

Week 2 - Notes: Android - Ground Zero

Terms in this set (36)

Android	a mobile operating system developed by Google, based on the Linux kernel and designed primarily for touchscreen mobile devices such as smartphones and tablets
An operating system (OS)	a collection of software that manages computer hardware resources and provides common services for computer programs"
Android Characteristics	Linux-based, Lightweight (wrt device resources), designed for touchscreen mobile devices, Open Source (Apache License), Free, source code available for modification and redistribution, The most permissive open source license without even the need to push modifications back into the open source community

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Study

What is the Android Ecosystem	<p>Android Apps</p> <ul style="list-style-type: none"> - Cooperation between these components is essential to the well being of the Android Ecosystem o Many problems have arisen as a result of lack of cooperation (see next slide) - Compare with the iOS Ecosystem where nearly all components are controlled by Apple which ensures cooperation <p>Components includes hardware manufacturers, core and development software (IDEs) creators, distribution channels (marketplaces etc.), app developers and their communities, telcos, etc... i.e. the OHA + other app developers + marketplaces + users</p>
API Level	<p>an integer value that uniquely identifies the framework API revision offered by a version of the Android platform</p>
The minimum SDK version	<p>This determines the lowest level of android that your app will run on</p>
Support Library Tip	<p>In order to provide the best features and functionality across several Android versions, you should use the Android in your app, which allows you to use several recent platform APIs on older versions.</p>
Activity Fragmentation	<p>Division of an activity into different/multiple functionalities</p>

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API Fragmentation	refer to manufacturers' skins and other matters (like security patches) in recent years
Forward Compatibility	<p>Old apps running on new platform versions</p> <p>Most android applications are forward compatible, they have new versions of the android platform because almost all changes to the framework API are additive</p>
Backward Compatibility	<p>New apps(using new features) running on old platform versions</p> <p>Android apps are not usually backward compatible with versions of the android platform older than the version against which they were compiled</p>
Activities	<p>A single, standalone module of application functionality which usually correlates directly to a single user interface screen and its corresponding functionality" - [Activities have lifecycles as they are partially or fully hidden or killed by the OS.</p>
Services	<p>Processes that run in the background and do not have a user interface.</p> <p>a component that runs in the background to perform long-running operations or to perform work for remote processes</p>
Content Providers	A standard interface that connects data in one process with code running in another process

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Broadcast Receivers	Broadcast Receivers are the mechanism by which applications are able to respond to Broadcast Intent
Intents	An Intent is a messaging object you can use to request an action from another app component.
Broadcast Intents	A system wide intent that is sent out to all applications that have registered an "interested" Broadcast Receiver
The Application Manifest File	<p>Assignment Project Exam Help</p> <p>It's an XML file - It details all of an Apps components , their capabilities and more</p> <p>includes - A declaration of all components in the application</p> <p>Including for each, any capabilities wrt implicit inter-App intents</p> <p>https://tutorcs.com</p> <p>WeChat: cstutorcs</p>
SDK Manager	It helps you install/uninstal the SDK tools, Platforms, and other componente yo need to develop your apps
AVD(Android virtual devise)	an emulator, its creates,edits, deletes, and runs/stops emulators
Which app component(s) is (are) activated by an Intent?	Animations, Drawable, Mipmap, Menus, Styles, Colours, Strings, Layout of the activity

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are targeted by an
intent

When and how is the API level
initially set on an emulator?

Can it be changed? How?

API level is set when creating a new AVD. You can select it when the system image page appears. The target SDK and minimum SDK can be changed but if features are not allowed in older SDK you may get compile errors. You can use the support library to get around this but note that the v7 or v4 in an import statement refers to the minimum API level that the support library supports.

Example:

- `android.support.v7.appcompat` works on API 7+ which refers to Android 2.1.x

Note: `minSdkVersion` and `targetSdkVersion` take in a number that refers to the API level (which may confuse people)

Can it be changed? How?

Yes:

Right click the app directory

Choose the module setting option

Change the SDK and API to the level you require

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When and how is the API level initially set on the app you are developing

Can it be changed? How?

During creation of the app

In the AVD manager (previous is asking about app, not emulator)

- Go to File > Project Structure then select "app" in the list on the left, go to "Flavors" tab and change min SDK and target SDK versions to the wanted values

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Consider an app compiled against API level 22 on a device running Nougat. This usually works. Why? How could this go wrong?

Apps are typically forward compatible, as most changes to the API framework are additive. A device running nougat will be on an API level of 25, but an app on API level 22 will probably have no issue

running on the newer device as all of the API used in the app will be available to the device.

It is important for an app to be forward compatibility as when users receive an OTA update to their android version it is critical all apps are functional after the update is complete.

The minSdkVersion attribute declares the minimum version with which your app is compatible (if you need a certain API to run) and the targetSdkVersion attribute declares the highest version on which you've optimized your app.

If the API version of the device is greater than the TargetSdkVersion then the system may enable compatibility behaviour to ensure the app runs as expected.

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Consider an app compiled against API level 22 on a device running Nougat. This usually works

Can it be fixed without changing the API level of the app and the device? Explain.

If the app uses parts of an API that have been removed in an update then that feature won't be available to the app. Therefore it may not perform as intended.

If maxSDKVersion is greater than the system API it will not be allowed to be installed on the system. (should not declare this attribute as it is not required. It may result in your application being removed from the users device if system is updated.)

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Consider an app compiled against API 25 on a device running Lollipop. How could this go wrong?

Android applications are not necessarily backward compatible with older versions of Android.

The app, compiled against API level 25 may contain framework that will not work on Lollipop.

If it goes wrong can it be fixed always or sometimes?

Features that are not required could be removed to fix this but if those features are required. It is also possible to use the support library to try going around this but it is not always possible. (It's also possible to give the feature to newer devices whilst not giving it to older devices - if statements usually help with this)

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running Lollipop. Under what circumstances can it be fixed?

the backward compatibility layer, as it understands the fragments.

Fluid UI design uses relative dimensions rather than absolute dimensions so the UI will scale to different screen sizes and orientations (e.g. 20% not 2 cm)

If you have prepared for your lab this week (it was part of prescribed pre-reading) you will have already encountered 2 relative specification of height and width. What are they and what do they mean?

A dp (or dip, Density Independent Pixel) is one physical pixel on a 160 dpi (Dots Per Inch) screen? Is this an absolute or relative dimension? Explain

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Android resources	
Android can select between alternate resources depending on device configuration. Give 2 examples of resource selection	...
How are alternate resources distinguished?	...
With respect to Android what is forward compatibility? What would prevent it?	...
With respect to Android what is Back compatibility? What would be a disadvantage	...

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