

PROGRAMMING HANDHELD SYSTEMS

MULTIMEDIA

TODAY'S TOPICS

MULTIMEDIA SUPPORT CLASSES

PLAYING AUDIO

WATCHING VIDEO

RECORDING AUDIO

USING THE CAMERA

MULTIMEDIA

ANDROID PROVIDES SUPPORT FOR ENCODING
AND DECODING A VARIETY OF COMMON MEDIA
FORMATS

ALLOWS YOU TO PLAY & RECORD AUDIO, STILL
IMAGES & VIDEO

SOME MULTIMEDIA CLASSES

AUDIOMANAGER & SOUNDPOOL

RINGTONEMANAGER & RINGTONE

MEDIAPLAYER

MEDIARECORDER

CAMERA

AUDIOMANAGER

MANAGES VOLUME, SYSTEM SOUND EFFECTS,
AND RINGER MODE CONTROL

ACQUIRE AUDIOMANAGER INSTANCE VIA

`Context.getSystemService(Context.AUDIO_SERVICE)`

AUDIOMANAGER

LOAD & PLAY SOUND EFFECTS

MANAGE VOLUME

MANAGE PERIPHERALS

SOUNDPOOL

REPRESENTS A COLLECTION OF AUDIO
SAMPLES (STREAMS)

CAN MIX AND PLAY MULTIPLE SIMULTANEOUSLY

AUDIOVIDEOAUDIOMANAGER

PRESENTS TWO BUTTONS THAT ADJUST THE
VOLUME UP OR DOWN

PRESENTS A PLAY BUTTON THAT, WHEN
PRESSED, PLAYS A BUBBLE POPPING SOUND AT
THE CURRENT VOLUME LEVEL



RINGTONE AND RINGTONEMANAGER

RINGTONEMANAGER PROVIDES ACCESS TO AUDIO CLIPS USED FOR INCOMING PHONE CALLS, NOTIFICATIONS, ALARMS, ETC.

ALLOWS APPLICATIONS TO GET AND SET RINGTONES AND TO PLAY AND STOP PLAYING THEM

AUDIOVIDEORINGTONEMANAGER

APPLICATION PRESENTS THREE BUTTONS
LABELED RINGTONE, NOTIFICATION AND ALARM

PRESSING ONE OF THESE BUTTONS CAUSES
THE ASSOCIATED DEFAULT RINGTONE TO PLAY



MEDIAPLAYER

CONTROLS PLAYBACK OF AUDIO AND VIDEO
STREAMS AND FILES

ALLOWS APPLICATIONS TO CONTROL PLAYBACK

OPERATES ACCORDING TO A COMPLEX STATE
MACHINE

SEE: [HTTP://DEVELOPER.ANDROID.COM/REFERENCE/
ANDROID/MEDIA/MEDIAPLAYER.HTML](http://developer.android.com/reference/android/media/MediaPlayer.html)

SOME MEDIAPLAYER METHODS

setDataSource()

prepare()

start()

pause()

seekTo()

stop()

release()

VIDEOVIEW

SURFACEVIEW FOR DISPLAYING VIDEO FILES

CAN LOAD VIDEO FROM MULTIPLE SOURCES

PROVIDES VARIOUS DISPLAY OPTIONS &
CONVENIENCE FUNCTIONS

AUDIOVIDEOVIDEOPLAY

APPLICATION PLAYS A MOVIE IN A VIDEOVIEW



MEDIARecorder

USED TO RECORD AUDIO AND VIDEO

OPERATES IN ACCORDANCE TO A STATE
MACHINE

SEE: [HTTP://DEVELOPER.ANDROID.COM/REFERENCE/
ANDROID/MEDIA/MEDIARecorder.HTML](http://developer.android.com/reference/android/media/MediaRecorder.html)

SOME MEDIARecorder METHODS

setAudioSource()

setVideoSource()

setOutputFormat()

prepare()

start()

stop()

release()

AUDIOVIDEOAUDIORECORDING

CAN RECORD AUDIO FROM THE USER

CAN PLAY BACK RECORDED AUDIO



CAMERA

CLIENT FOR THE CAMERA SERVICE, WHICH
MANAGES THE ACTUAL CAMERA HARDWARE

MANAGES IMAGE CAPTURE SETTINGS

START/STOPS PREVIEW

TAKES PICTURES

CAMERA PERMISSIONS

```
<uses-permission  
  android:name="android.permission.CAMERA" />
```

```
<uses-feature android:name="android.hardware.camera" />
```

```
<uses-feature android:name=  
    "android.hardware.camera.autofocus" />
```

USING THE CAMERA

GET CAMERA INSTANCE

SET CAMERA PARAMETERS AS NECESSARY

SETUP PREVIEW DISPLAY

START THE PREVIEW

TAKE A PICTURE & PROCESS IMAGE DATA

RELEASE THE CAMERA WHEN NOT IN USE

AUDIOVIDEOCAMERA

TAKES STILL PHOTOS USING THE DEVICE'S
DISPLAY AS THE CAMERA'S VIEWFINDER



NEXT TIME

SENSORS