Jbed Micro Edition CLDC™

The Micro Edition that flies.

Jbed Micro Edition CLDC™ is a small and fast Java™ virtual machine (JVM) that works - among others -on embedded devices, PDAs, Internet Appliances and Smart Mobile Phones. It is initially available on devices that run the Palm OS™ operating system like the Palm Pilot™ or Handspring Visor™ (the supported models are given below).

Like any other JVM, JbedVM CLDC™ executes Java bytecode. Unlike most JVMs, JbedVM CLDC™ always compiles bytecode to native (machine) code on the device itself. This compilation process even happens on small devices like a Palm Pilot. The execution times are thus about an order of magnitude faster than interpreted JVMs on the same hardware. Despite this massively increased efficiency, Jbed is one of the smallest JVMs on the market.

For application developers, Jbed Micro Edition CLDC™ offers an Integrated Development Environment (IDE) that runs on a PC (called the host) under Windows. This IDE allows the quick and easy development of Java applications that are running on the embedded device (called the target). The IDE also allows to statically pre-compile Java applications for download into the device as native code. For Palm OS devices, the IDE can thus directly create an executable application as "prc" file. Such an application is indistinguishable from any other Palm OS application and does not require a JVM to run! It can also be very small, just a few dozen kB.

Supported Hardware

Jbed Micro Edition CLDC™ works on all Handspring Visor models and on all Palm Pilot models with 8 MB of memory. Also supported are the newer models of the Palm Pilot equipped with 2 MB or 4 MB of memory (all Palm V and some newer Palm III models that are equipped with the new 68ez328 processor).
If you use the connection framework, Palm OS Software 3.3 or better is required.

JbedVM CLDC

The JbedVM for Palm OS is itself a Java application that includes - among other modules - the bytecode to native compiler. Because all modules of the JbedVM are itself regular Java classes, the JbedVM can be linked and deployed on the Palm in the same way any other standalone application.

Pre-compiled Demo Applications

Two Versions

The applications in the download come in two versions, one pre-compiled for Palm OS devices and one in bytecode for execution in a JVM. The applications provided as bytecode run on the Jbed Micro Edition CLDC™ or on another JVM (like the KVM™ from Sun Microsystems).

Setting up the KVM on your Palm and Getting Started with the KVM' is an article that can be found on Sun's website at the following URL. It describes how to download and install the KVM on both the PC and the Palm device.
http://developer.java.sun.com/developer/technicalArticles/wireless/palm/

Demos

There are three demos: "Life" is the game of Life. An initial pattern of dots evolves into new patterns according to the simple rules of the game. After starting the application, tap the screen to define the original pattern and then press the start button. Tapping the menu button repeatedly can fetch some predefined patterns.

John Conway invented the Game of Life. The game is played on a field of cells, each of which has eight neighbors (adjacent cells). A cell is either occupied (by an organism) or not. The rules for deriving a generation from the previous one are these:

- Death: If an occupied cell has 0, 1, 4, 5, 6, 7, or 8 occupied neighbors, the organism dies (0, 1 neighbors: of loneliness; 4 thru 8: of overcrowding).
- Survival: If an occupied cell has two or three neighbors, the organism survives to the next generation.
- Birth: If an unoccupied cell has three occupied neighbors, it becomes occupied.

The "Queens" application returns all solutions to the 8 queens puzzle (how to place 8 queens on the chess-board such that they cannot attack each other). Simply start the application and all solutions will be displayed one after the other.

The problem is to place 8 queens on the chessboard so that they do not check each other. This means that no two queens can share the same horizontal, vertical, or diagonal line. This problem is probably as old as the chess game itself, and thus its origin is not known. For 8-queens, we have 92 solutions. If we exclude symmetry, there are 12 solutions.

The "Logo" rotates a Jbed logo in three dimensions on the screen. Simply start it and watch it turn.

The Jbed Micro Edition CLDC VM for PalmOS 3.x (JbedVM.prc) allows to compile on the Palm any bytecode file (J2ME CLDC compliant) into native palm code and run it.

How to try Jbed Micro Edition CLDC™?

Install all the files of the distribution to your Palm OS device using the installer tool. In order to run one of the precompiled applications, click on the icon. In order to run one of the applications in bytecode, you must first install a JVM (e.g. the KVM from Sun Microsystems). After installing the KVM from SUN and our JbedVM on the Palm device simply click on the bytecode app to run it with SUN's KVM or click on the JbedVM icon to activate the JbedVM.

A Note About the Palm Emulator on the PC

The Palm PRC applications generated by Jbed Micro Edition CLDC can be run on the Palm OS Emulator (POSE) just like any other PRC file. However, Jbed Micro Edition CLDC implements its own scheduler for Java threads which runs on top of the POSE emulator. The Jbed scheduler supersedes some of the checks performed by the emulator. This causes the emulator to issue a large number of warnings.

To switch off these emulator warning messages, locate the file "Palm OS Emulator.ini" in the Windows root directory. Open the file in any text editor. Locate the following entries within the file and edit their settings to the values shown below.

ReportHardwareRegisterAccess=0
ReportLowMemoryAccess=0
ReportStackAlmostOverflow=0
ReportStackOverflow=0

Enjoy!

In case of questions do not hesitate to contact support@esmertec.com