

Contents

About the Author	xiii
About the Technical Reviewer.....	xv
Acknowledgments	xvii
CHAPTER 1 Introducing Mobile Media API (MMAPI)	1
What Is Mobile Media API (MMAPI)?	1
MMAPI Features and Requirements	2
How Do I Get MMAPI?.....	3
How Does MMAPI Fit with MIDP 2.0?	3
Who Supports MMAPI?.....	5
Summary	6
CHAPTER 2 MMAPI Architecture	7
Understanding Players and DataSources	7
DataSource Basics.....	8
Player Basics	9
Understanding the Manager Class.....	9
Creating Player Instances.....	10
Creating Player Instances for MIDI and Tone Sounds	11
Supported Protocols and Content Types	11
Understanding Controls	13
The MIDP 2.0 Subset	14
Feature Set Implementations	15
Security Architecture.....	16
Summary	17
CHAPTER 3 Getting Started with MMAPI	19
A Simple Multimedia Player.....	19
Creating a Functional Player	22
Writing the Code	23
Improving AudioPlayerCanvas: Caching Player Instances.....	29
Summary	37

CHAPTER 4	Media Player Lifecycle and Events	39
	Overview	39
	Exploring the Different Player States	39
	UNREALIZED	40
	REALIZED	41
	PREFETCHED	43
	STARTED	44
	CLOSED	46
	Responding to Player Events	47
	Understanding the Event Delivery Mechanism	50
	Creating an Event Handling Class	51
	Handling a Custom Event	55
	Summary	58
CHAPTER 5	Accessing Media Over the Network	59
	Understanding Threads in Java ME	59
	Understanding Permissions for Network Access	63
	Putting It Together	67
	Summary	71
CHAPTER 6	Creating and Playing Tones Using ToneControl	73
	Understanding Synthetic Tones	73
	Understanding Note, Pitch, and Frequency	74
	Using a MMAPI Formula to Calculate Note Values	76
	Using the playTone() Method	79
	Using Tone Sequences with ToneControl	81
	Defining Tone Sequences	82
	Playing Sequences Using ToneControl and Player	88
	Distributing Tone Sequences	89
	Summary	93
CHAPTER 7	Managing MIDI Using MIDIControl, TempoControl, and PitchControl	95
	Understanding MIDI	95
	Understanding the MIDI Specification	96
	Storing and Distributing MIDI Messages	101

Using MIDI in MMAPi	102
Playing MIDI Without MIDIControl	102
Playing MIDI with MIDIControl	113
Summary	125
CHAPTER 8 Working with Audio and Video	127
Querying the Capabilities of Your Device	127
Understanding Media Encodings	132
A Brief Overview of Sampled Audio	133
Storing Sampled Audio	133
Controlling Sampled Audio	134
Setting Preset Stop Times with StopTimeControl	134
Gathering Information Using MetaDataControl	139
Mixing Sampled Audio, MIDI, and Tones	142
Capturing Audio	146
Timed Capture and Playback	147
Controlled Capture and Playback	151
Saving Captured Audio	158
Capturing Audio from Existing Audio	162
Working with Video	163
Displaying Video	163
Positioning Video and Controlling Volume	169
Capturing Video and Images	173
Seeking Video Frames with FramePositioningControl	181
Streaming Media	181
Summary	184
CHAPTER 9 Case Study: Device Blogging	185
About the Companion Web Site	185
The Finished MIDlet in Action	185
MIDlet Startup	186
Registering with the Device Blog Web Site	186
Logging in to Device Blog Web Site	187
Creating and Posting Blog Entries	188
Creating the MIDlet Design	192
The Model	192
The View	194
The Control	197

Creating the MIDlet Code	198
Creating the Model Classes	198
Creating the Utility Classes	205
Creating the View	211
Creating the Control Classes	227
On the Server Side	232
Summary	237

APPENDIX A Mobile Media API (MMAPI) Reference 239

Package javax.microedition.media	239
Interface Control	239
Interface Controllable	239
Class Manager	240
Class MediaException	240
Interface Player	240
Interface PlayerListener	241
Interface TimeBase	242
Package javax.microedition.media.control	242
Interface FramePositioningControl	242
Interface GUIControl	242
Interface MetaDataControl	242
Interface MIDIControl	243
Interface PitchControl	243
Interface RateControl	243
Interface RecordControl	244
Interface StopTimeControl	244
Interface TempoControl	244
Interface ToneControl	245
Interface VideoControl	245
Interface VolumeControl	246
Package javax.microedition.media.protocol	246
Class ContentDescriptor	246
Class DataSource	246
Interface SourceStream	247

APPENDIX B	URI Syntax for Media Locators	249
APPENDIX C	Advanced Multimedia Supplements—JSR 234	251
	Introduction to JSR 234	251
	GlobalManager	252
	Spectator	252
	Module	252
	MediaProcessor	252
	Controls	252
	JSR 234 Implementations	253
INDEX	255