

# JVM Internals in comparison with .Net CLR

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## Types of Programmers(JVM & CLR)

- Application developers
- Library designers
- System programmers

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# Traits of Application developers

- Familiarity with different frameworks
- Familiarity with libraries
- Knowledge of common design patterns

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# Traits of Library designers

- Algorithms and Data structure knowledge
- Design patterns and principles
- Knowledge in API design

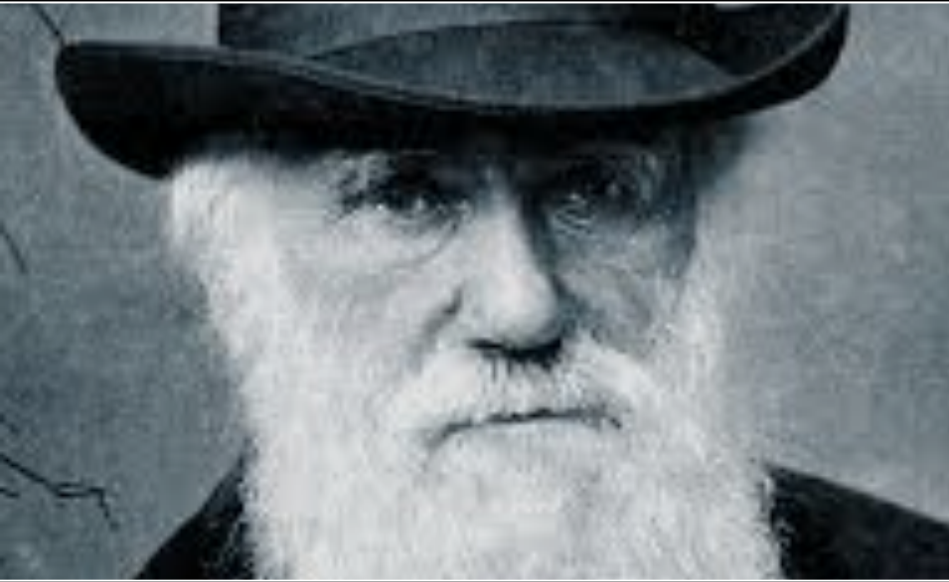
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# Traits of System programmers

- Should know the underlying machine architecture (JVM, CLR, CPU)
- Native code programming
- Cross platform programming

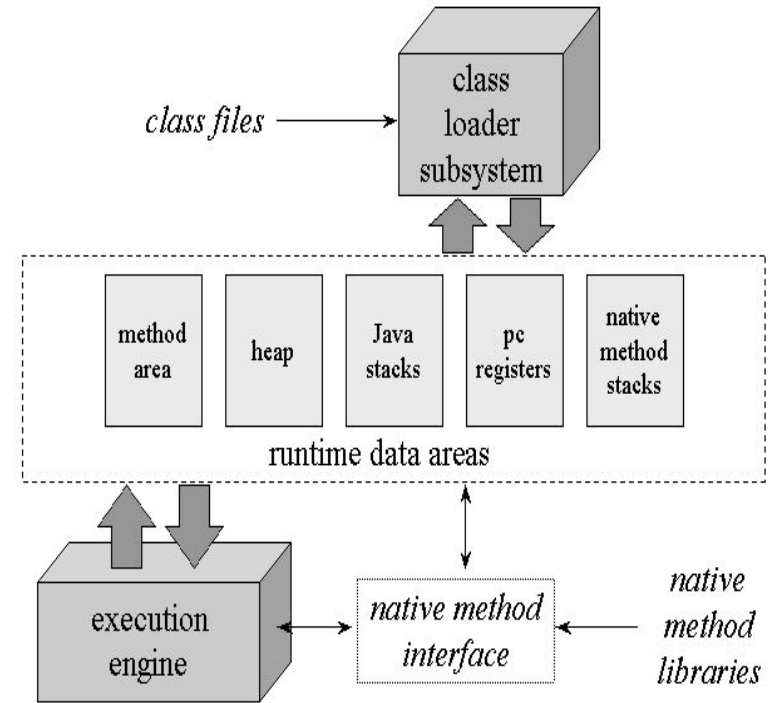
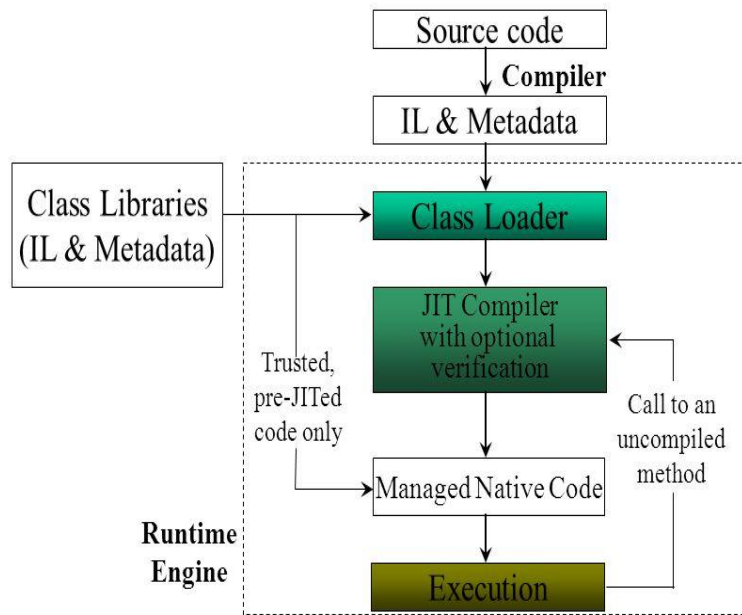
Where do you  
belong now??

# JVM & CLR



# JVM & CLR Architecture

## Execution scheme of .NET







**Let's See an Example of JNI and  
PInvoke**

**Let's See some  
bytes**



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# Dynamic Manipulation of Java Byte Code and .Net IL

## .Net

- .Net has Reflection.Emit
- Mono.Cecil

## Java

- In Java we need to go with third party libraries
- ASM - widely used for compiler backends
- Javassist
- Bytebuddy
- BCEL etc

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# How can you get started with byte code manipulation?

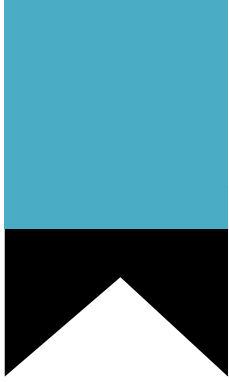
- <https://slangfordotnet.codeplex.com/> by Praseed Pai -- You can learn about all the language constructs til functions, parsing of the same and ,Net IL generation using Reflection.Emit
- <https://github.com/nsarathsoman/Madras-JUG-Byte-Code-Engineering> -IF, MethodCall, Loop
- <https://github.com/bvaisakh/slang4JVM>
- <https://github.com/nsarathsoman/slang4JVM>
- <https://github.com/nsarathsoman/PVSContainer> -- Byte code meta data fetch



**IKVM ? May be on another Day.**

# Application Development Territory

Java	.Net
JDBC	ADO .Net
Hibernate	Nhibernate, EntityFramework
Spring MVC	ASP .Net MVC
JAX Rs, Spring MVC Rest	ASP .Net Web API



# Thank You

- <https://github.com/nsarathsoman/KMUG-21J17-JVM-CLR-Internals>
- <https://github.com/nsarathsoman/Madras-JUG-Byte-Code-Engineering>
- <https://sarathsoman.wordpress.com/>