Chapter 3

Designing J2ME™ Applications:
MIDP and UI Design

Annette Wagner, Cynthia Bloch

3.1 Introduction

The Java™ 2 Platform, Micro Edition (J2ME™) is the Java platform for consumer and embedded devices such as mobile phones, PDAs, television set-top boxes, and other embedded devices. Like its counterparts – Java™ 2 Platform, Enterprise Edition (J2EE™ platform), Java™ 2 Platform, Standard Edition (J2SE™ platform), and Java Card™ – the J2ME platform is a set of standard Java APIs defined through the Java Community Process™ program. The Java Community Process program uses expert groups that include leading device manufacturers, software vendors, and service providers to create the standard APIs.

This chapter provides an overview of the J2ME platform architecture, and of MIDP. It then describes a process for creating a MIDP application. It covers the use of the MIDP user interface components and some issues in deploying your application.

3.2 J2ME Platform Architecture

The J2ME platform includes a flexible user interface, a robust security model, a broad range of built-in network protocols, and support for both networked and disconnected applications. With the J2ME platform, applications are written once for a wide range of devices, are downloaded dynamically, and leverage each device’s native capabilities.

The J2ME platform architecture defines configurations, profiles, and optional packages as elements for building complete Java runtime environments that meet the requirements for a broad range of devices and target markets. Figure 3.1 shows the relationships between these elements. Each combination is optimized for the memory, processing power, and I/O capabilities of a related category of devices. The result is a common Java platform that fully leverages each type of device to deliver a rich user experience. The following sections define the terms configurations,
profiles, and optional packages, and discuss them in terms of the Mobile Information Device Profile (MIDP).

### 3.2.1 Configurations

Configurations are composed of a virtual machine and a minimal set of class libraries. They provide the base functionality for a particular range of devices that share similar characteristics, such as network connectivity and memory footprint. Currently, there are two J2ME configurations: the Connected Limited Device Configuration (CLDC), and the Connected Device Configuration (CDC).

CLDC is the smaller of the two configurations; it is the configuration on which MIDP is built. CLDC was designed for devices with intermittent network connections, slow processors, and limited memory—devices such as mobile phones, two-way pagers, and PDAs. These devices typically have both 16- or 32-bit CPUs and a minimum of 128 KB to 512 KB of memory available for the Java platform implementation and associated applications.

### 3.2.2 Profiles

In order to provide a complete runtime environment targeted at specific device categories, configurations must be combined with a set of higher level APIs, or profiles, that further define the application life cycle model, the user interface, and access to device specific properties.