

Windows System Programming

Application Development for Windows

XP and Beyond

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OBJECTIVES (1 of 2)

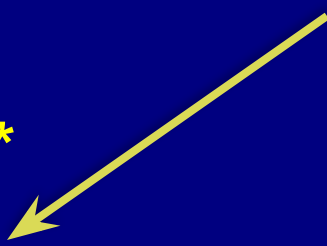
Upon completion of this four-day lecture/lab/demo course you will be able to:

- ◆ **Use the Windows API to develop Windows applications**
- ◆ **Perform file I/O and directory and file management**
- ◆ **Use structured exception handling**
- ◆ **Exploit memory management, shared memory, mapped files, and dynamic link libraries (DLLs)**
- ◆ **Manage Windows processes and interprocess communication**
- ◆ **Develop safe, high performance multithreaded applications that use Windows thread synchronization**
- ◆ **Develop 32 and 64-bit applications (single source)**
- ◆ **Use Windows security features**

OBJECTIVES (2 of 2)

- ◆ **Use interprocess communication with named pipes**
- ◆ **Develop reliable, networked client/server systems**
- ◆ **Describe performance and design issues**
- ◆ **Be prepared for independent learning of additional topics**
- ◆ **Use Visual Studio (2005, 2008, 2010) to develop, debug, test, and manage applications**

Contents + Some Supplements*

- Session 1** **Getting Started: Win32/64 and Visual Studio**
 - Session 2** **I/O With File and Directory Processing**
 - Session 3** **Structured Exception Handling**
 - Session 4** **Memory Management, Memory-Mapped Files,
and DLLs**
 - Session 5** **Process Management**
 - Session 6** **Thread Management**
 - Session 7** **Interprocess and Network Communication ****
 - Session 8** **Thread Synchronization Part I**
 - Session 9** **Thread Synchronization Part II ***
 - Session 10** **Securing Windows Objects**
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This course covers the System Services

- ◆ **The brains of Windows**
- ◆ **System Services enable everything else**

Topics NOT covered (they belong elsewhere)

- ◆ **Device Drivers**
- ◆ **OS internals**
- ◆ **Graphical User Interface (GUI) programming**
- ◆ **COM, DCOM, and MFC**
- ◆ **MS Developer Studio, .NET**

Course Methodology

Lecture/Lab

- ◆ **Lecture and discussion followed by lab or demo**
 - **About 50-50 time mix**
- ◆ **Labs demonstrate lecture material**
 - **Useful, realistic programs**
 - **Microsoft Visual C++ Developer's Studio used throughout**
 - **Exercises require fixing defects, filling small missing code sections, or improving programs**
 - **Designed to enhance learning, but fit in time provided**
 - **Complete solutions are always available**
 - **More (and less) challenging variations are provided**
 - **Working in pairs or groups**

Course Materials

All participants are provided with:

- ◆ **Text: *Windows System Programming Edition 4* by J. M. Hart**
- ◆ **Lab exercises with solutions**
- ◆ **Web site with additional information, discussion, clarifications, and more**

Background Requirements

Required: C programming knowledge

Useful, but not required:

- ◆ **UNIX system programming**
 - Or system programming experience with VMS, MVS, MacOS, Windows 3.1, etc.
- ◆ **Previous Windows programming experience**
 - GUI, MFC, COM, .NET, etc.
- ◆ **Network programming, especially with sockets**

Intro to the instructor and the course/book background