Introduction to Advanced Java Programming

Java IV Course Information

Dell Kronewitter

Who is Dell

- **Dell Kronewitter, Ph.D.**
  - ❑ Principal Software Systems Engineer at startup Fuse Integration
  - ❑ Previously Boeing Software Manager
  - ❑ Lead SW Engineer/Architect for ORBCOMM Gen 2 Satellite Payload LEO 18 Satellite Constellation
  - ❑ Over 15 years of experience in SW embedded systems in telecommunications, robotics, SDR, satellite, and medical.
  - ❑ Several publications and patents in technical journals
  - ❑ Taught math and computer science for over 7 years (in the 90's)

Blackboard Web Site

✓ **http://ucsdextension.blackboard.com**

□ First time login – email address on file at UCSD Extension as user name and password.

✓ **Use this for all course interaction**

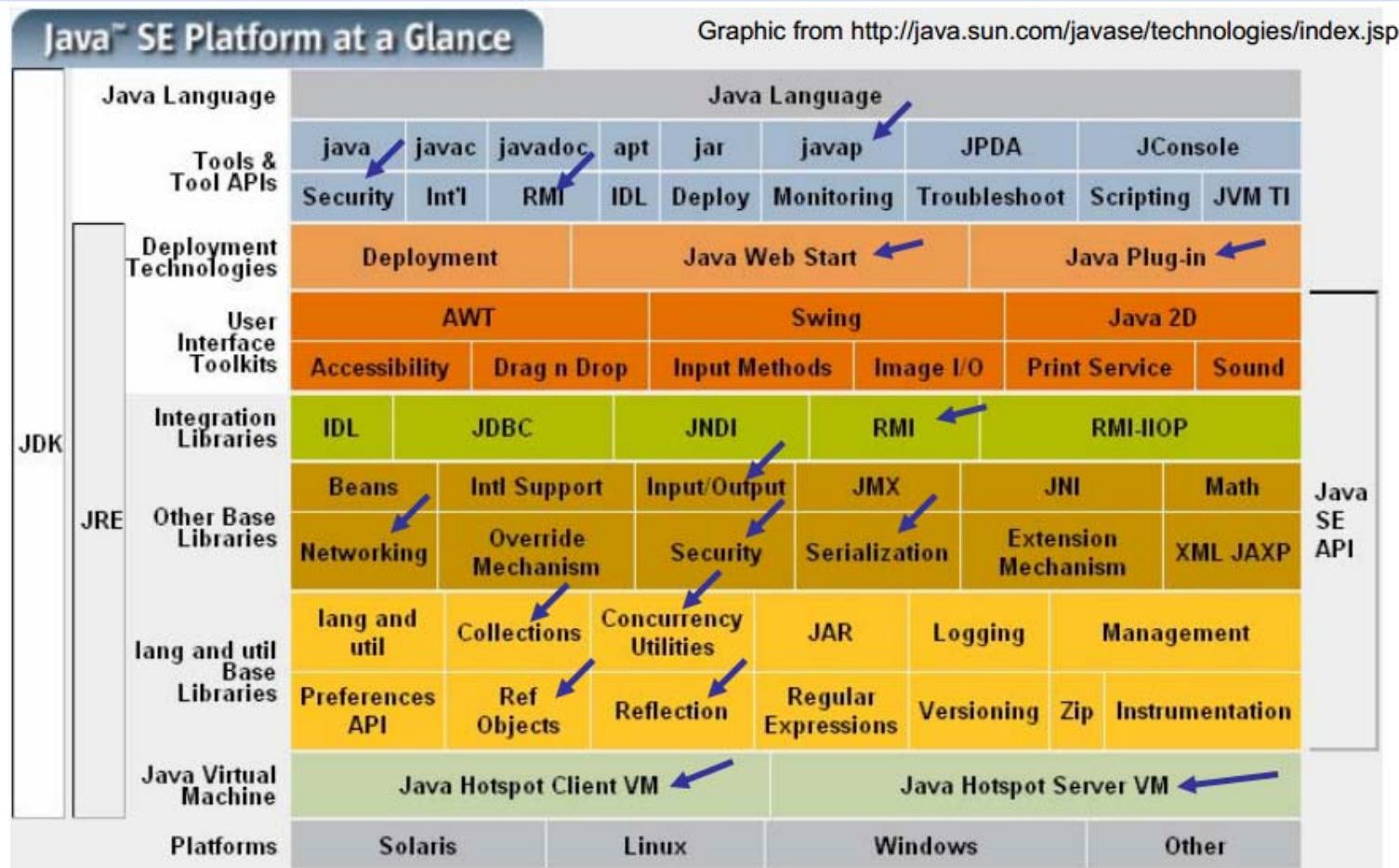□ Discussion forum participation on assigned topics will be part of the course grade

Slides and sample code. Print your own handouts

Submit all assignments via the assignment upload/submit function.

Includes suggested readings

JSE 6 – What We Will Cover

Java™ SE Platform at a Glance

Java Language	Java Language								
Tools & Tool APIs	java	javac	javadoc	apt	jar	javap	JPDA		JConsole
	Security	Int'l	RMI	IDL	Deploy	Monitoring	Troubleshoot	Scripting	JVM TI
Deployment Technologies	Deployment			Java Web Start			Java Plug-in		
User Interface Toolkits	AWT			Swing			Java 2D		
	Accessibility	Drag n Drop		Input Methods		Image I/O	Print Service		Sound
Integration Libraries	IDL	JDBC		JNDI		RMI		RMI-IIOP	
Other Base Libraries	Beans	Intl Support		Input/Output	JMX		JNI		Math
	Networking	Override Mechanism		Security	Serialization		Extension Mechanism		XML JAXP
lang and util Base Libraries	lang and util	Collections		Concurrency Utilities	JAR		Logging	Management	
	Preferences API	Ref Objects		Reflection	Regular Expressions		Versioning	Zip	Instrumentation
Java Virtual Machine	Java Hotspot Client VM				Java Hotspot Server VM				
Platforms	Solaris		Linux		Windows		Other		

JDK / JRE

Java SE API

Syllabus Review

✓ **We will walk through the published syllabus**
- ❑ Grades
- ❑ Session Topics
- ❑ My expectations

✓ **Textbooks – there will be reading assignments from both books**
- ❑ <u>Effective Java</u>, Second Edition, by Joshua Bloch, Publisher: Prentice Hall, Print ISBN-10: 0-321-35668-3
- ❑ <u>Learning Java</u>, 3rd Edition, by Jonathan Knudsen; Patrick Niemeyer, Publisher: O'Reilly, ISBN: 0-596-00873-2

Grades

✓ **Your course grade will be determined by the quality of your completed homework assignments.**

✓ **Homework assignments are due on the specified date.**

✓ **All work should be jarred together and submitted electronically via Blackboard.**

  ❑ Late assignments will be accepted on a case by case basis until they are reviewed in class and/or the solutions have been posted.

✓ **Course grades will be determined by the following:**

  ❑ 10% - Discussion comments posted to the forum. Comments will be graded 1-5 points.

  ❑ 50% - Weekly exercises. Each exercise will be graded 1-10 points.

  ❑ 20% -Final projects

  ❑ 20% - essay question exam related to the programming assignment

✓ **Grading scale**

✓ **90+% = A, 80+% = B, 70+% = C, 60+% = D, Below 60% = F**

  ❑ Plus and minus will be assigned at the instructors discretion

Session Topics

- ✓ **Introduction to Advanced Java (tools used, JSE version)**
  - ❑ Garbage Collection
  - ❑ Soft and Weak References
  - ❑ Reading Assignment –
    - ▪ Effective Java, Chapter 2
    - ▪ Learning Java, Sections 1.4, 5.3 and 5.4
- ✓ **Session 2**
  - ❑ Reflection basics
  - ❑ Annotations
  - ❑ Unit testing using JUnit 3 and 4
  - ❑ Generics
  - ❑ Reading Assignment
    - ▪ Learning Java, Chapter 8
    - ▪ Effective Java, Chapter 5
- ✓ **Session 3**
  - ❑ More Generics
  - ❑ Collections
  - ❑ Reading Assignment -
    - ▪ Learning Java, Section 11.4
    - ▪ Effective Java, Item 12
- ✓ **Session 4**
  - ❑ Streams and File I/O
  - ❑ Object Serialization
  - ❑ NIO
  - ❑ Reading Assignment
    - ▪ Learning Java, Chapter 12
    - ▪ Effective Java, Chapter 11

- ✓ **Session 5**
  - ❑ Concurrent programming principles
  - ❑ Basic Thread Programming
  - ❑ Reading Assignment
    - ▪ Learning Java, Chapter 9
    - ▪ Effective Java, Chapter 10
- ✓ **Session 6**
  - ❑ Advanced Thread Programming
  - ❑ JSE 5 Concurrency Utilities
  - ❑ Reading Assignment
    - ▪ Learning Java, Chapter 9
    - ▪ Effective Java, Chapter 10
- ✓ **Session 7**
  - ❑ Networking with Sockets
  - ❑ Reading Assignment
    - ▪ Learning Java, Chapter 13.1 - 13.3
    - ▪ Effective Java, Chapter 11
- ✓ **Session 8**
  - ❑ Programming for the Web
    - ▪ Web Start
    - ▪ Applets
    - ▪ Web services
  - ❑ Reading Assignment
    - ▪ Learning Java Chapter 14 and 15
- ✓ **Session 9**
  - ❑ Secure Coding Guidelines for the Java Programming Language
  - ❑ Overview of Security related extensions to JSE

Java Tools

- **JSE 6 is preferred**
- **IDE**
  - Eclipse may be used in some class demonstrations
  - Netbeans is good alternative as well.
- **Unit Testing**
  - JUnit 3.8.1 and JUnit 4.x
- **Build Tools**
  - Ant
- **Other Tools**
  - Findbugs
- **Do not mistake this for a list of all of the tools you would need in a serious development organization**