What’s New in Java 7

for

San Antonio Java User Group

May 2010
What’s New in Java 7

Top 5 Main features in Java 7

• Modularity
• Language Changes
• Multi Language Virtual Machine
• Garbage Collector
• New File I/O API
What’s New in Java 7

Modularity – What is the need?

- Java SE has grown **BIG**
  - More and more functionality is added in Java SE
  - Java SE – the foundation of Java EE
- Underlying Implementation code is interconnected
- Class path Hell
  - No version management for JARs
  - No dependencies mechanism
Module – an Example

module A @ 1.0
{
    requires B @ 2.1;
    requires C @ 1.1;
}

module A;
package com.sample;
public class sample class
{
    public void sample()
    {
    }
}
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Language Changes

- Additions to the Java Language itself
- Sun very much conservation to language additions
  - because language changes are permanent and cannot be removed
- No big features like support for closures
- Only simple and useful language changes in Java 7
- Under the Open Source Project Coin (signifies small changes)
Language Changes – Strings in switch

String s = ....;

switch(s)
{
    case "subbu":
        System.err.println("It is subbu man!");
        break;
    case "ryan":
        System.err.println("It is ryan man!");
        break;
    case "john":
    default:
        System.err.println("Default");
        break;
}

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Language Changes – Multiple Exception Handling

```java
try {
    //do something;
}
catch(Exception1 e) {
    handleException(e)
}
catch(SQLException e) {
    handleException(e)
}
```

```java
try {
    //do something;
}
catch( Exception1, Exception2 e) {
    handleException(e)
}
```
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Language Changes – Improved Type Inference

Map<String, Integer> = new HashMap<String, Integer>();

Map<String, Integer> = new HashMap<>();
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Language Changes – Elvis Operator

**Standard example:**

String s = maybeNull?.toString() ?: "null";

**Auto-unboxing example:**

Integer ival = ...; // may be null
int i = ival ?: -1; // no NPE from unboxing
Language Changes – Elvis Operator

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Multi Language Virtual Machine

- Java 6 provided the capability to plug-in other languages in the VM
- Java 7 to be strengthened to make the other languages run even better in the JVM
- JVM to be optimized to make the language specific features run better (Ex: Closures)
- Provided by Open Source Project DaVinci
Limitation of current I/O API

- Deletion is not guaranteed. Need to do a check to determine if the file is deleted.
- Operations on directory are not scalable and run on the parent thread.
- Polling will need to be done for changes on files.

New I/O APIs

- New File System API
- File Notifications
- Directory Operations
- Asynchronous I/O
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New I/O APIs - Example

```java
Path searcPath = Paths.get("c:/sample");
final Path findFile = Paths.get("samplefile");

FileVisitor visitor = new SimpleFileVisitor()
{
    public FileVisitResult visitFile(Path file, BasicFileAttributes attrs)
    {
        if(file.getName().startsWith(findFile))
        {
            //do something
        }
    }
};
Files.walkFileTree(searcPath, visitor);
```
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Garbage First

• New Garbage Collector introduced in Java 7
• It is called the Garbage First Collector
• Memory split into multiple regions as opposed to 2 regions in the current version
• Quite predictable and provides greater throughput for memory intensive applications
• Performs faster than the current parallel collectors.
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Any Questions? Thank You