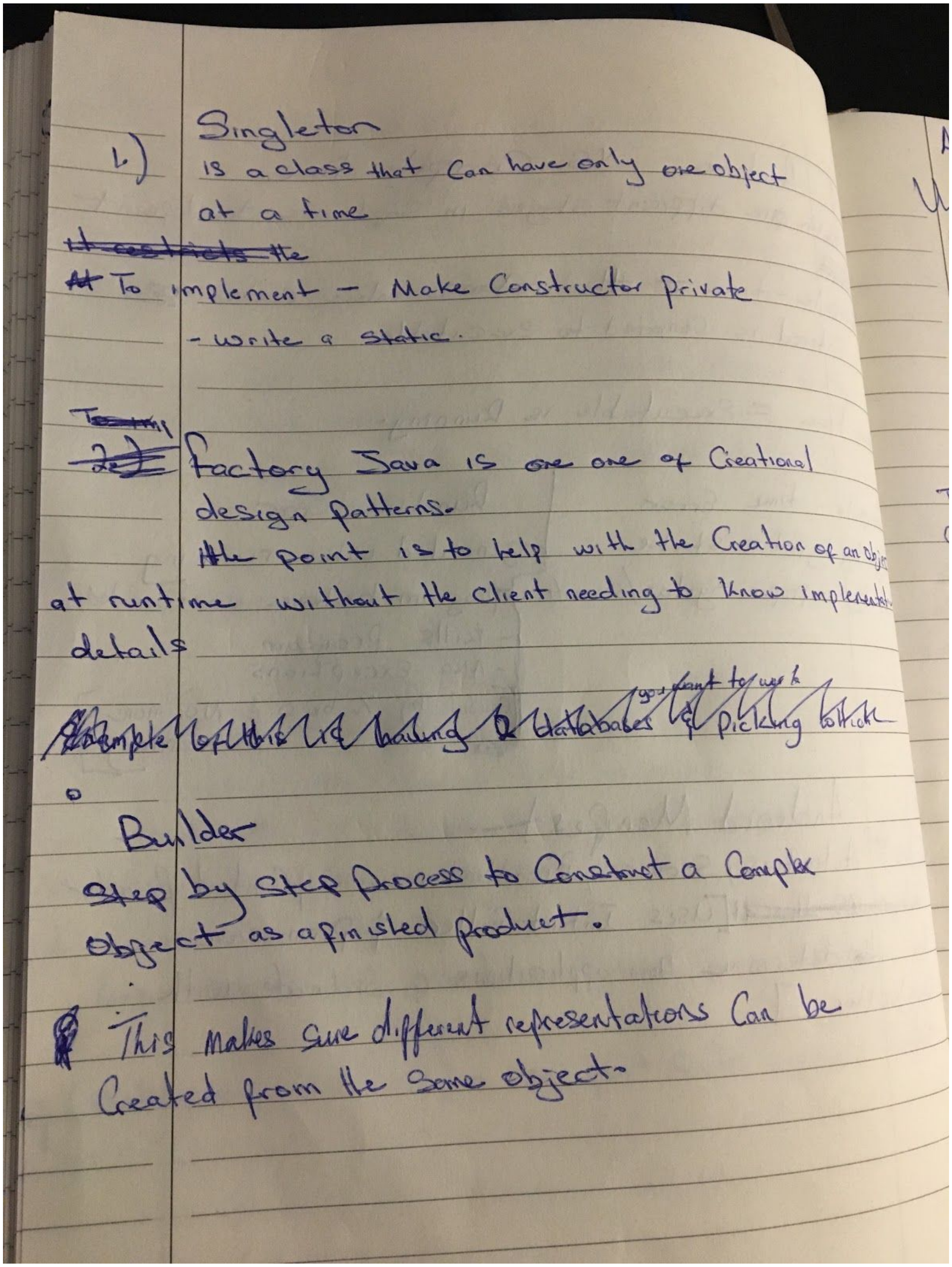
1. Define the following design principles: Singleton, Factory, Builder, Facade, Prototype



1) Singleton
is a class that Can have only one object at a time

~~It restricts the~~

~~At~~ To implement - Make Constructor private
- write a static.

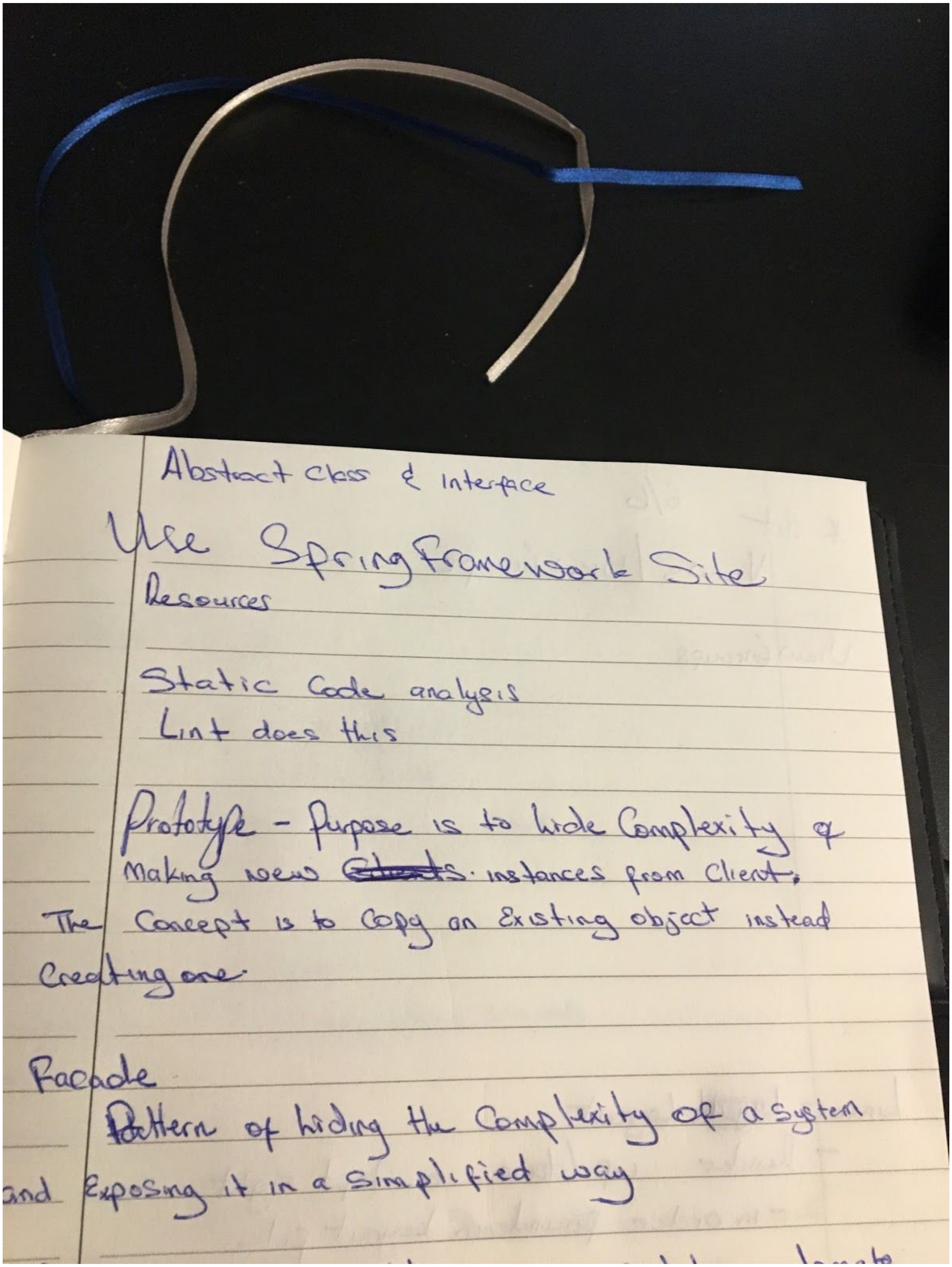
~~Teaching~~

~~2)~~ Factory Java is one one of Creational design patterns.
~~At~~ the point is to help with the Creation of an object at runtime without the client needing to know implementation details

~~Example of this is having a databases & picking which you want to work~~

Builder
~~Step~~ by Step Process to Construct a Complex Object as a finished product.

This makes sure different representations Can be Created from the Same object.



Abstract class & interface

Use Springframework Site

Resources

Static Code analysis

Lint does this

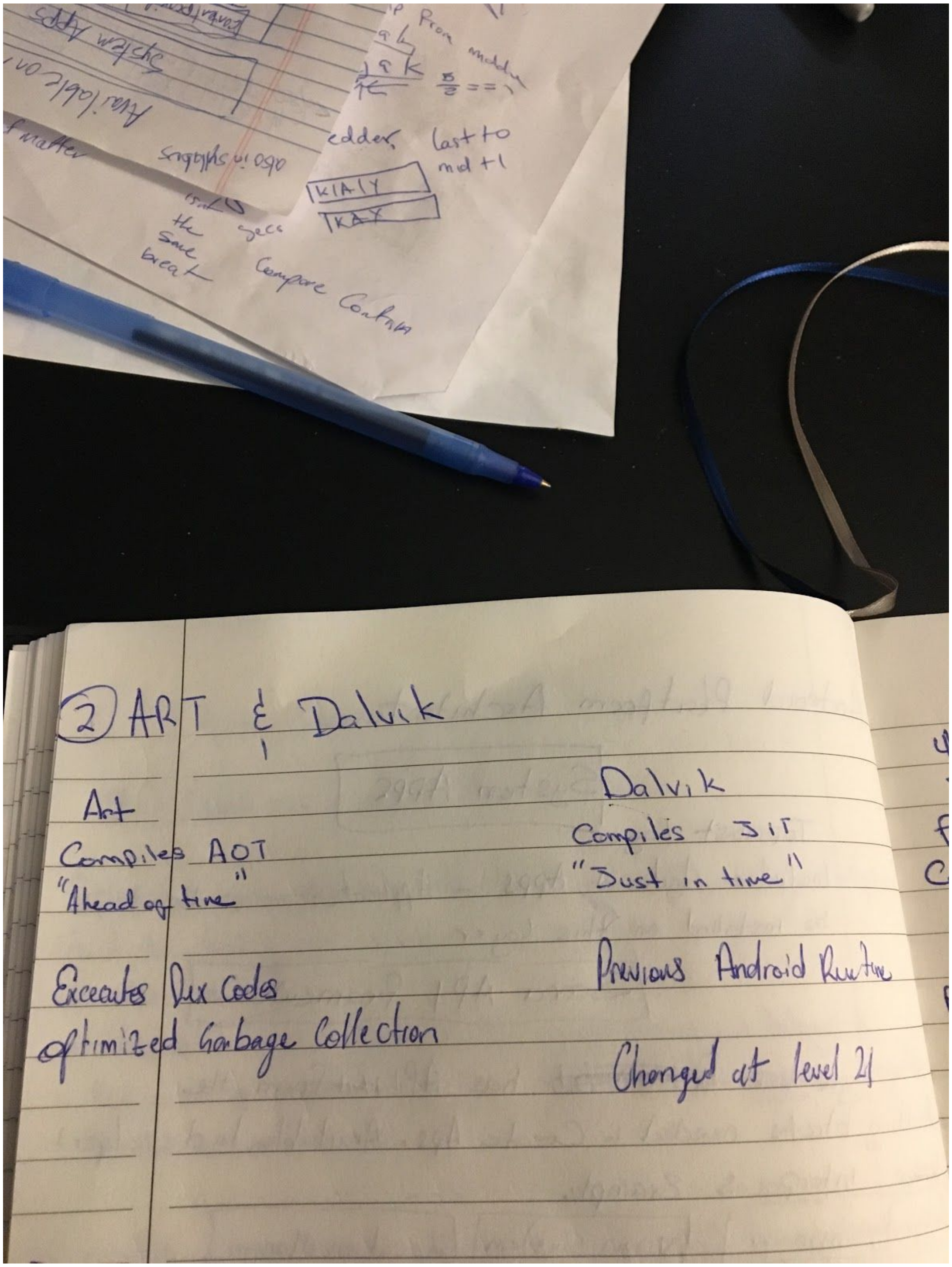
Prototype - Purpose is to hide Complexity of making new ~~Clients~~. instances from Client.

The Concept is to Copy an Existing object instead Creating one.

Facade

Pattern of hiding the Complexity of a system and Exposing it in a Simplified way

2. What is the differences in ART and Dalvik?



② ART & Dalvik

Art

Compiles AOT
"Ahead of time"

Excecutes Dex Codes
optimized Garbage Collection

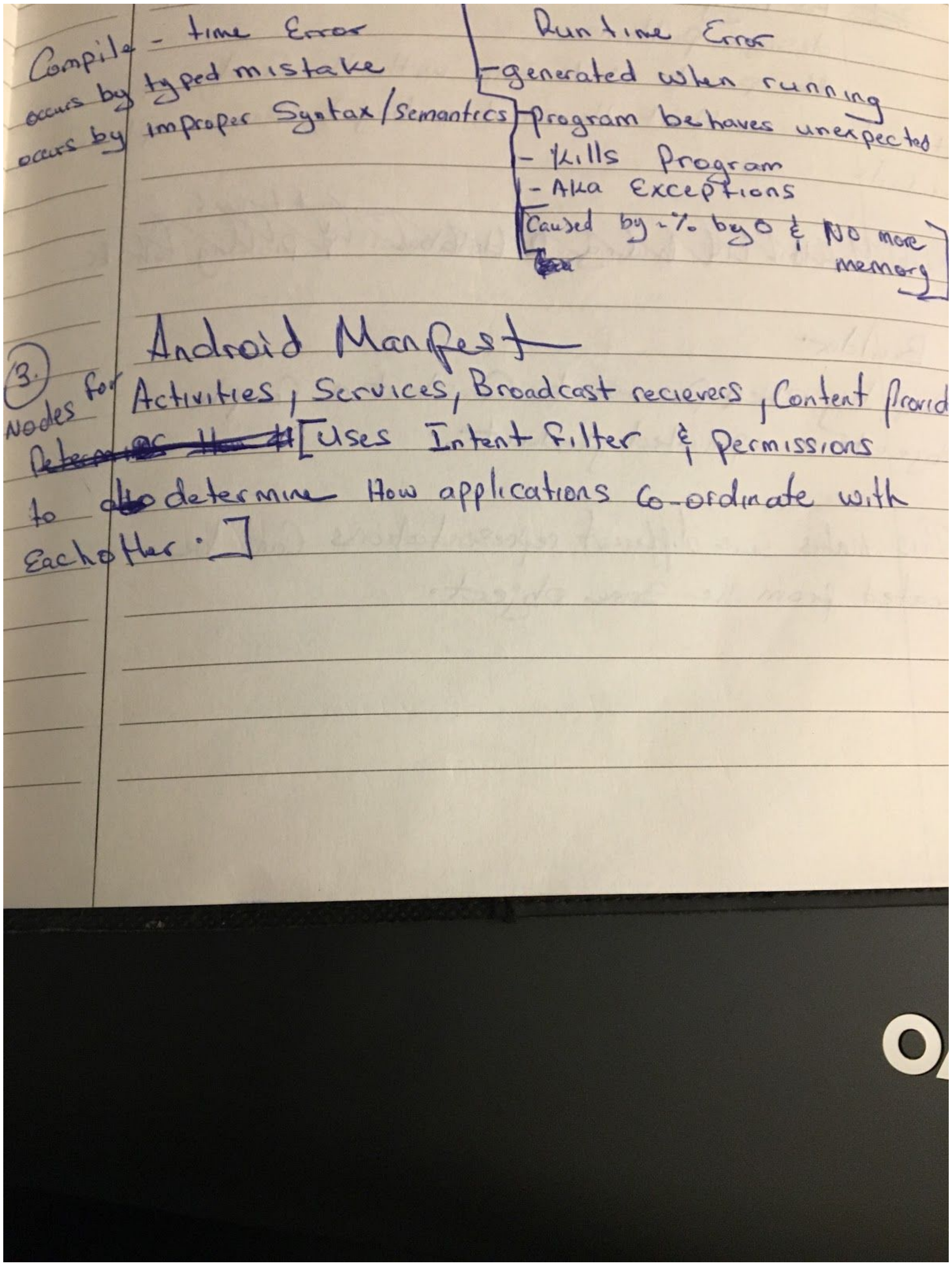
Dalvik

Compiles JIT
"Just in time"

Previous Android Runtime

Changed at level 21

3. What is the android manifest used for?



Compile - time Error
occurs by typed mistake
occurs by improper Sytax/Semantics

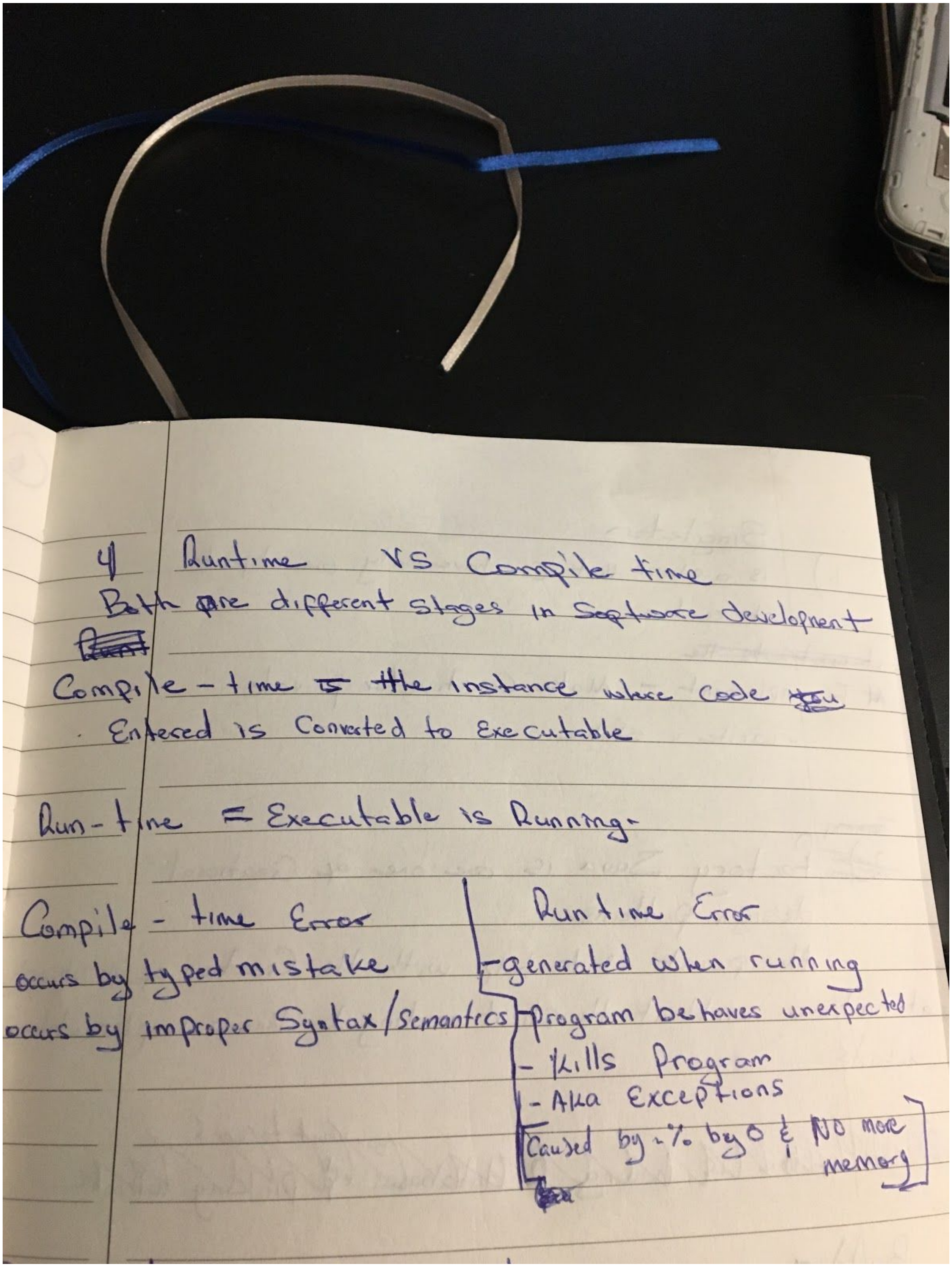
Run time Error
- generated when running
- Program behaves unexpected
- Kills Program
- Aka Exceptions
[Caused by -% by 0 & No more memory]

Android Manfest

3. Nodes for Activities, Services, Broadcast recievers, Content Provid

~~Determines How it~~ [Uses Intent filter & Permissions to ~~do~~ determine How applications co-ordinate with Eachother.]

4. Define the difference in Runtime and Compile Time.



4 Runtime VS Compile time

Both are different stages in Software development

Compile-time is the instance where code ~~you~~ Entered is Converted to Executable

Run-time = Executable is Running.

Compile-time Error

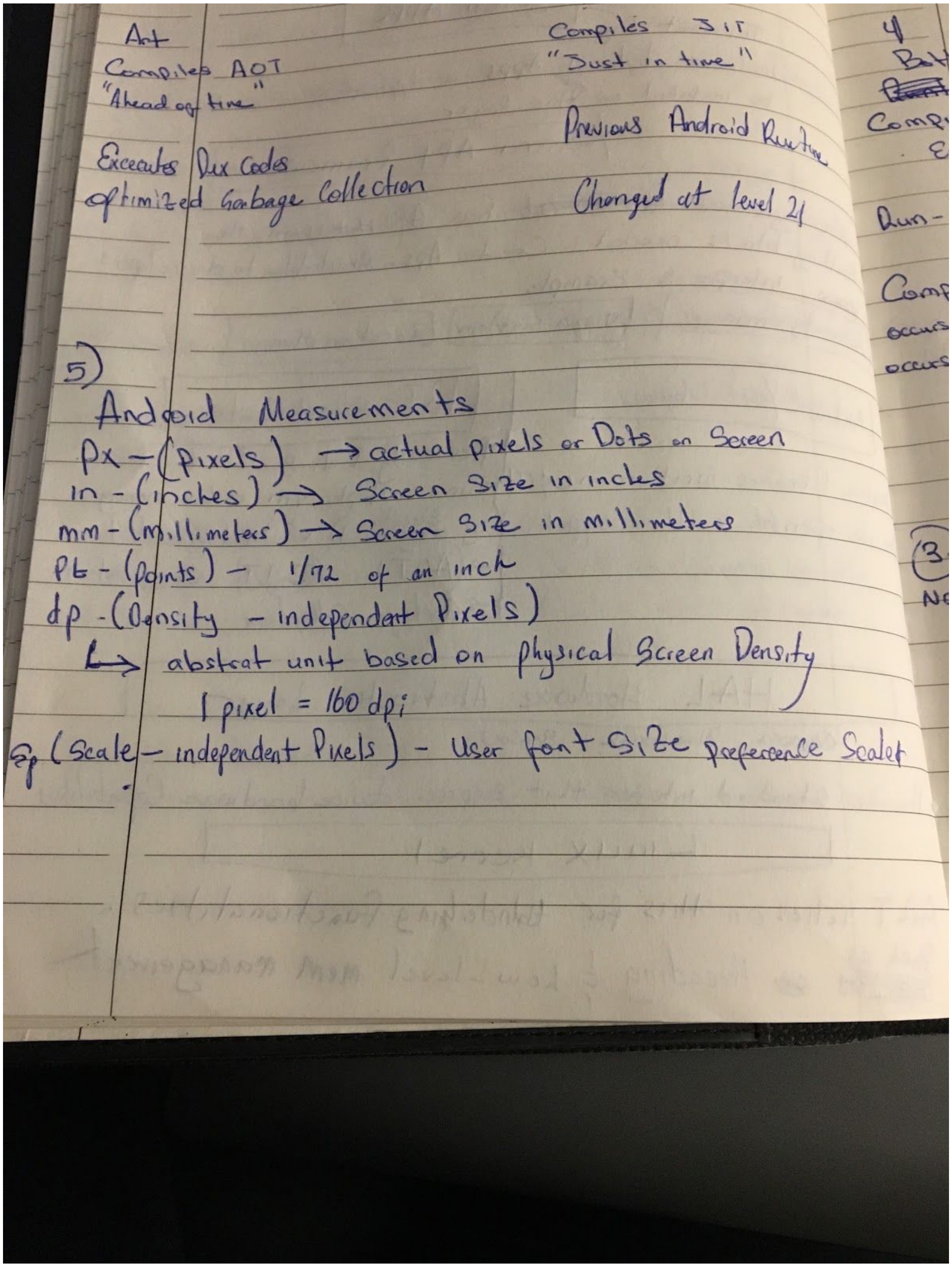
occurs by typed mistake

occurs by improper Syntax/Semantics

Runtime Error

- generated when running
- Program behaves unexpected
- Kills Program
- Aka Exceptions
- Caused by ÷% by 0 & No more memory

5. How does each of the following units of measure for view work: sp, dp, px, pt, in, mm



Art
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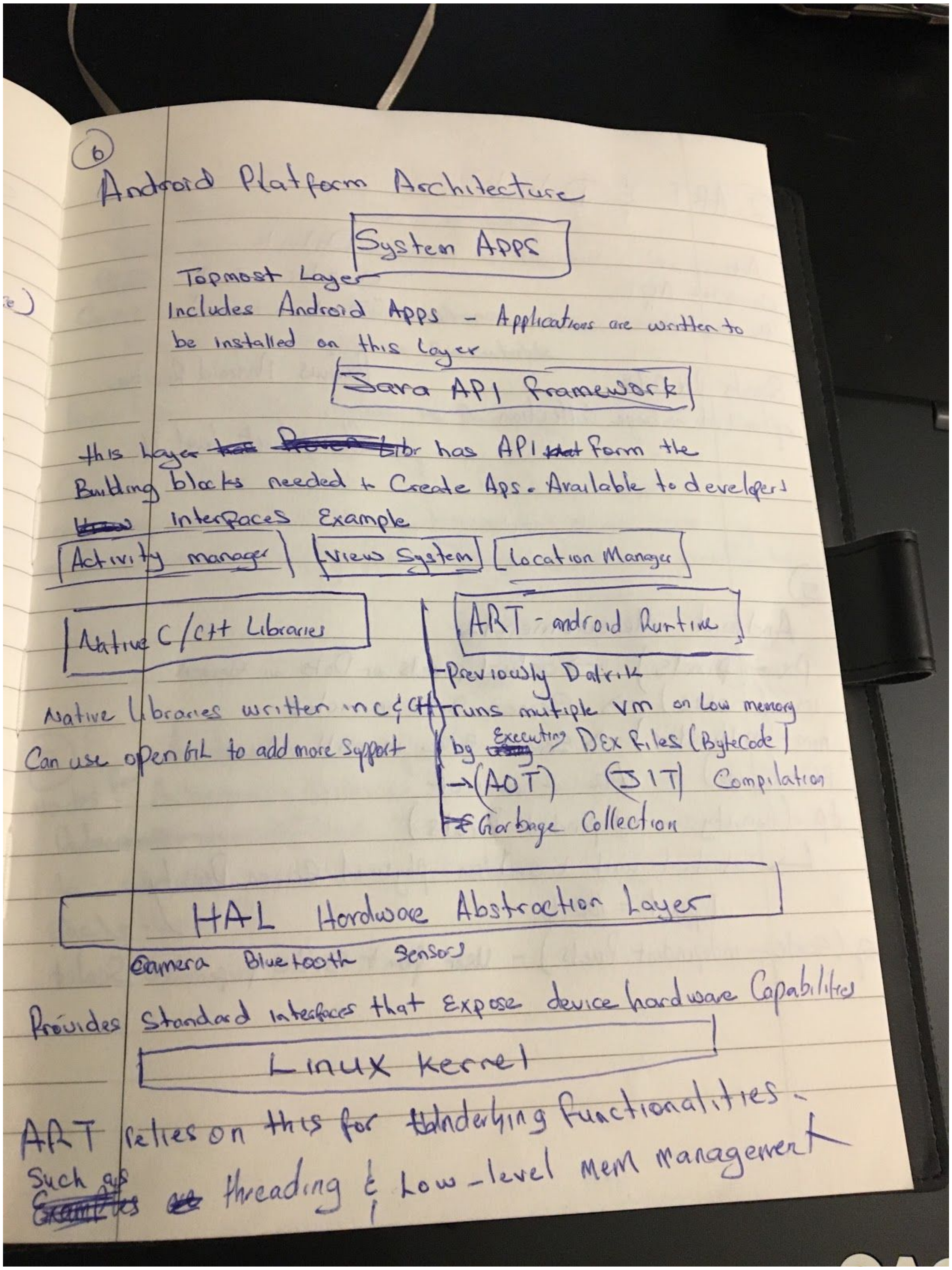
Changed at level 21

4
Bot
Comp
E
Run-
Comp
occurs
occurs
occurs
3
No

5)
Android Measurements
px - (pixels) → actual pixels or Dots on Screen
in - (inches) → Screen Size in inches
mm - (millimeters) → Screen Size in millimeters
pt - (points) - 1/72 of an inch
dp - (Density - independant Pixels)
↳ abstrat unit based on physical Screen Density
1 pixel = 160 dpi
Sp (Scale - independent Pixels) - User font Size preference Scaler

6. Describe what each section of the Android Platform arch. Details.



(6)

Andtoid Platform Architecture

System Apps

Topmost Layer

Includes Android Apps - Applications are written to be installed on this layer

Jara API framework

this layer ~~has~~ ~~Proven Lib~~r has API ~~that~~ form the Building blocks needed to Create Aps. Available to developers ~~How~~ interfaces Example

Activity manager | View System | location Manager

Native C/C++ Libraries

Native Libraries written in C & C++

Can use openGL to add more Support

ART - android Runtime

- Previously Dalvik
- runs mutiple vm on Low memory by Executing DEX files (ByteCode)
- → (AOT) (JIT) Compilation
- Garbage Collection

HAL Hardware Abstraction Layer

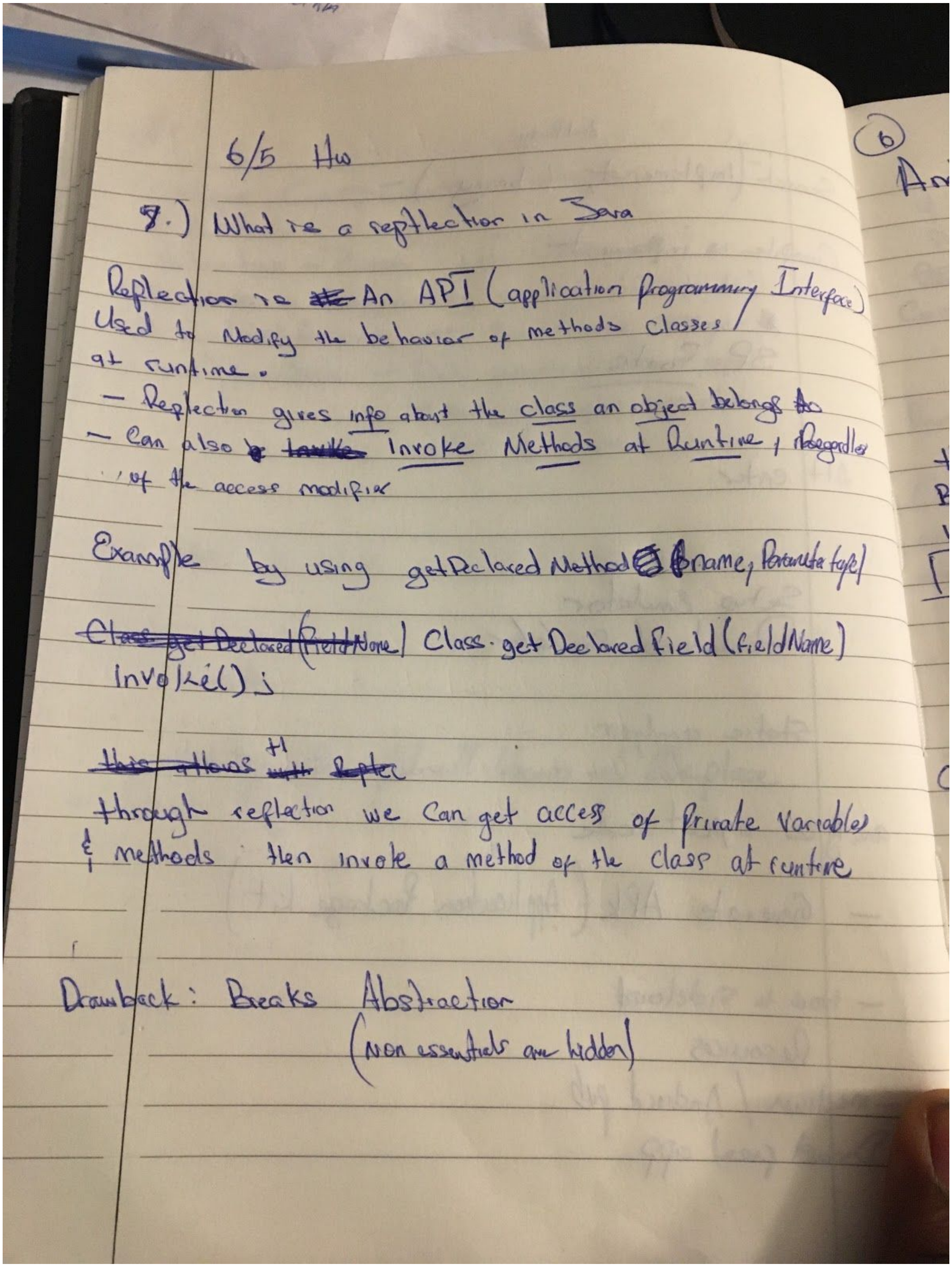
Camera Bluetooth Sensors

Provides Standard interfaces that Expose device hardware Capabilities

Linux kernel

ART relies on this for ~~Undlerlying~~ functionalities. Such as ~~Examples~~ ~~as~~ threading & Low-level mem management

7. What is reflection in JAVA?



6/5 Hw

7.) What is a repflection in Java

Replection is ~~the~~ An API (application Programming Interface) / Used to Modify the behavior of methods classes at runtime.

- Replection gives info about the class an object belongs to
- Can also ~~invoke~~ Invoke Methods at Runtime, Regardless of the access modifier

Example by using getDeclared Method(name, Parameter type)

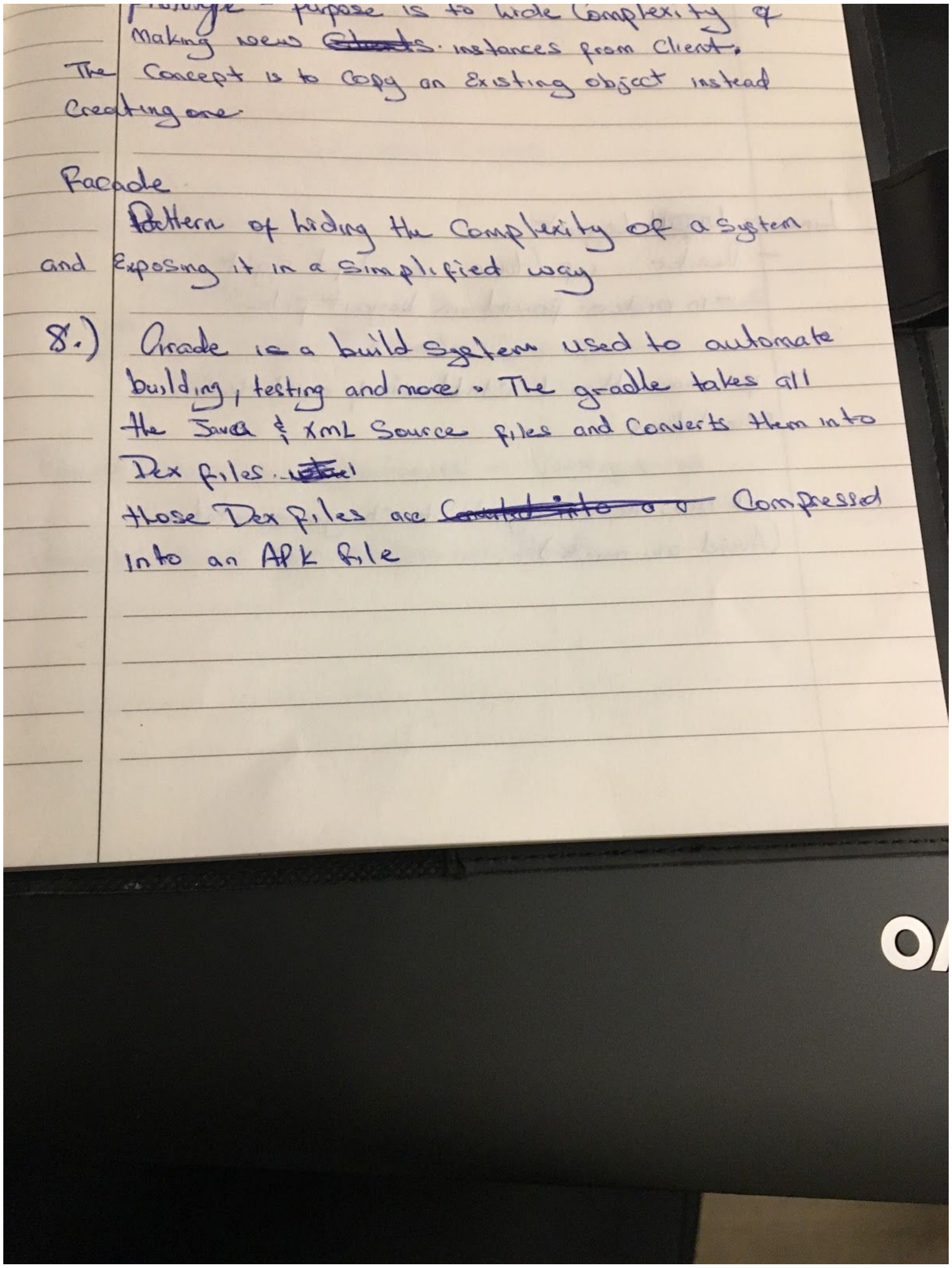
~~Class.getDeclared(FieldName)~~ Class.get DeclaredField(fieldName) invoke();

~~this allows~~ +l ~~with~~ ~~Repter~~

through reflection we Can get access of Private Variables & methods then invoke a method of the class at runtime

Drawback: Breaks Abstraction (non essentials are hidden)

8. How does gradle work behind the scene.



Prototype - purpose is to hide Complexity & Making new ~~Client~~s. instances from Client. The Concept is to Copy an Existing object instead Creating one.

Facade

Pattern of hiding the Complexity of a System and Exposing it in a Simplified way

8.) Grade is a build system used to automate building, testing and more. The gradle takes all the Java & XML Source files and Converts them into Dex files. ~~[illegible]~~

those Dex files are ~~Converted into a~~ Compressed into an APK file