Session 19
Folder metrics and File reading/writing

I. Compare Internal and External storage

	Internal Storage	**External Storage**
Availability	Always	Varies
Accessibility	Your app only	World readable
App Uninstallation	Delete all files	Delete all files (if saved in the directory given by *getExternalFilesDir()*
Permission	No permission needed	Require either *WRITE_EXTERNAL_STORAGE* Or *READ_EXTERNAL_STORAGE*
Best for	Files that must not be accessed by either the user or other apps.	Files that don't need access restriction, need to be shared with other apps, or that the user can access.
Access directory	*getFilesDir()*	*getExternalFilesDir()* *or* *getExternalStoragePublicDirectory()*

II. Note on External storage

External storage is **NOT** always stored on a removable storage device (E.g. SD-card), even if it can be.
In fact, nowadays, in most cases, Android devices split the device permanent storage into Internal and External storage.

“*Many devices now divide the permanent storage space into separate ‘internal’ and ‘external’ partitions.”*
Source : https://developer.android.com/training/data-storage/files

Before accessing External storage, you should verify that it is available and that where you want to read/write exists.

You can verify the availability with *getExternalStorageState()*

III. Read and Write files

There are two major ways of writing files in Android.

FileOutputStream

Code example:

```
val filename = "outputstream.txt"
val fileContents = "Hello world! outputstream"


applicationContext.openFileOutput(filename, MODE_PRIVATE).use {
    it.write(fileContents.toByteArray())
}
```

PrintWriter

Code example:

```
val filename = "printwriter.txt"
val fileContents = "Hello world! printwriter"
File(applicationContext.filesDir, filename).printWriter().use {
    it.write(fileContents)
}
```

There is one major way of reading files in Android.

FileInputStream

Code example:

```
var filename = "outputstream.txt"
var fileContents = "Hello world! outputstream"
```

```
applicationContext.openFileInput(filename).bufferedReader().use {
    lblStorageDir.text = it.readLine()
}
```

Access this file:
https://github.com/vincent-picot/Android-apps