

Introduction Android: INTERVIEW QUESTION AND ANSWER

Android is an operating system for mobile devices that includes middleware and key applications, and uses a modified version of the Linux kernel. It was initially developed by Android Inc..It allows developers to write managed code in the Java language, controlling the device via Google-developed Java libraries.....

The Android SDK includes a comprehensive set of development tools . These include a debugger, libraries, a handset emulator (based on QEMU), documentation, sample code, and tutorials. Currently supported development platforms include x86-architecture computers running Linux (any modern desktop Linux distribution), Mac OS X 10.4.8 or later, Windows XP or Vista.

Android does not use established Java standards, i.e. Java SE and ME. This prevents compatibility among Java applications written for those platforms and those for the Android platform. Android only reuses the Java language syntax, but does not provide the full-class libraries and APIs bundled with Java SE or ME

What is android?

Android is a stack of software for mobile devices which has Operating System, middleware and some key applications. The application executes within its own process and its own instance of Dalvik Virtual Machine. Many Virtual Machines run efficiently by a DVM device. DVM executes Java language?s byte code which later transforms into .dex format files.

What are the advantages of Android?

The following are the advantages of Android:

*** The customer will be benefited from wide range of mobile applications to choose, since the monopoly of wireless carriers like AT&T and Orange will be broken by Google Android.**

*** Features like weather details, live RSS feeds, opening screen, icon on the opening screen can be customized**

*** Innovative products like the location-aware services, location of a nearby convenience store etc., are some of the additive facilities in Android.**

Components can be reused and replaced by the application framework.

***Optimized DVM for mobile devices**

***SQLite enables to store the data in a structured manner.**

***Supports GSM telephone and Bluetooth, WiFi, 3G and EDGE technologies**

***The development is a combination of a device emulator, debugging tools, memory profiling and plug-in for Eclipse IDE.**

Features of Android

Application framework enabling reuse and replacement of components ♣

Dalvik virtual machine optimized for mobile devices ♣

Integrated browser based on the open source WebKit engine ♣

Optimized graphics powered by a custom 2D graphics library; 3D ♣ graphics based on the OpenGL ES 1.0 specification (hardware acceleration optional)

SQLite for structured data storage ♣

Media support for common audio, video, and still image formats (MPEG4, H.264, MP3,

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AAC, AMR, JPG, PNG, GIF)♣

GSM Telephony (hardware dependent)♣

Bluetooth, EDGE, 3G, and WiFi (hardware dependent)♣

Camera, GPS, compass, and accelerometer (hardware dependent)♣

Rich development environment including a device emulator, tools for♣ debugging, memory and performance profiling, and a plugin for the Eclipse IDE.

Explain about the exceptions of Android?

The following are the exceptions that are supported by Android

*** InflateException : When an error conditions are occurred, this exception is thrown**

*** Surface.OutOfResourceException: When a surface is not created or resized, this exception is thrown**

*** SurfaceHolder.BadSurfaceTypeException: This exception is thrown from the lockCanvas() method, when invoked on a Surface whose is**

SURFACE_TYPE_PUSH_BUFFERS

*** WindowManager.BadTokenException: This exception is thrown at the time of trying to add view an invalid WindowManager.LayoutParams token.**

Describe the APK format.

The APK file is compressed the AndroidManifest.xml file, application code (.dex files), resource files, and other files. A project is compiled into a single .apk file.

What is .apk extension?

The extension for an Android package file, which typically contains all of the files related to a single Android application. The file itself is a compressed collection of an AndroidManifest.xml file, application code (.dex files), resource files, and other files. A project is compiled into a single .apk file.

What is .dex extension

Android programs are compiled into .dex (Dalvik Executable) files, which are in turn zipped into a single .apk file on the device. .dex files can be created by automatically translating compiled applications written in the Java programming language

What is an adb ?

Android Debug Bridge, a command-line debugging application shipped with the SDK. It provides tools to browse the device, copy tools on the device, and forward ports for debugging.

What is an Application ?

A collection of one or more activities, services, listeners, and intent receivers. An application has a single manifest, and is compiled into a single .apk file on the device.

What is a Content Provider ?

A class built on ContentProvider that handles content query strings of a specific format to return data in a specific format. See Reading and writing data to a content provider for information on using content providers.

What is a Dalvik ?

The name of Android's virtual machine. The Dalvik VM is an interpreter-only virtual machine that executes files in the Dalvik Executable (.dex) format, a format that is optimized for efficient storage and memory-mappable execution. The virtual machine is

register-based, and it can run classes compiled by a Java language compiler that have been transformed into its native format using the included “dx” tool. The VM runs on top of Posix-compliant operating systems, which it relies on for underlying functionality (such as threading and low level memory management). The Dalvik core class library is intended to provide a familiar development base for those used to programming with Java Standard Edition, but it is geared specifically to the needs of a small mobile device.

What is an DDMS

Dalvik Debug Monitor Service, a GUI debugging application shipped with the SDK. It provides screen capture, log dump, and process examination capabilities.

What is Drawable?

A compiled visual resource that can be used as a background, title, or other part of the screen. It is compiled into an android.graphics.drawable subclass.

What is an Intent?

A class (Intent) that contains several fields describing what a caller would like to do. The caller sends this intent to Android’s intent resolver, which looks through the intent filters of all applications to find the activity most suited to handle this intent. Intent fields include the desired action, a category, a data string, the MIME type of the data, a handling class, and other restrictions.

What is an Intent Filter ?

Activities and intent receivers include one or more filters in their manifest to describe what kinds of intents or messages they can handle or want to receive. An intent filter lists a set of requirements, such as data type, action requested, and URI format, that the Intent or message must fulfill. For Activities, Android searches for the Activity with the most closely matching valid match between the Intent and the activity filter. For messages, Android will forward a message to all receivers with matching intent filters.

What is an Intent Receiver?

An application class that listens for messages broadcast by calling Context.broadcastIntent

What is a Layout resource?

An XML file that describes the layout of an Activity screen.

What is a Manifest ?

An XML file associated with each Application that describes the various activities, intent filters, services, and other items that it exposes.

What is a Resource

A user-supplied XML, bitmap, or other file, entered into an application build process, which can later be loaded from code. Android can accept resources of many types; see Resources for a full description. Application-defined resources should be stored in the res/ subfolders.

What is a Service ?

A class that runs in the background to perform various persistent actions, such as playing music or monitoring network activity.

What is a Theme ?

A set of properties (text size, background color, and so on) bundled together to define various default display settings. Android provides a few standard themes, listed in R.style

(starting with “Theme_”).

What is an URIs?

Android uses URI strings both for requesting data (e.g., a list of contacts) and for requesting actions (e.g., opening a Web page in a browser). Both are valid URI strings, but have different values. All requests for data must start with the string “content://”. Action strings are valid URIs that can be handled appropriately by applications on the device; for example, a URI starting with “http://” will be handled by the browser.

Can I write code for Android using C/C++?

Yes, but need to use NDK

Android applications are written using the Java programming language. Android includes a set of core libraries that provides most of the functionality available in the core libraries of the Java programming language.

Every Android application runs in its own process, with its own instance of the Dalvik virtual machine. Dalvik has been written so that a device can run multiple VMs efficiently. The Dalvik VM executes files in the Dalvik Executable (.dex) format which is optimized for minimal memory footprint. The VM is register-based, and runs classes compiled by a Java language compiler that have been transformed into the .dex format by the included “dx” tool.

Android only supports applications written using the Java programming language at this time.

What is an action?

A description of something that an Intent sender desires.

What is activity?

A single screen in an application, with supporting Java code.

What is intent?

A class (Intent) describes what a caller desires to do. The caller sends this intent to Android’s intent resolver, which finds the most suitable activity for the intent. E.g. opening a PDF file is an intent, and the Adobe Reader is the suitable activity for this intent.

How is nine-patch image different from a regular bitmap?

It is a resizable bitmap resource that can be used for backgrounds or other images on the device. The NinePatch class permits drawing a bitmap in nine sections. The four corners are unscaled; the four edges are scaled in one axis, and the middle is scaled in both axes.

What languages does Android support for application development?

Android applications are written using the Java programming language.

What is a resource?

A user-supplied XML, bitmap, or other file, injected into the application build process, which can later be loaded from code.

How will you record a phone call in Android? How to get a handle on Audio Stream for a call in Android?

Permissions.PROCESS_OUTGOING_CALLS: Allows an application to monitor, modify, or abort outgoing calls.

What’s the difference between file, class and activity in android?

File – It is a block of arbitrary information, or resource for storing information. It can be

of any type.

Class – Its a compiled form of .Java file . Android finally used this .class files to produce an executable apk

Activity – An activity is the equivalent of a Frame/Window in GUI toolkits. It is not a file or a file type it is just a class that can be extended in Android for loading UI elements on view.

What is a Sticky Intent?

sendStickyBroadcast() performs a sendBroadcast (Intent) that is “sticky,” i.e. the Intent you are sending stays around after the broadcast is complete, so that others can quickly retrieve that data through the return value of registerReceiver (BroadcastReceiver, IntentFilter). In all other ways, this behaves the same as sendBroadcast(Intent).

One example of a sticky broadcast sent via the operating system is ACTION_BATTERY_CHANGED. When you call registerReceiver() for that action — even with a null BroadcastReceiver — you get the Intent that was last broadcast for that action. Hence, you can use this to find the state of the battery without necessarily registering for all future state changes in the battery.

Does Android support the Bluetooth serial port profile?

Yes.

Can an application be started on powerup?

Yes.

How to Remove Desktop icons and Widgets

A. Press and Hold the icon or widget. The phone will vibrate and on the bottom of the phone you will see an option to remove. While still holding the icon or widget drag it to the remove button. Once remove turns red drop the item and it is gone

Describe a real time scenario where android can be used?

Imagine a situation that you are in a country where no one understands the language you speak and you can not read or write. However, you have mobile phone with you.

With a mobile phone with android, the Google translator translates the data of one language into another language by using XMPP to transmit data. You can type the message in English and select the language which is understood by the citizens of the country in order to reach the message to the citizens.

How to select more than one option from list in android xml file?

Give an example.

Specify android id, layout height and width as depicted in the following example.

What languages does Android support for application development?

Android applications are written using the Java programming language.

Describe Android Application Architecture.

Android Application Architecture has the following components:

- **Services – like Network Operation**
- **Intent – To perform inter-communication between activities or services**
- **Resource Externalization – such as strings and graphics**
- **Notification signaling users – light, sound, icon, notification, dialog etc.**
- **Content Providers – They share data between applications**

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