Android SDK Platform Tools package, which is installed at `${ANDROID_HOME}/platform-tools/`. If the Android SDK is not installed in the system, we can use the `sudo apt install android-tools-adb` command to install adb as a system package.

After the PATH environment variable is set appropriately, we verify the program execution by typing adb in the terminal.

```
santoshkumarpadmalojanan@Santoshs-MacBook-Pro ~ % adb devices
List of devices attached
emulator-5554    device
```

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Android Virtual Device (AVD) is started by typing the following command.

```
[santoshkumarpadmalojanan@Santoshs-MacBook-Pro ~ % emulator -list-avds  
INFO | Storing crashdata in: /tmp/android-santoshkumarpadmalojanan/emu-crash-  
34.2.14.db, detection is enabled for process: 9551  
Pixel_4_API_30
```

## Basic ADB Commands

adb devices

adb -s emulator-5554 shell

```
santoshkumarpadmalojanan@Santoshs-MacBook-Pro ~ % adb -s emulator-5554 shell
```

Id

```
[emulator_arm64:/ $ id  
uid=2000(shell) gid=2000(shell) groups=2000(shell),1004(input),1007(log),1011(ad  
b),1015(sdcard_rw),1028(sdcard_r),3001(net_bt_admin),3002(net_bt),3003(inet),300  
6(net_bw_stats),3008(readproc),3011(ubid) context=u:r:shell:s0
```

Ls

```
santoshkumarpadmalojanan@Santoshs-MacBook-Pro ~ % adb -s emulator-5554 shell  
[emulator_arm64:/ $ ls  
acct          d              etc            mnt           sdcard  
apex          data          init           odm           storage  
bin           data_mirror  init.environ.rc oem           sys  
bugreports    debug_ramdisk linkerconfig   proc          system  
cache         default.prop  lost+found     product       system_ext  
config        dev          metadata       res           vendor  
emulator_arm64:/ $
```

cd sdcard

```
[emulator_arm64:/ $ cd sdcard  
[emulator_arm64:/sdcard $ ls  
Alarms  Audiobooks  Documents  Movies  Notifications  Podcasts  
Android DCIM      Download  Music   Pictures  Ringtones  
emulator_arm64:/sdcard $
```

pm (**P**ackage **M**anager) is an utility program for retrieving various kinds of information related to the application packages that are currently installed on the device.

pm list packages

```
emulator_arm64:/sdcard $ pm list packages
package:com.google.android.networkstack.tethering
package:com.android.cts.priv.ctsshim
package:com.google.android.youtube
package:com.android.internal.display.cutout.emulation.corner
package:com.google.android.ext.services
package:com.android.internal.display.cutout.emulation.double
package:com.android.providers.telephony
package:com.android.dynsystem
package:com.android.theme.icon.pebble
package:com.google.android.googlequicksearchbox
package:com.google.android.cellbroadcastservice
package:com.android.providers.calendar
package:com.android.providers.media
package:com.google.android.onetimeinitializer
package:com.google.android.ext.shared
package:com.android.internal.systemui.navbar.gestural_wide_back
package:com.android.managedprovisioning.auto_generated_rro_product__
package:com.android.theme.icon.vessel
package:com.android.theme.color.cinnamon
```

pm list packages | grep youtube

```
emulator_arm64:/sdcard $ pm list packages | grep youtube
package:com.google.android.youtube
package:com.google.android.apps.youtube.music
emulator_arm64:/sdcard $
```

pm list packages has various options to configure the output. -3 option is used to filter and display only show third party packages. -s option is used to filter and display only system packages.

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```
emulator_arm64:/sdcard $ pm list packages -3
package:com.example.android_security_app
package:com.example.lecture1_androidsec
package:com.example.myapplication
emulator_arm64:/sdcard $
```

To check the Process ID (PID) of the currently running applications, we use the `ps -A` command. `ps -A | grep.myapplication`

```
emulator_arm64:/ $ pm list packages -3
package:com.example.android_security_app
package:com.example.lecture1_androidsec
package:com.example.myapplication
emulator_arm64:/ $ ps -A | grep myapp
u0_a169      22969      300 13752004 128488 0          0 S com.example.my
application
emulator_arm64:/ $
```

`pm path` is used to get the path of the installed APK file.

`pm path com.example.myapplication`

```
emulator_arm64:/ $ pm path com.example.myapplication
package:/data/app/~~DTXs30YDmdmhr7xlu-nmuA==/com.example.myapplication-yCp_no_b8fEsy-2570XfAA==/base.apk
emulator_arm64:/ $
```

EXIT

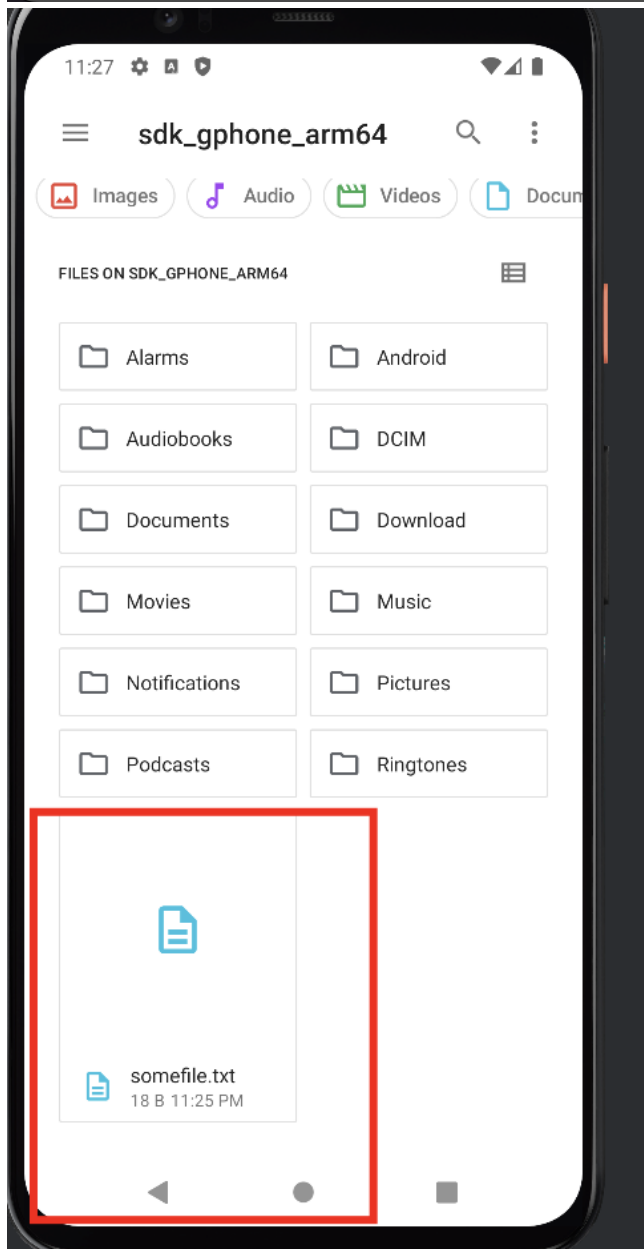
`adb pull`

```
emulator_arm64:/ $ exit
[santoshkumarpadmalojanan@Santoshs-MacBook-Pro ~ % adb pull "/data/app/~~DTXs30YDmdmhr7xlu-nmuA==/com.example.myapplication-yCp_no_b8fEsy-2570XfAA==/base.apk"
/data/app/~~DTXs30YDmdmhr7xlu-nmuA==/c.... 195.5 MB/s (6862049 bytes in 0.033s)
santoshkumarpadmalojanan@Santoshs-MacBook-Pro ~ %
```

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```
echo "This is some file" > somefile.txt  
adb push somefile.txt /sdcard/
```

```
[santoshkumarpadmalojanan@Santoshs-MacBook-Pro ~ % echo "This is some file" > somefile.txt  
santoshkumarpadmalojanan@Santoshs-MacBook-Pro ~ % adb push somefile.txt /sdcard/  
  
somefile.txt: 1 file pushed, 0 skipped. 0.2 MB/s (18 bytes in 0.000s)  
santoshkumarpadmalojanan@Santoshs-MacBook-Pro ~ %
```



## **Find Application UID**

### **Method 1**

21:51 Reference

```
ps  
su app_9 id
```

### Method 2

28:45 Reference

```
pm list packages -U
```

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