# maXbox Starter 46

Work with WineHQ

1.1 A compatibility layer for operating systems

Today we step through emulator and NOT emulator.
The framework Wine (originally an acronym for "Wine Is Not an Emulator")
is a compatibility layer capable of running Windows applications on several
POSIX-compliant operating systems, such as Linux (Ubuntu, RedHat, Suse,
Debian etc.), OS X, Solaris and Free BSD. Instead of simulating internal
Windows logic like a virtual machine or emulator Wine translates and
converts API calls from the original Win Exe!
So it translates Win API calls into POSIX calls on-the-fly and runtime,
eliminating the performance, data structure and memory penalties of
other methods and allowing you to cleanly integrate Win applications into
your desktop just with a separate loader.
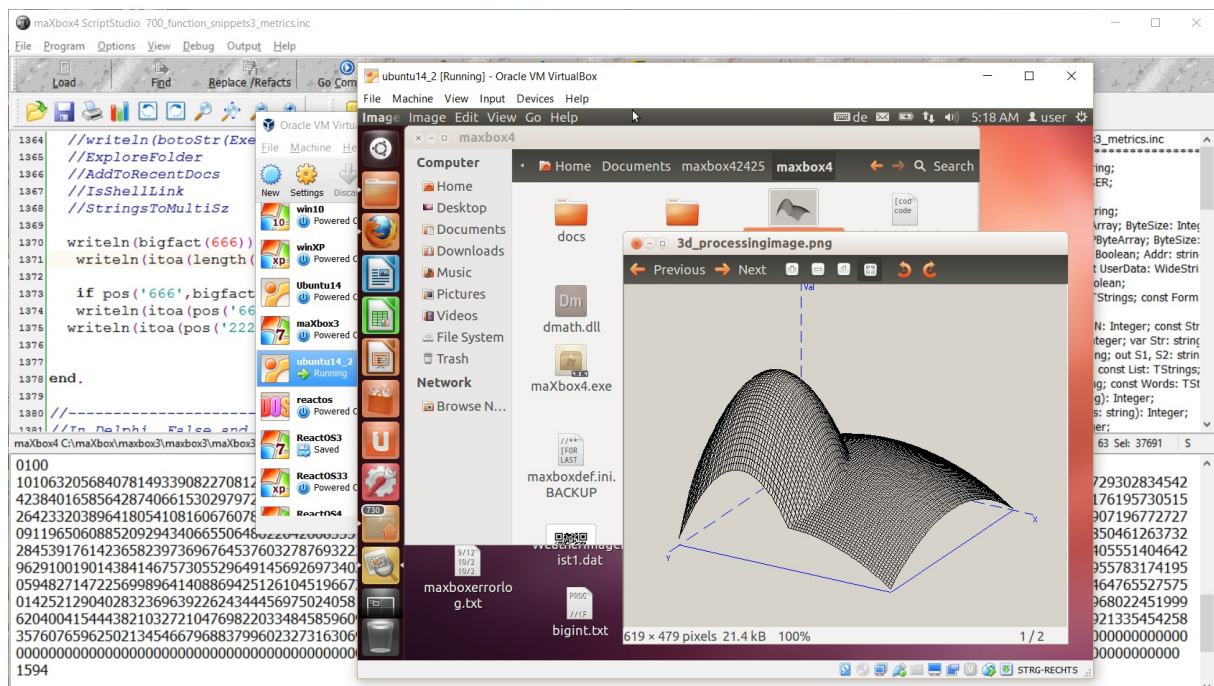
Wine is free software under constant development and improvement.
Other platforms may benefit as well.

- Loads Windows 9x/NT/2000/XP/Vista/7/8,10 Windows 3.x and DOS programs and libraries
- Win32 compatible memory layout, exception handling, file-system threads and processes
- Designed for POSIX compatible operating systems (eg. Linux, Solaris and FreeBSD)
- "bug-for-bug" stack compatibility with Windows

It also has a registry of your own (builtin reg.exe utility):
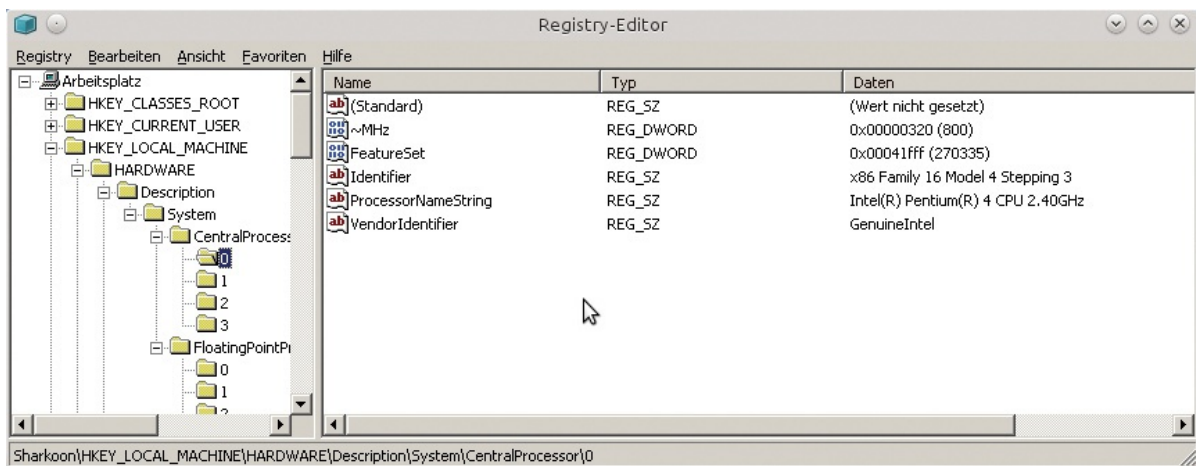
Many of the most common configuration changes can be done with the winecfg tool. We'll go through an easy, step-by-step introduction to winecfg and outline the options available. I

https://www.winehq.org/docs/wineusr-guide/config-wine-main

Finally, some things you might want to configure fall out of the scope of winecfg and regedit, and we'll go over those.

1.2 How to install it?

Wine provides a run-time environment for a Windows application by serving Windows APIs called by the application. As of today, there are more than 20,000 Windows applications that are supported by Wine. http://www.winehq.org/

Since Wine is included in the most default and known repository of Linux (Debian, Ubuntu, Suse), you can install it with **apt-get**. However, if you are using 64-bit Debian or Ubuntu, you need to enable multi-architecture, as Wine is a 32-bit application:

```
$ sudo apt-get install wine
```

On Ubuntu-derivatives (Kubuntu or Lubuntu) or Linux Mint, you can install Wine using the Wine PPA maintained by WineHQ team.

http://ask.xmodulo.com/install-wine-linux.html

Installation of Wine is also straightforward on Ubuntu as we did with
Ubuntu 14 and Wine 1.6.2 (actually 1.9):

https://github.com/maxkleiner/maXbox4.git
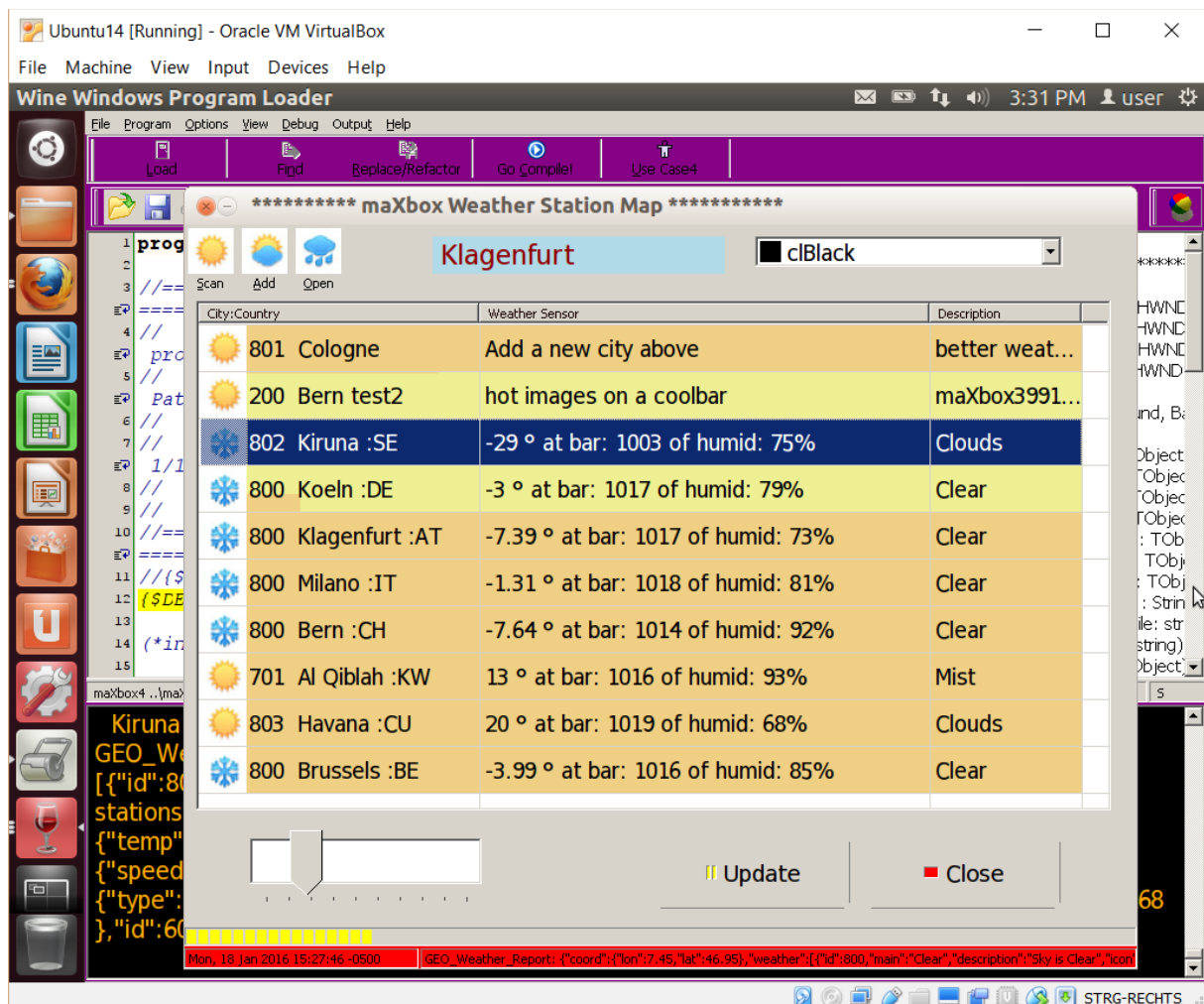
For example maXbox runs out of the box without any settings or changes
in the winecfg. Changing settings in the Applications and Libraries tabs of
the winecfg will have the most impact on getting an application to run. The
other settings focus on getting Wine itself to behave the way you want it
to.
Note: The Applications, Libraries, and Graphics tabs are linked together! If
you have "Default Settings" selected under Applications, all of the changes
made within the Libraries and Graphics tabs will be changed for all
applications to use it.

So this is not the end of the line, install on Mac is a bit different.
Nowadays, Windows and Mac play almost nicely together.
You can install Windows and Mac side by side and switch between them
using Boot Camp, but that requires a reboot every time, and you can only
use one operating system at a time. With wine WineBottler you get both!

Wine is different. When any program runs, it requests resources like memory and disk space from the operating system. All that Wine does is make sure that those requests get answered so that the program can run correctly. If you want a version of Wine that is packaged specifically for OS X, then use WineBottler, available here:

http://winebottler.kronenberg.org/

A lot of people discover Wine because they have one specific Windows program that they need to use like maXbox:
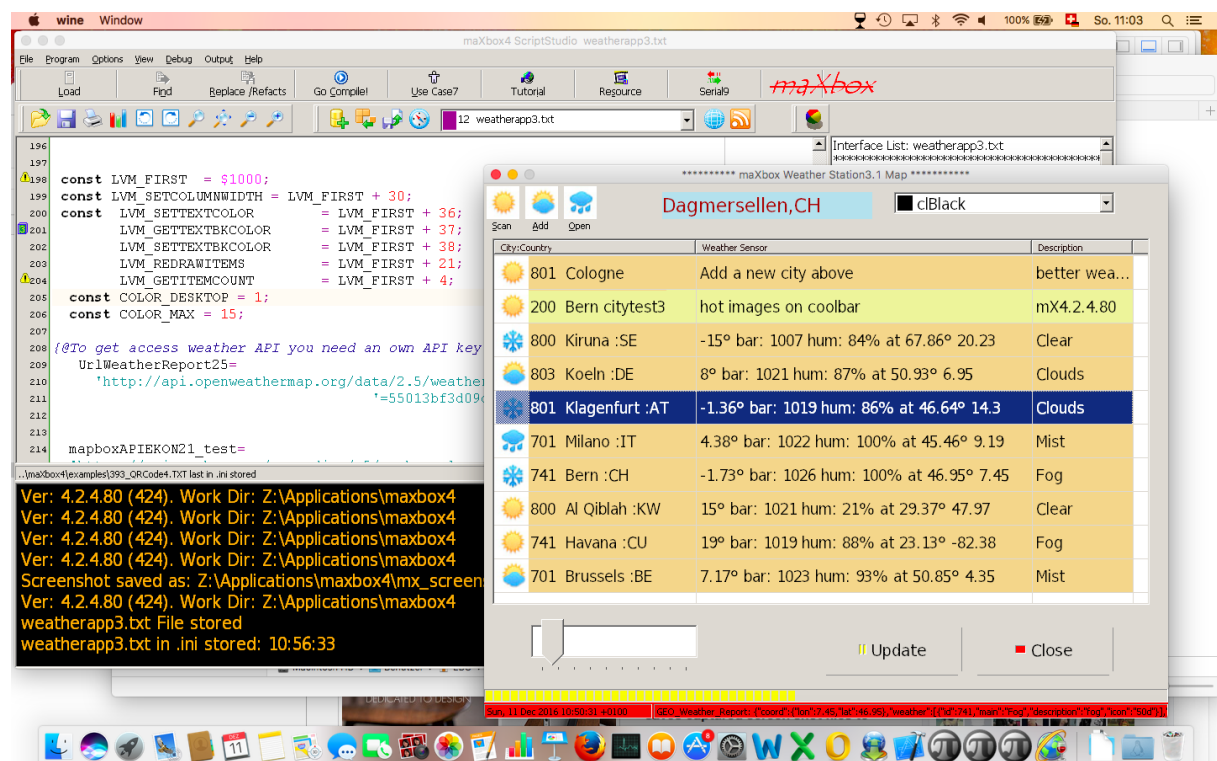
As you can see also the 3 PI icons down right gets extracted from the resource part of the exe and once again, its the same exe (`maXbox4.exe`) as on windows running.

The Wine project maintains also a database called the `AppDB` that has user reviews of how well specific or known Win programs work under Wine. Search for your program and find out!
http://appdb.winehq.org/

We tested a lot of the same scripts on Win, Linux and Mac with big numbers concerning correctness, stability and performance and it seems nested loops, for each and recursions are more slower than the original computation on Win, we don't know the reason yet.

All examples can be found online:

```
..\examples\161_bigint_class_maxprove3.txt
```

http://www.softwareschule.ch/examples/161_bigint_class_maxprove3.txt

The call respectively the calculation goes like this:

```
function GetBigIntFact(aval: byte): string;
//call of unit mybigint
var mbRes: TMyBigInt;
   i: integer;
begin
 mbRes:= TMyBigInt.Create(1);
  try
   //multiplication of factor
   for i:= 1  to aval do
     mbRes.Multiply1(mbres, i);
    Result:= mbRes.ToString;
  finally
   //FreeAndNil(mbResult);
   mbRes.Free;
  end;
end;
```

Or you want the power of 100 like 2^100=
1267650600282299670376

```
function BigPow(aone, atwo: integer): string;
var tbig1, tbig2: TInteger;
begin
 tbig1:= TInteger.create(aone);
 //tbig2:= TInteger.create(10);
  try
   tbig1.pow(atwo);
  finally
   result:= tbig1.toString(false);
   tbig1.Free;
  end;
end;
```

At least one really big, it's 333^4096 (10332 decimal digits)!

With wine -dbg you can also find out more of the application you want to run or recompile the whole project like Homebrew on mac.
Homebrew is a package manager that makes installing open source programs much easier. In particular, trying to install a large program like Wine without the help of a package manager would be tremendously difficult.

☝ One useful application to install along with Wine is `PlayOnLinux`. This program allows you to quickly configure Wine for a pool of well-known Windows applications and games.

```
Datei  Bearbeiten  Ansicht  Terminal  Hilfe
The commands currently are:
  help                            quit
  break [*<addr>]                 watch *<addr>
  delete break bpnum              disable bpnum
  enable bpnum                    condition <bpnum> [<expr>]
  finish                          cont [N]
  step [N]                        next [N]
  stepi [N]                       nexti [N]
  x <addr>                        print <expr>
  display <expr>                  undisplay <disnum>
  local display <expr>            delete display <disnum>
  enable display <disnum>         disable display <disnum>
  bt [<tid>|all]                  frame <n>
  up                              down
  list <lines>                    disassemble [<addr>][,<addr>]
  show dir                        dir <path>
  set <reg> = <expr>              set *<addr> = <expr>
  pass                            whatis
  info (see 'help info' for options)
The 'x' command accepts repeat counts and formats (including 'i') in the
same way that gdb does.

The following are examples of legal expressions:
 $eax      $eax+0x3   0x1000    ($eip + 256)  *$eax   *($esp + 3)
 Also, a nm format symbol table can be read from a file using the
 symbolfile command.

Wine-dbg>
```

☞ **Conclusion** Many people want to be able to run Win programs the same way they run other programs on Win with Wine! Wine also prints out error messages in the Terminal when something goes wrong.

Feedback @ max@kleiner.com

Literature: Kleiner et al., Patterns konkret, 2003, Software & Support

http://www.softwareschule.ch/download/XXL_BigInt_Tutorial.pdf

http://www.ultimatetech.org/install-configure-wine-ubuntu/
http://ask.xmodulo.com/install-wine-linux.html

https://github.com/maxkleiner/maXbox4/releases