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How to utilize NDK for Android Application and Game Development by Pradeep Hunka

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Android software development is the process by which new applications are created for the Android operating system. Android applications are generally developed in the Java programming language using the Android Software Development Kit, but other development tools like NDK are also available.

What is NDK?

NDK is a software development tool for development of android applications and games. Android development using SDK is done in Java. NDK allows the user to implement parts of applications using native code languages such as C and C++. Therefore, it is called as Native Android Development.The Android NDK is available for three platforms- Windows, Mac OS X(Intel), Linux 32-64 bit(x86).

Using NDK proves beneficial in the sense, that it allows the user to generate native code in certain classâ€™s applications, in the form of reuse and increasing performance in certain cases. The Android NDK is always used with the Android SDK. To run the Android NDK, the user must have a complete installation of the Android SDK installation (including all dependencies) and an Android 1.5 SDK or later version. Native classes can be called from Java code running under the Dalvik VM using the System.loadLibrary call, which is part of the standard Android Java classes.

Contents of NDK

The NDK contains the APIs, documentation, and sample applications that help you write your native code.

The NDK includes a set of cross-toolchains (compilers, linkers, etc.) that can generate native ARM binaries on Linux, OS X, and Windows (with Cygwin) platforms.

It provides a set of system headers for stable native APIs that are guaranteed to be supported in all later releases of the platform:libc (C library) headers,libm (math library) headers, JNI interface headers, libz (Zlib compression)headers, liblog (Android logging) header, OpenGL ES 1.1 and OpenGL ES 2.0 (3D graphics libraries) headers, libjnigraphics (Pixel buffer access) header (for Android 2.2 and above), minimal set of headers for C++ support, OpenSL ES native audio libraries, Android native application APIS.

Ways to use native code

The Android framework provides two means in which the native code can be used for Android application development:-

1) Write your application using the Android framework and use JNI to access the APIs provided by the Android NDK. This technique allows you to take advantage of the convenience of the Android framework, but still allows you to write native code when necessary. You can install applications that use native code through the JNI on devices that run Android 1.5 or later.

2) Write a native activity, which allows you to implement the lifecycle callbacks in native code. The Android SDK provides the NativeActivity class, which is a convenience class that notifies your native

code of any activity lifecycle callbacks (onCreate(), onPause(), onResume(), etc). You can implement the callbacks in your native code to handle these events when they occur. Applications that use native activities must be run on Android 2.3 (API Level 9) or later.

Required development tools

1) For all development platforms, GNU Make 3.81 or later is required. Earlier versions of GNU Make might work but have not been tested.

2) A recent version of awk (either GNU Awk or Nawk) is also required.

3) For Windows, Cygwin 1.7 or higher is required. The NDK will not work with Cygwin 1.5 installations.

It is recommended to use NDK only when it is necessary for the application. Its use should not be governed by the preference to use a certain languages the use of native code may not necessarily lead to increase in speed of the program. Using NDK will always increase the program complexity.

About Hunka Technologies

Hunka Technologies is on one of the leading mobile applications development company based in India. Hunka specializes in Apple iphone application development, android application development, windows mobile application development and HTML 5. Hunka also has a specialized team for iphone game development, ipod & ipad game development and android game development. For more information please check our website: http://hunkatech.com

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