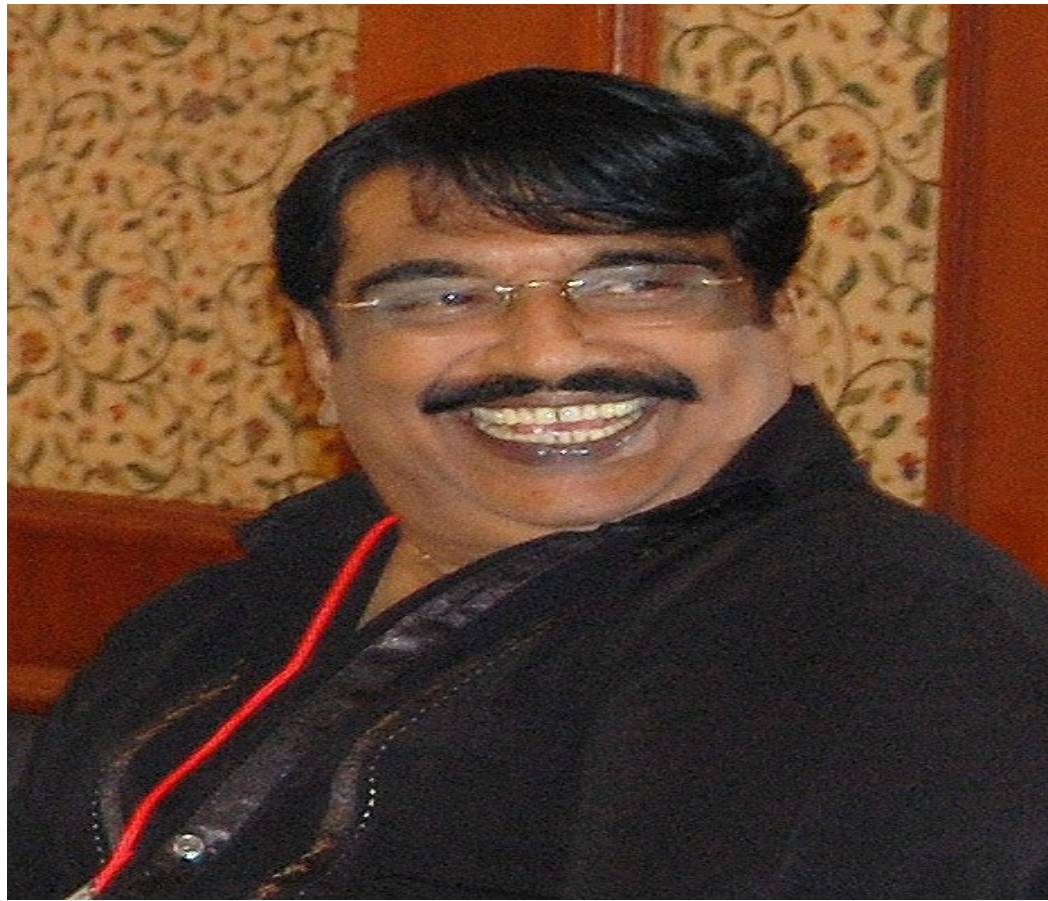


Mixed Mode Development using C# and C++

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***“IN INDIA ,IT IS LIKE THIS ,NOT MUCH IDEA
ABOUT HOW IT IS IN PUNJAB “***

**PUNJABI HOUSE , 1998
(Malayalam Movie)**

The Background

- Millions of Lines of (Legacy ?) Code lying around
- .NET BCL libraries cannot provide all the features ,especially scientific /engineering software (NAG – a case in the point) and presence of thousands of open source libraries.
- Isolation of unmanaged code and giving a managed code interface to un-managed code
- Empowering native code programmers to access .NET platform.

The Three Musketeers

- C# /.net
- ANSI C++
- C++/CLI
- A Hello World in each of three
- A program to print command line parameters
- A program to find average of the numbers from the command line

P/INVOKE

- Platform Invocation services
- Invoking messagebox Win API from C# and C++/CLI
- Invoking a custom library to do Emi Computation.

Native Code DLL

- Introduction to the Visual C++ command line compiler
- Compiling and linking multiple source files into a single program
- Creation of Static Libraries
- Creation of Dynamic Link Libraries
- Static Linking to DLL
- Dynamic Linking to a DLL

Interoperating with Custom Native DLL -Demo

- Explanation of the source code
- Creation of the DLL
- Passing Strings , array of ints , array of doubles to native code
- Delegates and Function Pointers
- Passing structures , ref parameter semantics
- Calling a ANSI C++ class

Cross Platform C#

- The Mono Project
- The code compiles on Windows , GNU Linux and MAC OS X
- Necessity of P/Invoke on non microsoft platforms
- Using Mono compiler to write good code

What we have not covered

- Safe array
- Custom marshalling
- COM interop (a vast topic)

Q & A

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