What is Android?

A mobile operating system developed by Google, based on the linux kernel, primarily designed for touchscreen devices.

What is DVM?

Dalvik virtual machine.

an android virtual machine optimized for mobile devices

A standard java compiler turns source code into byte code, then into a .txt file that DVM can read and use

DVM AND JVM

faster

for mobile devices

JVM is heavier

What does the android architecture consist of?

Linux kernel, libraries, android framework and android applications.

libraries: DVM, media framework, SQLite

android framework: activity manager, window manager, content provider

android application: browser, camera, calendar, contact, email

What are the main components that can be used within an android application?

activities, services, broadcast receiver, content provider

what is AAPT(android asset packaging tool)?????

part fit the SDK

allow you to view, create and update zip-compatible archives(zip, jar, apk)

ADK?

a hardware profile, system image, storage area, skin …

APK?

android application package

the file format for installing software on the android OS

compressed packaged

Android context?

an abstract class whose implementation is provided by the android system

It gives the context of the current state of the application or the object

can be invoked by

getApplicationContext() getContext(), getBaseContext(),    This.

what is android app?

a collection of dif activities, services, receivers and listeners.

has a single manifest; compiled into a single .apk file

NDK?

Native development kit

toolset lets you implement parts of your app using native-code languages such as c and c++

What does android app not responding happen?

when the main thread is blocked for a few time:

5s in an activity, 10s in a broad receiver, 20s in a service

To avoid it, on the main thread the app should not read or write files, connecting the internet, operate with the database.

Which language is the android framework written in

The framework and application layers in java

the driven and the library layer in c and c++

**Intent**

An object you can use to request an action from another app component(such as activities, services, broadcast receivers and content providers.)

In which case can we use intents?

When we want to start an activity

to start a service

to deliver a broadcast

what dif between implicit and explicit intents?

when you ask a specific component from within the app by name(explicitly), you use an explicit intent-start a new activity

when an action is asked from another app, you don’t specify it by name, so you use an implicit intent-load a webpage via uri object, open the gallery, load the camera.

what kind of information can be contained within an intent?

The name of the component to start(explicit)

a string that specifies the general action to be performed

the URI that references that data to be edited, loaded and so on

a string with the category of the kind of component that should handle the intent

extras with additional information, which can be transferred from one intent to another

additional flags with extra instructions to the android system.

What happens when there is more than one app that responds to your implicit intent?

the user can select which app to use

the user can make that app the default choice for the action(always send an emial)

show a chooser dialog for an option to the user to specify their choice every time.

What is the <intent-filter element>?

an expression in the app’s manifest file

specifies the type of intents the component would like to receive

each intent filter specifies the type of intents it accept based on the intent’s action, data, category

what is a pending intent?

an object that wraps another intent

a token that you give to a foreign application which allows the foreign application to use your applications’ permissions

by giving a pending intent to another app, you grant it the right to perform the operation your have specified as if the other application was your initial one.

eg. I want to have an apple, but i want to have it after i have breakfast. so, i have the pending intent to have an apple after some other actions are completed.

what is meant by intent resolution?

the handling f the implicit intent->when an implicit intent to start an activity is received, the system search for the best activity for the intent by checking: the action, the data, the intent category

sticky intent?

it sticks with android for future broadcast listeners.

eg.if BATTERY\_LOW occurs, the intent gets stick to android. if one more time battery\_low happens, the intent will be triggered.

THE MANIFEST FILE

how many per each app

one

exception is the case when a 3rd part library is added. then the library has a manifest itself as well.

Components of the application that are defined in its manifest.

activities,services, broadcast receivers, content provider

why do certain permissions need to be defined in the app’s manifest?

By default, no application is allowed to perform any operations that would adversely impact other applications, the operating system, or the user, e.g. reading or writing the user’s private data, reading or writing anther application’s files, performing network access, keeping the device awake and so on;

the person allows access to the protected parts of the API;

it also allows the application to interact with other applications.

some permissions that may be included in the manifest file:

internet

read\_logs

call\_emergency\_numbers

set\_wallpaper

device\_power

what contained with the <activity> tag in the app’s manifest?

info about activities, services, receivers, providers and used lib

which are the 2 required elements within the manifest’s declaration?

<manifest>

<application>

ACTIVITES

def?

an applications component which is visualized in separate screen;

usually an app consist of several activities

“last in first out” stack mechanism in the context of activities?

In an application, each activities can start another activity. when the new activity is stated the older one is stopped, but persevered by the system. So, when the user pressed the button, the last that was visible is the first to appear again.

Dif startActivity() and startActivityForResult()?

The second case you expect something to be returned from the start activity. In order the activity to be received, we implement the onActivityResult() callback method.

In which phase of the Activity;s lifecycle should the global state be declared(as the layout for example)?

In the onCreate() callback

Here the essential components of the activity need to be initialized

within the setContentView() we define the layout

Phases of lifecycle?

onCreate() - onDestroy()

Between which calls does the entire cycle of the Activity happen?

Between onCreate() where the resources are created.

And onDestroyed() where the resources are released.

Between which calls can the user see and interact with the activity,

Between onStart() the visible phase after the activity has been created.

And onStop() when a new activity is started for example.

How can a destroyed activity’s state saved?

within the onSaveInstanceState()

as an argument is used a Bundle where certain information can be stored.

If nothing specified, what happens when some of the device’ configurations are changed at runtime?

eg. screen orientation.

The activity is recreated onDestroy() is called followed by onCreate()

a way to handle it include the configChanges attribute to the certain activity.

which method is called to shut down an activity?

finish()- to finish the activity itself

finishActivity() - to allow others kill the activity

What is seamlessness? how is it applicable in android?

non-interrupted flow of the application

it is up to the developer t handle all possible hindrances for the user-low battery, configuration changed, permission wanted.

what is the android splash screen?

a screen that appears for a couple of seconds before the main screen. used to

\*show some progress

\*show company logo

FRAGMENTS

def?

Two or more on the screen at the same time.

have their own layout

can be added/removed from the activity at the run time

have their lifecycle, dependent on the activity’s, must be embedded in an activity

can be re-used in multiple activities

what the dif between DialogFragment, ListFragment and Preference Fragment?

All of them are subclassed are extend the basic Fragment class

Preference->display a hierarchy of preference objects as a list

List->display a list of items that are managed by an adapter

Dialog->display a floating dialog

what is the interface for interacting with Fragment objects inside of an Activity?

Fragment Manager.

fragment transition?

the ability to add, remove, replace and perform other actions with fragments on user’s interaction. each of these changes  is called a transaction.

In ordet to achieve it, you need the apis in FragmentTransaction.

can fragment be accessed within the Activity it is in?

yes, via using getActivity();

which are the states in which a fragment can exist?

Resumed

Paused

Stopped

dif between a fragment and an activity in terms of their lifecycle?

the way they are stored in the back stack.

by default the Activity is added at the top of the back stack, in order to be able to be called by the user on back press.

if we want the same behavior by the fragment, we need to explicitly call addToBackStack()

correlation between the activity’s and the fragment’s lifecycle?

yes. each lifecycle callback for the activity results in a similar callback for each fragment.

In comparison to an Activity, are there additional lifecycle callbacks for the fragment?

Yes, onAttach(), onCreateView(), onActivityCreated(), onDestroyView(), onDetach()

SERVICES

def?

a component of the application that lets you handle long-term operations in the background.

it does not have a user interface

a service is not a thread, it does not run on a separate thread

which are the basic forms a service takes?

started->within an activity, for example, via startService()

* a service may continue running even if the component it’s started from is destroyed

bound->it allows application components to bind to it.

How long does a bound service run for?

as long as there is a component bound to it

should a service be declared in order to be used?

yes, in the manifest, within the <service>element, a child of <application>

dif between stopSelf() and stopService()?

stopSelf() is called by the service itself when the job it was created for is done

stopService() is called by another component

Does the service run in a separated from the UI thread?

No. It runs in the main thread of that application, by default

When a service is created, why is it better to extent IntentService rather than Service?

Because IntentService creates a default worker thread that executes all intents, whereas in the Service you create a new thread in which to do all the service’s work(otherwise the work of the main thread will be slowened)

PERMANENT DATA STORAGE

Which are the ways to store date permanently in android?

shared preferences, internal storage, external storage, SQLite Databases, network connection

what type of data can be saved via Shared Preference?

Primitive(booleans, floats, int, longs, strings);

Stored as key-value pairs

In order to use shared preferences, you have to call a method getSharedPreferences() that returns a SharePreference instance.

By default, what’s the status of the files, saved directly in the device’s internal storage?

They are private to the application,

other applications cannot access them,

when the application is uninstalled, the files are removed.

What is specific for the external storage option?

You need to acquire the respective permission(to be declared in the manifest)

eg. READ\_EXTERNAL\_STORAGE WRITE\_EXTERNAL\_STORAGE(implicitly acquires the READ permission as well)

files can be stored on the SD card

can be stored in an internal(but not removalbe)storage. Before going for the particular media, you need to check if it is available.

By default, this files can be access from other apps

What is always returned by an executed SQLite Query?

A Cursor that points to all the rows found by the query.

Can a SQLight database be debugged in Android?

Yes. Via an SQLite3 database tool.

RESOURCES

why does the resources need to be externalized?

They can be maintained independently

alternative resources may be provided for the dif devices.

dif lang may be implemented.

Where are the element’s IDs stored?

They are stored in the project’s R class.

Subdirectories within the res directory?

Color/

Drawable/

Layout/

Value/

Raw/

Mipmap/

what are 9 patch image?

a stretchable bitmap image, automatically resized to fit the content of the View

usually used for the background of Buttons.

What alternative resources can be provided for the screen orientation?

Port:when the device is in portrait orientation

Land:when the device is in landscape orientation.

What is an alias resources?

This is the case when we have a resource we’d want to use for more than one device configuration and at the same time not to set it as a default one.

An alias of an existing drawable file is created via the <bitmap> element.

An alias of an existing layout file-via the <merge> element

what is the R class in your application?

it is generated by the appt tool once the application is compiled. Here are generated IDs for all of the defined resources within the res/ directory

for each type of resource there is a subclass in the R file:

R.drawable, R.values, R.mipmap

for each resource of the particular type is stored a static integer- the unique ID of the resource in question.

When dealing with multiple resources, which one takes precedence?

the ‘locale’ qualifier almost always takes the highest precedence.

LAYOUT

how can a layout be declared?

in the .xml file

programmatically, at run time.

How many root element can an .xml file have?

One.

The type must be other View or ViewGroup object.

android:id=“@+id/btnNext”

@:the xml parser is indicated that an id string comes

+:please, add the new resource reference to the resource file

Margin VS Padding

Margin-the space left between the elements

Padding-the space between the content and the outside border

How should a layout whose content is dynamic be built?

The layout can be populated with view at run time, using Adapter. The Adapter binds the data to view.

What is a viewGroup?

the base class for Layouts

the invisible container;

It holds View and ViewGroup;

EX: RelativeLayout is the ViewGroup that contains Button(View) and other Layout.

What is the purpose f the layout weight attribute?

It specifies how much of the extra space in the layout to be allocated to the View.

It assigns an “importance” value to a view.

space assigned to child = (child’s individual weight)/(sum of weight of every child in linear layout)

Default position of the children within the Relative Layout?

Top-left of the layout.

How are the elements visualized within a List View?

The List View elements look like a lost of scrollable elements The design if each row is achieved via the implementation of an adapter.

What is the dif ListView VS RecyclerView?

The Recycler view is described as advanced ListView.

As a matter of usage, the RV implementation is easier to be achieved

-The ViewHolder is the default behavior of the RecyclerView.

-The items from the list can be easily controlled at the run time.(we have Layout Manager)

-The ItemAnimator holds the set of options of adding effects to each of the list items.

How are the elements visualized within a GridView?

Here are elements are within a two-dimensional scrollable grid(as the default way the icons are located on the start screen of any device)

Most often it’s used when we want to build an application as image viewer, audio or video player.

What is adapter?

It helps data be transmitted an visualized with a View.

Ex;ListAdapter defines layout for individual row of the list and provides data to the ListView via setAdapter() method of ListView.

INPUT CONTROLS

what a button consist of?

text->we use button

icon->image button with android:src=“@drawable/button\_icon”

text and icon->Button with android:drawableLeft=“@drawable/button\_icon”

Which is the alternative of android: onClick attribute?

Programmatically can be used the OnClickListener

button.setOnClikListener(new View.OnClickListener(){

        public void onClick(View v){

        }

})

How to make a borderless button?

In the .xml of the control, when adding

style=“?android:attr/borderlessButtonStyle”

If you want to store the user’s input in a field, what type of Input Control is used?

EditText

How can be restricted the data entered and required in an EditText?

when specifying the android:inputType, we predefine what keyboard can be used by the user.

How can the user be provided with input auto-complete suggestions?

We use AutoCompleteTextView which is a subclass of EditText.

The suggestions we want to be visualized need to be defines in a string-array as dif items. Then we need to set the adapter, matching each line of the string array with a line in the field.

dif in the visualization between the radio buttons and the Spinner?

The radio buttons shows the options one to another,

the Spinner shows the one under another.

Toggle Button used for?

To provide the User with an option to set ON of OFF a particular setting.

what are pickers typically used?

In the context of dates-when the user is provided with the opportunity to choose a particular time/date

MENU,SETTING,DIALOGS

which is the collection that holds menu items for an activity?

options menu

how dif menu items stored?

within <menu>

what is the Options Menu used for?

Here are added actions and other options that are relevant to the current activity context(search, share,star)

what is contextual menu?

the actions specified within the contextual menu are connected to specific items not to the whole activity.

what is popup menu?

It is a type of menu that appears below the clicked/hovered element (when there is enough space) or above it(when the space is not enough)

which object is used in order to specify a particular setting to the User?

The Preference Object.

Dialog?

a small window that prompts the user to make a decision or tenter additional information.

How many botton can be added to in an alter dialog

up to three

how are the buttons in the alert dialog ordered?

positive, neutral, negative

what dialog boxed are supported in android?

alter dialog

progress dialog’

date picker dialog

time picker dialog

THREADS

describe the “main” thread

it is created when the application is launched.usually referred to as the UI thread;

all components, Running in the same process, are instantiated in the UI thread

the android ui toolkit may be access only from the main thread

when may the UI thread be blocked?

when all of the processes in an application happen on one thread;

when long operations are performed on the UI thread:

DB queries

Network access

What are the “background” or “worker” threads?

Extra threads, dif from the UI one , where time-consuming operation can be run

How to start a new thread?

create a new instance of Runnable;

Using AsyncTask

How does AsyncTask work?

It is defined by a computation that runs on a background thread

Its result is public on the UI thread

How is AsyncTask defined?

Param- what is going to be sent when the execution is started

Progress-the way the progress is to be stored during the execution

Result-the result expect from he whole computation itself

which phase does an execution go through when implementing AsyncTask?

onPreExecute()

doInBackground(Params...)

onProgressUpdate(Progress…)

onPostExecute(Result)

NOTIFICATIONS AND SEARCH INTERFACE

notification?

a message that appears on the User’s screen

not part of the basic UI design of the application

the issued notification appear first in the notification area

when chosen, it goes to the notification drawer

which are the obligatory parts each notification object should have?

a small icon

a title

a detail text

How many action should be add to notification

at least one, in order the user to be given the redirected to the corresponding activity the notification pushed them about.

can you control how a set of notifications are going to be shown?

yes add priority

which are the options a search input to be included in the app?

a search dialog at the top of the screen

add a search widget

how can you grant the user the opportunity to search the app’s data?

the feature is not supported by the search framework, however, there are specific for the dif the of data APIs

For example, if we have an SQLite DB, the android.database.sqlite APIs should be used.