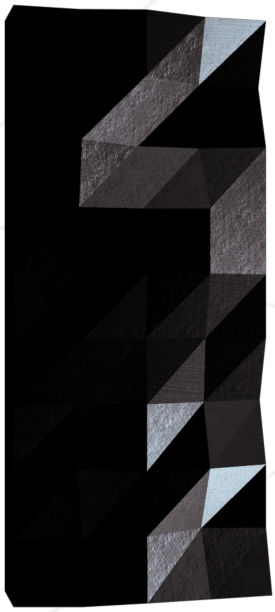

C++ Project

Abstract VM

Summary: *The purpose of this project is to create a simple virtual machine that can interpret programs written in a basic assembly language.*

Contents

Chapter I

A Machine

A machine, virtual or not, has a specific architecture. The only real difference between a virtual machine and a physical one is that the physical one uses real electronic components, while a virtual one emulates them by using to a program.

A virtual machine is nothing more than a program that simulates a physical machine, or another virtual machine. Nevertheless, it is clear that a virtual machine that emulates a physical machine such as a desktop computer is a very advanced program that requires an important programming experience as well as a very in-depth architectural knowledge.

For this project, requirements will be limited to a very simple virtual machine: it will run some basic arithmetic programs coded in a very basic assembly language. If you want to have an idea of what your program's capabilities should look like, type the command `man dc` in your shell.

The virtual machine we are describing has a classical architecture. However you may wonder what a classical architecture is...

There is no easy answer to this question. It depends on the precision you want to adopt, as well as the kind of problem you are looking at. Each "organ" of a machine can be translated into a program or set of (more or less) complex functions. Moreover, this complexity is linked to what your machine is used for in the end. Let's look at memory for instance. We do agree that the emulation complexity of a machine's memory between a virtual machine running an operating system, such as Linux or Windows, and a virtual machine running a CoreWar is completely different !

Whatever decision you make, you really should have a look at these articles:

1. http://en.wikipedia.org/wiki/Central_processing_unit
2. http://en.wikipedia.org/wiki/Chipset
3. http://en.wikipedia.org/wiki/Computer_data_storage
4. http://en.wikipedia.org/wiki/Input/output