2. Lab Series – a first Contact with the Win32-API

To be handed in at the exercise/lecture at November 21, 2001.

Assignment 2.1:

Give a short explanation of the following terms and its usage in context of the Windows 2000 operating system to your instructor:

- Handle
- Process, thread

Assignment 2.2:

Make yourself familiar with the Microsoft Developer Network (MSDN) documentation. Look up and read the online-documentation of the following functions from the Win32-API:

- `CreateFile()`, `ReadFile()` , `WriteFile()`, `CloseFile()`
- `GetStdHandle()`, `GetLastError()`, `CloseHandle()`.

Assignment 2.3:

Look up the MSDN documentation for the Win32 function `CreateProcess` and for the UNIX compatibility functions `fork()` and `execv()` (also in MSDN). Compare the Windows 2000 approach and the UNIX approach to process creation!

Assignment 2.4:

Design and implement a simple command interpreter `min_shell` (a command shell) using the Win32 application programming interface (API). The command interpreter should be able to read input line by line either from standard input or from a file (given on the command line). Each line of input should be interpreted as a program, which is executed within a separate process. The command interpreter should wait for completion of a previously started process before executing the next command.

Usage of `min_shell`:

```
$ type script.txt
C:\Winnt\system32\notepad.exe script.txt
C:\Winnt\system32\calc.exe
C:\Winnt\system32\charmap.exe
$ min_shell script.txt
```

Use the Win32-function `CreateProcess()` to execute commands in separate processes.
Make yourself familiar with the Microsoft Visual C++ development environment.