

Assembler on Psion 5mx

The ARM processor in the Psion cannot be directly addressed from OPL. The method of extending OPL provided by Psion is through using the development environment using C++ to write .opx files.

OPL together with the various .opx available from Psion and 3rd party suppliers is in itself very powerful. This can be seen in such programs as Dark Horizon and XJmail. OPL however can be slow at long and repetitive calculations often needed in games programs or complex drawing.

Two options have been developed to enable ARM assembler language to be used with the Psion 5mx and the results passed back to OPL

The first is from Dominique Seville called Assembleur and can be downloaded from <http://pagesperso-orange.fr/psions5-3495/>

An example of the power and speed of the directly instructing the CPU can be seen in the difference in speed of versions 1 and 2 of La compte est bon which can be downloaded from the same site.

The Assembleur package includes instructions in French which can easily be translated with Google or Microsoft. It also includes easy reference guides for the ARM instruction set and a useful set of examples to demonstrate the process.

The second is from Henrik Bjerregaard Pedersen from Denmark.

His assembler takes a slightly different approach to the task but again is aimed at speeding up data processing.

It can be downloaded from <http://hbp.iconbar.com/psion.html>

The files are all prepared under Linux so I recommend that you download 7-Zip from www.7-Zip.org to unpack the files. This is free software.

You do not need to download the source code files. The WGFx opx allows direct access to bitmap pixels. The example file generates an instant Mandelbrot diagram on the Psion .

The instructions are comprehensive.

All this assumes that you have a working knowledge of Assembler for ARM. If you do not, I recommend ARM Assembly Language - an Introduction by J.R.Gibson which is available through Amazon and is a current University text book as ARM processors are still in common use. An alternative is ARM Assembly language programming by Peter Cockerell which is available from www.peter-cockerell.net/aalp/ as an online book or as a PDF downloadable file. A copy of that is on this site at present. The book is aimed at BBC micro computer users but the principles apply to the Psion ARM CPU.

Both assembler packages consist of an assembler program to convert text assembler language files to machine code files and an opx(s) to allow the mc files to be called from OPL. The Pedersen program returns the value of Register 0. For results from other registers which you may wish to be placed into a memory location for access by OPL you need to investigate what base location is stored in register R13.

I hope that this will be useful to some of the more adventurous programmers among you. If you want to publish any interesting results please let me know.