

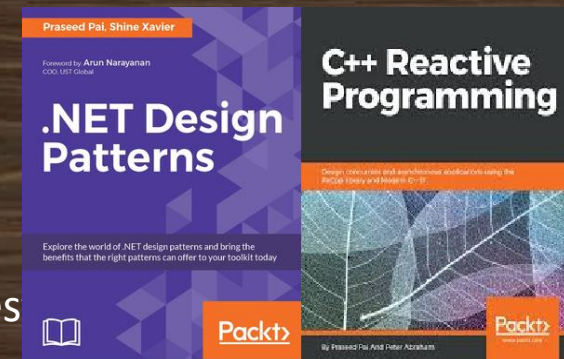
# C#/.NET & Java/JVM – Twins separated at birth?

By Praseed Pai K.T.

Sr. Solutions Architect, UST Global

# About the Presenter

- Co-Author of Books, “.NET Design Patterns” and “C++ Reactive Programming” for Packt Publishing
- Has Written a university level accredited paper on “Ontology”
- Has created a course on “Philosophical Tools for Software Engineering” (Presented @ Rubyconf India – Preconference)
- Presented in more than 200 events
- “Father” of SLANG Compiler Infrastructure
  - Slang4.net, Slang4Jvm, Slang4CPP (LLVM), SlangJs,
  - Slang4Py, Slang4VB.net
- A budding expert on comparative philosophy (Indian/Wes
- A Critique of Digital Solutioning and Technology Fads
- Sr. Solutions Architect @ UST Global



# Who is an Architect?

Architect (n) – Any person who has “fooled” around in the Software Industry for sizeable time (ever shrinking span) who is past his prime, as a Programmer Or Engineer, Systematically moved up in the hierarchy to obey “Peter Principle”.

-

# I will try to make it Simple!

Prathikriya vaadhigalum  
bhoorshvasigalum pradhama drishtya  
agalchayyil aayirunenkilum avar  
thammillulla andhardhara  
kuravayyirunnu ennu venam  
karudhan. adhannu nammal thottathu.

"MANASILLAYILLA"

Athayyathu vargadhipathyavum  
colonialist chinthasaranigalum  
radicalayya matamalla, ippol  
manasillayyo.



എന്ന് കൊണ്ട് നമ്മൾ തോറ്റു, എന്ന് ലളിതമായി  
പറഞ്ഞാലേന്താ? വെറുതെ confusion ഉണ്ടാക്കുന്നതെന്തിനാ ?



# Dialogue between two .NET developers

Rajesh => "I have been asked to Switch to Java ?"

Rajeev => "Why should you Switch ? "

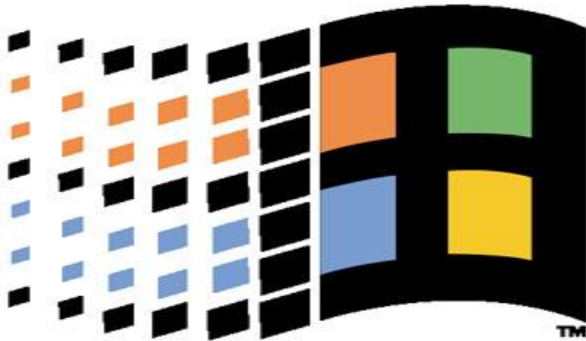
Rajesh => "Business Compulsion is prompting the company to make a request"

Rajeev => "Are Yaar, You are not switching , r8?. The way I look at it, you are adopting Java(as well). Now, you are going to be a Polyglot programmer. IT is just like buying an additional Car for use. "

Rajesh => "Still, I am bit fearful , as I will loose my skill, experience and what I have stood for."

Rajeev => "If you want to be in Technical arena as a SME.,One needs to be familiar with multipole stacks and languages. To architect large solutions, you need to be a Well grounded developer. The acquisition of skills in Java/JEE will help you there. U Itimately, it is you who need to take a decision. I took it long ago and till date, no .NET or Java developer ( pure ones ) have been able to match wits with me"

Circa 1995



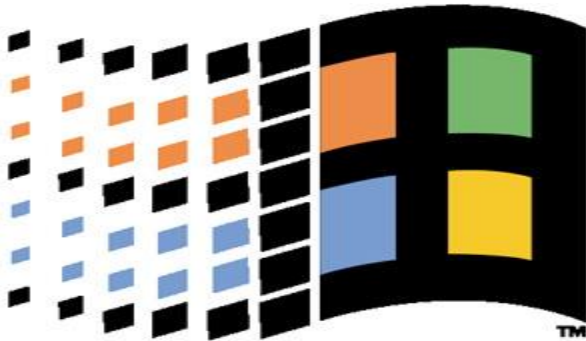
Microsoft  
**Visual Basic**



**OLE/COM  
Programming**



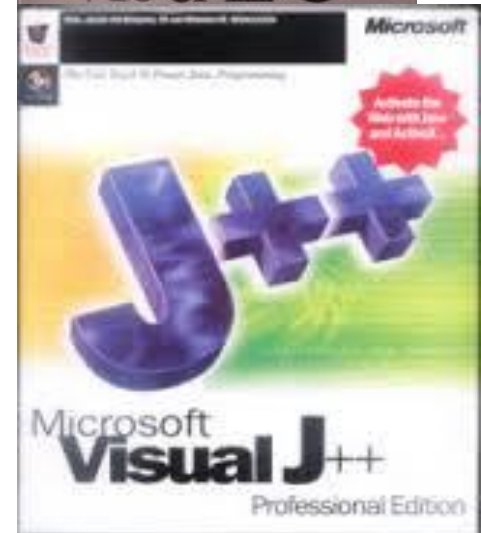
Circa 1997/1998



Microsoft  
**Visual Basic**



**OLE/COM  
Programming**



**Java™**

# Legal Battle

- Visual J++ compiler became the fastest Java compiler. The compiler was written by a team headed by Anders Hejlsberg, who also Wrote Borland's Object Pascal (Delphi) compilers
- Microsoft brought J/Direct as a competitor to JNI for COM objects
- Java had it's own distributed Programming Model based on RMI, EJB ( RMI/IIOP) and support for CORBA
- Microsoft did not comply to JCP process and JSR
- Sun sued and won the battle against Microsoft.



VS





# How Java upstaged Visual C++/VB/COM?

- COM was a technology solution and was supposed to rectify the short comings of C++. Java achieved all the benefits at the Language level
- Systems became powerful enough to run a Virtual Machine
- A Language well suited for writing Internet centric web applications
- Support for distributed Objects using RMI/IIOP & Corba
- Enterprise Java Beans and JSP
- The Java language became “Internet C++”
- Lot of people deserted “Visual Basic”
- Linux + Java became a formidable platform

# “Polyglot Programming”

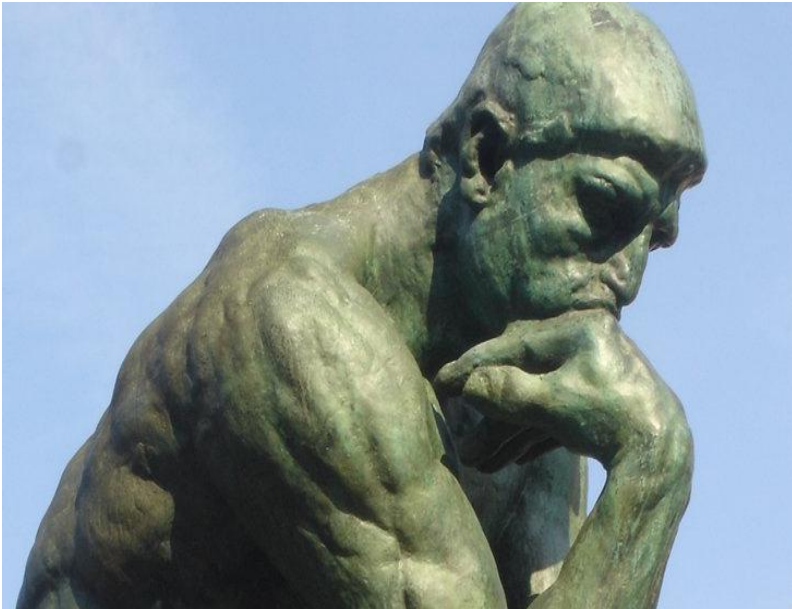
A person who is competent in multiple programming languages is called a Polyglot Programmer ( in Computing/Software Engineering parlance)

Ours is a world which demands specialization and the common question which arise naturally is **"Can anyone become a true polyglot ?"** and followup question will be **"Is it well worth the effort ?"**

# Perils of “Polyglot Programming”



## 2000/2001- Back to the Basics for Microsoft



“Imitation is the sincerest form of flattery”



# Who is more important?



Aaj mere paas building(C++) hai,  
property(C#) hai ,  
bank balance (Java) hai,  
bungla(Python) hai,gaadi hai(PHP)  
Kya hai, Kya hai tumhare paas?

....Mere Paas Maa (JavaScript) hai



# How to “Kill” Visual Basic?

- BASIC Programming Language and Microsoft
- Visual Basic battled with Delphi, PowerBuilder and Visual C++
- A Virtual Machine to run all languages ( CLR)
- Visual Basic Programmers require VB.net ( OOP extension) and a Web programming model which mimics VB’s desktop model
- ASP 3.0 became ASP+ and mutated to ASP.net Webforms
- Created a new language (C#) for the new platform
- VB.net was not actively promoted.
- Despite Microsoft’s attempt to kill the language, it still survives.

# “Emperor” Strikes back

- A new Virtual machine platform which adds features at the Platform level ( In Java, features are added at the Lexical level )
- Projections of Platform features to Languages
- Better constructs for Event handling, properties, Indexers, unchecked exceptions, Delegates etc.
- Access to Windows API using P/Invoke ( Java uses JNI)
- COM interoperability
- A Web Programming model which mimics desktop
- Attributed Programming and better Reflection Library

# A Stalemate situation

- Both Java and C# did add support for Generics
- Java added support for Annotations to emulate Attributes
- People began to mix and match ideas from both platforms
- Better Concurrency primitives in Java to emulate .NET
- .NET came up with Windows Communication Foundation to avoid Application server deficiency
- Java people got rid of infamous EJB with the POJO based EJB because of pressure from “Spring Stack”
- All was well with the both camps and C# was just a Java Clone.

# How C# became “better” than Java?

- Till 2005, both were going neck and neck
- Language Integrated Query ( LINQ) was a watershed event in the battle. Microsoft did add lot of features to the language to support LINQ. Extension Methods, Lambda, Anonymous types, Type Intference got added to the platform
- Sun got acquired by Oracle and community viewed that with suspicion. Lambda support got only added by Java 8
- Microsoft did add Prototype OOP and Parallel programming framework to C#
- Java + Scala + Groovy could emulate C# to a large degree.

# How Java made a “comeback” ?

- Lambda Support in Java 8
- Streams Support ( which can emulate LINQ )
- Enhancement to VM to support Lambda





ENOUGH OF POLITICS & HISTORY – LET US GET INTO THE  
MEET OF THE STUFF

# Comparitive Study of Programming Languages



In India, it is like this, I do  
not know how it is in  
Punjab?  
- Punjabi House

## .NET Stack

- ASP.net MVC
- ASP.net Web Forms
- WCF
- ASP.net Web API
- EF/Nhibernate
- P/Invoke/COM-Interop
- ADO.net
- Unity

## Java Stack

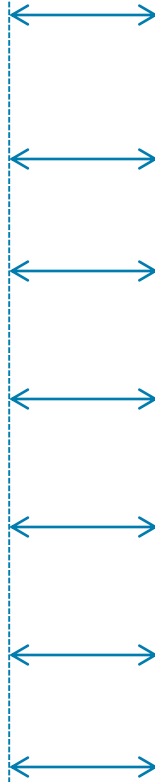
- Spring MVC/Struts
- JSF
- JAX-WS
- JAX-RS
- JPA/Hibernate
- JNI
- JDBC
- Spring DI/Java CDI

## Java Stack

- Spring
- JUNIT
- ANT
- Hibernate
- Jmock
- Lucene
- iText

## .NET

- Spring.NET (\*)
- NUNIT
- NANT/MSBuild
- Nhibernate
- Nmock
- Lucene.net
- iText.net

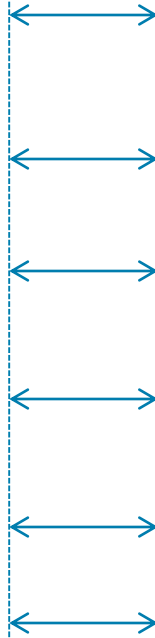


## C#/.NET

- OOP
- Functional Programming
- Generics
- Type Inference
- Dynamic Typing
- LINQ

## JVM

- Java
- Java8/Scala/Groovy
- Generics
- Scala
- Groovy
- Limited form of Lambda  
Syntax supported by Java  
8 Streams



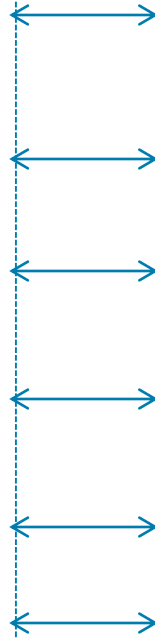


### .NET

- IronPython
- IronRuby
- Scala.net \*
- VB.net
- No Equivalent
- F#

### JVM

- Jython
- JRuby
- Scala
- No Equivalent
- Groovy
- Scala



- The Mono Project
- A Ground up implementation of .NET Platform
- The powerhouse behind Xamarin
- ASP.net support
- IKVM.net – The “Mozart” of Enterprise World

- Most of the world's high net worth corporations use Java for their front facing site.
- Java people earn more respect and compensation than C# people
- Escape from the comfort of Microsoft's tools
- Good Libraries are available ( Fine grained API as well)
- Can program Google's App Engine, Android and Amazon Beanstalk
- Easy to learn for .NET developers

- The Most advanced programming language in the world with support for Class based OOP, Prototype OOP(dynamic),Lambda Abstractions, LINQ, Generics, inline native code etc.
- The C# eco system can help you to program Windows, Xbox, Windows CE, Kinect, .NET MF ( Netdiuno and Partial support for Raspberry Pi) and Xamarin etc.
- It is easy for Java developers to cross skill
- Understand the comfort of Visual studio editor (You are missing something)
- Cross Platform support

# Which Java Stack?

- Sun/Oracle Stack
- Apache Stack
- JBOSS Stack
- IBM Stack
- Spring Stack
- Check the article, “Your Java is not my Java” @  
<http://www.technoparktoday.com/java-java-paradox-choice/>



# Q&A

- If any!