PORTING 3GP PLAYER ANDROID APPLICATION ON ARM9 WITH HIGH SECURITY (USING BIOMETRICS)

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Abstract—This paper discussed the 3GP player implementation with Biometrics Security by using one specified application program. In this application we are giving high security with the help of finger print (op-69 module) on ARM9. Apart from 3GP player we are also implementing the data transfer from USB to USB based on Linux commands. In this we are providing the security for accessing the files on the player.

Keywords-3GP player,op-69module, usb hub ,android software development kit (SDK),ADT plug-in, eclipse IDE.

I.   INTRODUCTION

A **smart phone** is a high-end mobile phone built on a mobile computing platform, with more advanced computing ability and connectivity than a contemporary feature phone.

The first smart phones were devices that mainly combined the functions of a personal digital assistant (PDA) and a mobile phone or camera phone. Today's models also serve to combine the functions of portable media players, low-end compact digital cameras, pocket video cameras, and GPS navigation units. Modern smart phones typically also include high-resolution touch screens, web browsers that can access and properly display standard web pages rather than just mobile-optimized sites, and high-speed data access via Wi-Fi and mobile broadband. Android is open source. So we can implement any user defined application in easy way. Here we are porting Android on ARM9.The structure of the system can be shown in figure1.

This can be developed in java Programming Language by using the Eclipse Integrated Development Environment (IDE). We use the Android Software development kit (SDK) which include a verity of custom tools that help us develop mobile application on the android Platform .the most important of these are the android Emulator and the Android Development Tool (ADT) plug-in for Eclipse. Here Linux is used for porting the Android on ARM9.

II. ANDROID SYSTEM STRUCTURE

In mobile flat form android is used for development, software structure contains operating system, middleware and applications. The software structure can be divided in to four levels: The application, Application frame work, Android operating

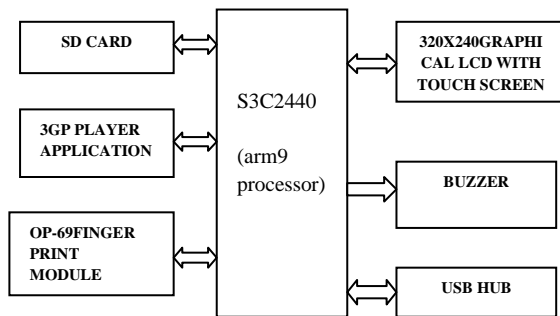environment and the operating system as you shown in figure 2.

Figure 1 system structure.

A Applications

At this top layer, you will find applications that ship with the Android device (such as Phone, Contacts, Browser, etc.), as well as applications that you download and install from the Android Market. Any applications that you write are located at this layer.

B Application framework

In the various capabilities of the Android OS to application developers so that they can make use of them in their applications.

C Libraries

These contain all the code that provides the main features of an Android OS. For example, the SQLite library provides database support so that an application can use it for data storage. The WebKit library provides functionalities for web browsing.

D Android runtime

At the same layer as the libraries, the Android runtime provides a set of core libraries that enable developers to write Android apps using the Java programming language. The Android runtime also

includes the Dalvik virtual machine, which enables every Android application to run in its own process, with its own instance of the Dalvik virtual machine (Android applications are compiled into the Dalvik executables). Dalvik is a specialized virtual machine designed specifically for Android and optimized for battery-powered mobile devices with limited memory and CPU.
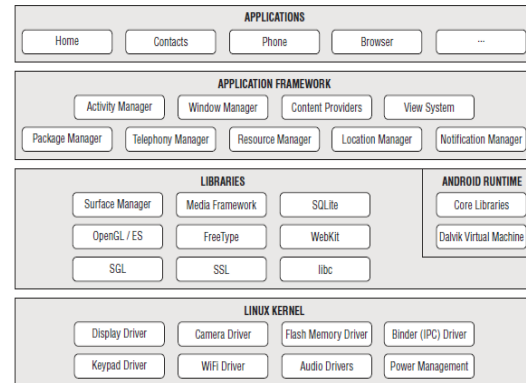

Figure 2 Android software system structure

III. 3G PLYER IMPLIMENTATION

3Gp player is a kind of common mobile applications, which used for play Music file. Here this application developed by using Android (API).

A User interface

View class is the base class of visual controls, being used to provide control and processing method of the controls. View Group class inherits the View class. It realizes the View and processing method of events and ultimately to interact with users. The biggest characteristic of View Group is it has rich controls, which can be nested to build perfect interface. Music player interface layout diagram is shown in figure 3
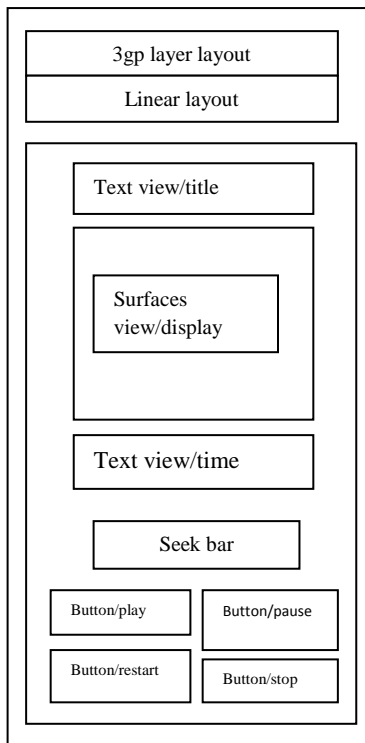
one or more intrinsic physical or behavioral traits.

Figure4 Snapshot of 3gp player in android

```
┌─────────────────────────────────┐
│  ┌───────────────────────────┐  │
│  │     3gp layer layout      │  │
│  ├───────────────────────────┤  │
│  │      Linear layout        │  │
│  └───────────────────────────┘  │
│  ┌───────────────────────────┐  │
│  │ ┌───────────────────────┐ │  │
│  │ │   Text view/title     │ │  │
│  │ └───────────────────────┘ │  │
│  │   ┌─────────────────┐     │  │
│  │   │    Surfaces      │     │  │
│  │   │  view/display    │     │  │
│  │   │                  │     │  │
│  │   └─────────────────┘     │  │
│  │ ┌───────────────────────┐ │  │
│  │ │   Text view/time      │ │  │
│  │ └───────────────────────┘ │  │
│  │   ┌─────────────────┐     │  │
│  │   │     Seek bar     │     │  │
│  │   └─────────────────┘     │  │
│  │ ┌─────────┐ ┌──────────┐  │  │
│  │ │Button/  │ │Button/   │  │  │
│  │ │play     │ │pause     │  │  │
│  │ └─────────┘ └──────────┘  │  │
│  │ ┌─────────┐ ┌──────────┐  │  │
│  │ │Button/  │ │Button/   │  │  │
│  │ │restart  │ │stop      │  │  │
│  │ └─────────┘ └──────────┘  │  │
│  └───────────────────────────┘  │
└─────────────────────────────────┘
```

Figure3 Music player user interface

B   *Back stage control*

In the Android system, Service is not interacting directly with users, which is a kind of components in the background. Class that Implement from the Surface Holder, Surface View Media Player   class should be **implements** at first, then realize the callback methods needed in each state of the Service. Service condition callback methods mainly includes: start()   , Stop(),Prepare ( ) and Seek To().Information transmission between Surface View and Media Player for play File. The snapshot of the 3gp player on android can be shown in below figure4.

III.   AUTHENTICATION   OF   3GP PLAYER USING (BIOMETRICS)
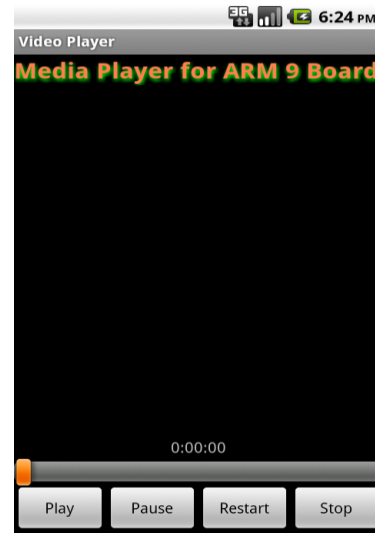
Biometrics   refers   to   method   for uniquely recognizing humans based up on

In the second stage development of fingerprint module, we do integration of fingerprint   collection   and   single   chip processing. It is configured to have the features   like   small   size,   less   power consumption small finger print template (512 bytes), large finger print capacity. SM Series   module   is   UART   communication interface   with   adjustable   safety   level function, fingerprint for data reading & writing functions, 1:N and 1:1 verification functions. Whenever the user (authenticated person) authenticated using his fingerprint on this module, it stores the fingerprint in the database automatically. If the user tries to   authenticate   again,   it   can   verify   the fingerprint   by   using   the   command   and identifies his/her fingerprint and allows access   to   the   3gp   player   otherwise   the module   gives   some   buzzer   sound.   In   this module   data   is   transmitted   through transmitter and collected at receiver end.

IV. PORTING ANDROID TO HARDWARE BOARD

Android can be ported into mini2440 by using Linux commands. This process is very easy because it needs only the replacement of kernel (Z image) and file system. The first step is to turn switch S2, which is near word NOR (or near the edge), and after that open DNW and Hyper Terminal in windows XP. Initially you should format NAND memory with [x] and [f] option; then choose [v] to load super vivi or vboot, and then choose [k] to load Z Image android (as name in file downloaded above), and lastly select [y] to port mini2440T35_android.img (as name in file downloaded above). Now it is all done and Restart the board to finish the porting.

Cross-compile android instructions:

A *Download*

Z Image and file system are in raw type (not cross-compile already) format so copy these into /usr/local/android/, then extract them all the kernel information. $ tar -zxvf android-fs_20090825.tgz command.

B *Cross-compile kernel*

$ cd /usr/local/android/kernel/

$ cp config_mini2440 .config

$ make menuconfig

$ make zImage

C *Cross compile file system*

$ cd /usr/local/android/fs/

$ gedit default.prop

$ cd /usr/local/android/

$ mkyaffs2image-128M fs/

mini2440T35_android.img

By using above commands we can port android to hardware board. The hardware implementation can shown in figure5.

Figure 5 Android Porting on hardware implementation.

V.CONCULSION

Security is the form of protecting the user data from unauthorized persons. A 3gp player is designed using the android technology, porting to hardware board provided security for the users accessing the player content. We have to study the android structure, openness and compatibility. Developers can develop the application by using the SDK tools and ADT plug –in.

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