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How to obtain Objective Caml

The various programs used in this work are “free” software ¹. They can be found either on the CD-ROM accompanying this work, or by downloading them from the Internet. This is the case for Objective Caml, developed at INRIA.

Description of the CD-ROM

The CD-ROM is provided as a hierarchy of files. At the root can be found the file `index.html` which presents the CD-ROM, as well as the five subdirectories below:

- `book`: root of the HTML version of the book along with the solutions to the exercises;
- `apps`: applications described in the book;
- `exercises`: independent solutions to the proposed exercises;
- `distrib`: set of distributions provided by INRIA, as described in the next section;
- `tools`: set of tools for development in Objective Caml;
- `docs`: online documentation of the distribution and the tools.

To read the CD-ROM, start by opening the file `index.html` in the root using your browser of choice. To access directly the hypertext version of the book, open the file `book/index.html`. This file hierarchy, updated in accordance with readers’ remarks, can be found posted on the editor’s site:

Link: <http://www.oreilly.fr>

1. “Free software” is not to be confused with “freeware”. “Freeware” is software which costs nothing, whereas “free software” is software whose source is also freely available. In the present case, all the programs used cost nothing and their source is available.

Downloading

Objective Caml can be downloaded via web browser at the following address:

Link: <http://caml.inria.fr/ocaml/distrib.html>

There one can find binary distributions for Linux (INTEL and PPC), for Windows (NT, 95, 98) and for MacOS (7, 8), as well as documentation, in English, in different formats (PDF, POSTSCRIPT and HTML). The source code for the three systems is available for download as well. Once the desired distribution is copied to one's machine, it's time to install it. This procedure varies according to the operating system used.

Installation

Installing Objective Caml requires about 10MB of free space on one's hard disk drive. The software can easily be uninstalled without corrupting the system.

Installation under Windows

The file containing the binary distribution is called: `ocaml-2.04-win.zip`, indicating the version number (here 2.04) and the operating system.

Warning

Objective Caml only works under recent versions of Windows : Windows 95, 98 and NT. Don't try to install it under Windows 3.x or OS2/Warp.

1. The file is in compressed (`.zip`) format; the first thing to do is decompress it. Use your favorite decompression software for this. You obtain in this way a file hierarchy whose root is named `ocaml`. You can place this directory at any location on your hard disk. It is denoted by `<caml-dir>` in what follows.
2. This directory includes:
 - two subdirectories: `bin` for binaries and `lib` for libraries;
 - two "text" files: `License.txt` and `Changes.txt` containing the license to use the software and the changes relative to previous versions;
 - an application: `OCamlWin` corresponding to the main application;
 - a configuration file: `Ocamlwin.ini` which will need to be modified (see the following point);
 - two files of version notes: the first, `Readme.gen`, for this version and the second, `Readme.win`, for the version under Windows.
3. If you have chosen a directory other than `c:\ocaml` as the root of your file hierarchy, then it is necessary to indicate this in the configuration file. Edit it with Wordpad and change the line defining `CmdLine` which is of the form:


```
CmdLine=ocamlrun c:\ocaml\bin\ocaml.exe -I c:\ocaml\lib
```

 to

```
CmdLine=ocamlrun <caml-dir>\bin\ocaml.exe -I <caml-dir>\lib
```

You have to replace the names of the search paths for binaries and libraries with the name of the Objective Caml root directory. If we have chosen `C:\Lang\ocaml` as the root directory (`<caml-dir>`), the modification becomes:

```
CmdLine=ocamlrun C:\Lang\ocaml\bin\ocaml.exe -I C:\Lang\ocaml\lib
```

4. Copy the file `OCamlWin.ini` to the main system directory, that is, `C:\windows` or `C:\win95` or `C:\winnt` according to the installation of your system.

Now it's time to test the `OCamlWin` application by double-clicking on it. You'll get the window in figure 1.1.

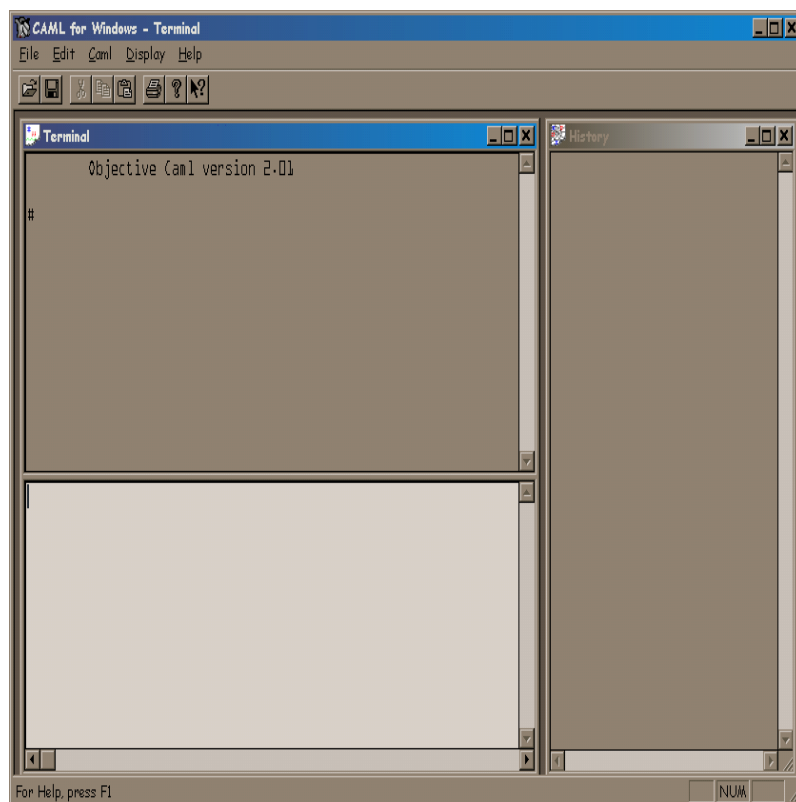


Figure 1.1: Objective Caml window under Windows.

The configuration of command-line executables, launched from a DOS window, is done by modifying the `PATH` variable and the Objective Caml library search path variable (`CAMLLIB`), as follows:

```
PATH=%PATH%;<caml-dir>\bin
set CAMLLIB=<caml-dir>\lib
```

where `<caml-dir>` is replaced by the path where Objective Caml is installed.

These two commands can be included in the `autoexec.bat` file which every good DOS has. To test the command-line executables, type the command `ocaml` in a DOS window. This executes the file:

```
<caml-dir>/bin/ocaml.exe
```

corresponding to the Objective Caml. text mode toplevel. To exit from this command, type `#quit;;`.

To install Objective Caml from source under Windows is not so easy, because it requires the use of commercial software, in particular the Microsoft C compiler. Refer to the file `Readme.win` of the binary distribution to get the details.

Installation under LINUX

The LINUX installation also has an easy-to-install binary distribution in the form of an rpm. package. Installation from source is described in section 1. The file to download is: `ocaml-2.04-2.i386.rpm` which will be used as follows with root privileges:

```
rpm -i ocaml-2.04-2.i386.rpm
```

which installs the executables in the `/usr/bin` directory and the libraries in the `/usr/lib/ocaml` directory.

To test the installation, type: `ocamlc -v` which prints the version of Objective Caml installed on the machine.

```
ocamlc -v
The Objective Caml compiler, version 2.04
Standard library directory: /usr/lib/ocaml
```

You can also execute the command `ocaml` which prints the header of the interactive toplevel.

```
Objective Caml version 2.04
```

```
#
```

The `#` character is the prompt in the interactive toplevel. This interactive toplevel can be exited by the `#quit;;` directive, or by typing `CTRL-D`. The two semi-colons indicate the end of an Objective Caml phrase.

Installation under MacOS

The MacOS distribution is also in the form of a self-extracting binary. The file to download is: `ocaml-2.04-mac.sea.bin` which is compressed. Use your favorite software

to decompress it. Then all you have to do to install it is launch the self-extracting archive and follow the instructions printed in the dialog box to choose the location of the distribution. For the MacOS X server distribution, follow the installation from source under Unix.

Installation from source under Unix

Objective Caml can be installed on systems in the Unix family from the source distribution. Indeed it will be necessary to compile the Objective Caml system. To do this, one must either have a C compiler on one's Unix, machine, which is generally the case, or download one such as `gcc` which works on most Unix. systems. The Objective Caml distribution file containing the source is: `ocaml-2.04.tar.gz`. The file `INSTALL` describes, in a very clear way, the various stages of configuring, making, and then installing the binaries.

Installation of the HTML documentation

Objective Caml's English documentation is present also in the form of a hierarchy of HTML files which can be found in the `docs` directory of the CD-ROM.

This documentation is a reference manual. It is not easy reading for the beginner. Nevertheless it is quite useful as a description of the language, its tools, and its libraries. It will soon become indispensable for anyone who hopes to write a program of more than ten lines.

Testing the installation

Once installation of the Objective Caml development environment is done, it is necessary to test it, mainly to verify the search paths for executables and libraries. The simplest way is to launch the interactive toplevel of the system and write the first little program that follows:

```
String.concat "/" ["a"; "path"; "here"] ;;
```

This expression concatenates several character strings, inserting the `/` character between each word. The notation `String.concat` indicates use of the function `concat` from the `String`. If the library search path is not correct, the system will print an error. It will be noted that the system indicates that the computation returns a character string and prints the result.

The documentation of this function `String.concat` can be found in the online reference manual by following the links “The standard library” then “Module String: string operations”.

To exit the interactive toplevel, the user must type the directive `#quit ;;`.

