



SOU Java

sociedade de usuários java

**Correndo com o
Mustang
Velocidade com o JDK 6**

Claudio Miranda



SOU Java
sociedade de usuários java

Claudio Miranda



- Como consultor presta serviços para empresas como Sun Microsystems, CEF, Banco do Brasil e BrasilTelecom.
- Participa no desenvolvimento e arquitetura de sistemas de missão crítica, que exigem alta disponibilidade
- Realiza pesquisa e desenvolvimento na plataforma Java, J2ME e tecnologias emergentes.
- Participa ativamente da comunidade Java, como diretor do SouJava.
- Palestrante em eventos: (JavaOne 2002, COMDEX 2001/2003/2004, JustJava 2003/2004, Abaporu 2002/2003, entre outros).



Agenda

- Planeta JDK
- O que há de novidade ?
- Demonstração



Planeta JDK

- Java Development Kit
 - Bibliotecas (API – Application Programming Interface)
 - Runtime (JVM – Java Virtual Machine)
 - Linguagem



Planeta JDK

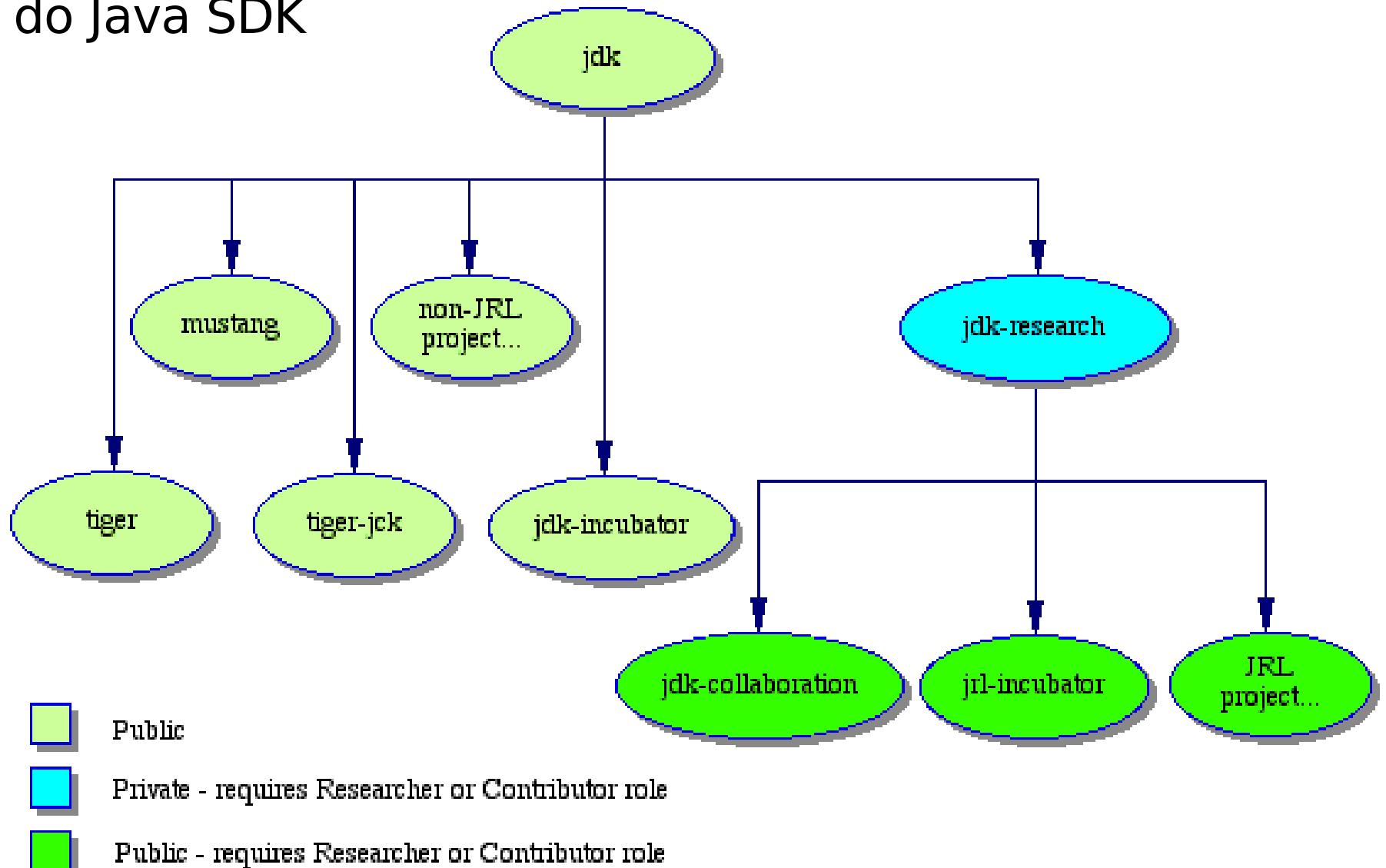
- Roteiro de release fechado
 - JDK 1.1, 1.2, 1.4 e 1.4
- Pequena participação da comunidade
 - JDK 1.5 (codinome Tiger)

Planeta JDK

- Mustang é o apelido para o JDK 6
- Projeto Peabody
 - Participação da comunidade
 - Builds e código fonte semanal
 - Licença para pesquisa (Java Research License)
 - Colaboração da comunidade com correções e feedback



Estrutura de sites no java.net do projeto de colaboração do Java SDK



Planeta JDK

- Comunidade
 - Relatório de erros
 - Participação ativa
 - Blogs
 - Fóruns
 - Testes
 - e ... ?



Planeta JDK

**Como você pode ajudar a
melhorar o Mustang**



Planeta JDK

- Relatório de erros (bug report)
 - Registro gratuito no developers.sun.com
 - Descrever o problema
 - Passo a passo para reproduzi-lo

Bug ID: 6306967

Votes 0

Synopsis This code compiles but gives VerifyError when run

Category java:compiler

Reported Against

Release Fixed

State In progress, bug

Related Bugs

Submit Date 05-AUG-2005

Description FULL PRODUCT VERSION :

1.5.0_04

1.4.2_05

ADDITIONAL OS VERSION INFORMATION :

Windows 2000

A DESCRIPTION OF THE PROBLEM :

Compiler does not properly detect all situations in which a variable

STEPS TO FOLLOW TO REPRODUCE THE PROBLEM :

Compile and run the code below.

Planeta JDK

- Implementação e correções (bug fix)
 - Escolha do bug report
 - Feedback
 - Qualidade

JDK Community Starter Bug List

This is a list of bugs that Java SE engineers have identified as great candidates for developers who are looking to get started at fixing bugs in Java. Please check the [instruction note](#) on how to claim a starter bug.

Note: There is no guarantee that any bug fix will be put into Mustang, even if it is perfect. All fixes received will be evaluated on their impact to the time they are received. For this reason, it will become increasingly difficult to add bug fixes and new enhancements (especially API changes) closer to Mustang's ship date. Fixes that are not included in Mustang are still valuable and will be considered for inclusion in Mustang update 1 or Dolphin.

Date: 03/02/06

Category	ID	Forum Link	Synopsis
java:debugger			
	4789022	Open	TTY: redefine class clears breakpoints but clear still lists breakpoints
	4702575	Open	TTY: Warn user before accepting a breakpoint if class is on exclude list
	4700613	Open	TTY: command line interpreter needs to handle backslash escapes
	4518755	Open	TTY: Unexpected handling of comma separator in expressions
	4766855	Open	TTY: incorrect expression evaluation
	4846797	Open	TTY: print doesn't work right
	4981536	Open	TTY: jdbrc is read twice jdb is run in the user's home dir
	4447326	Open	TTY: Command length limited to 256 characters
	5085102	Open	TTY: Compilation of some files causes javac warnings
	4660158	Open	TTY: NumberFormatException while trying to set values by 'set' command
java:classes_swing			
	6299160	Open	JTable: not all renderers/editors are updated on LF change
	4930166	Open	JInternalFrame does not redraw borders when its resizable property is changed
	4949405	Open	WinXP L&F: The height of progress bar is bigger than Windows' standard one
	4532967	Open	class summary , you use the words cell update and changed

JDK Community Contribution Bug Status

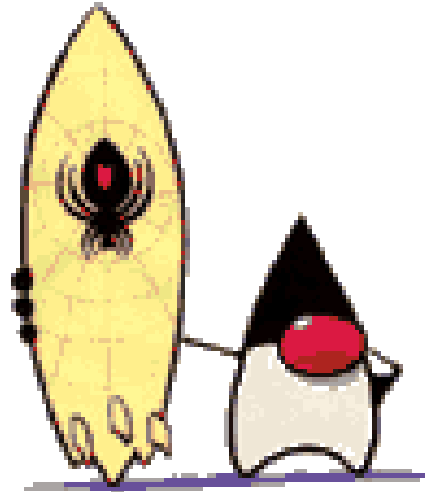
This is a list of bug fixes contributed by the JDK community.

Date: 03/02/06

Category	ID	Status	Release	Build#	Synopsis
hotspot:garbage_collector					
	6339846	10-Fix Delivered	mustang	b63	New Community Fix Received: HotSpot build on AMD64 Fedora Core 4
hotspot:runtime_system					
	6339849	10-Fix Delivered	mustang	b63	New Community Fix Received: HotSpot build on AMD64 Fedora Core 4
idl:other					
	6203567	6-Fix Understood	5.0u7		NameService resolving in Applet causes AccessControlException and deadlock
	6369913	1-Dispatched			idlj generates wrong code for helper of union with multiple labels per branch
java:build					
	6207243	10-Fix Delivered	mustang	b34	non-varargs warnings during j2se build, should be cleaned up
java:char_encodings					
	4890726	10-Fix Delivered	mustang	b71	Linux version of JDK doesn't support uk_UA.KOI8-U locale
java:classes_2d					
	4140876	6-Fix Understood	dolphin		drawRect doesn't take Rectangle as parameter
	4172661	6-Fix Understood			GeneralPath needs double version

Planeta JDK

- Discussão com engenheiros do JDK
 - Fórum
 - Blogs



Forum: Java SE Snapshots: Project Feedback

Messages: 1,499 Topics: 268 Last Post: Mar 9, 2006 5:47 PM, by: [cowwoc](#) »

Discuss issues related to obtaining and using [Mustang snapshot releases](#). If you discover API or functionality bugs in a snapshot release, please file them using the usual [J2SE bug reporting channels](#).

Welcome, [claudio](#)

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[Your Control Panel](#)

[Help](#)

[Post New Topic](#) [Search Forum](#) [Watch Forum](#) [Mark All Topics as Read](#) [Go Back to Forum List](#)

Pages: 18 [[1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) | [Next](#)]

Topic	Author	Replies	Last Post
What is java_impl.exe?	jansan	21	Mar 9, 2006 5:47 PM by: cowwoc »
Any chance of JDIC FileAssociations in Mustang or Dolphin..? ?	chris_e_brown	1	Mar 9, 2006 4:15 PM by: mac_systems »
Summary of changes release notes order	rogerhernandez	0	Mar 9, 2006 12:35 PM by: rogerhernandez »
Java 6 on KDE using gtk-qt engine	cramirez	0	Mar 8, 2006 2:57 PM by: cramirez »
systray icon and popupmenu in b72 on linux	mfernau	2	Mar 8, 2006 10:49 AM by: mfernau »
Cannot load heap dump with jhat ?	sv	2	Mar 7, 2006 2:01 PM by: sv »
Performance regression in simple program?	sjasja	4	Mar 6, 2006 4:31 PM by: rasbold »
rt.jar with debug symbols ?	cowwoc	15	Mar 6, 2006 2:31 AM by: cowwoc »
So where can i find gcc 3.2.1-7	ugeorge	0	Mar 3, 2006 11:03 PM by: ugeorge »
Properties Cast to Map<String, String>? ok in 5.0, compile error in 6.0Beta ?	gestaltsolution	2	Mar 2, 2006 1:04 PM by: tackline »
Mustang Site not working	alexlamsl	2	Mar 2, 2006 12:53 PM by: alexlamsl »



MUSTANG BETA

MUSTANG REGRESSIONS CHALLENGE

JAVA EE 5 BETA

A. Sundararajan
Alan Bateman
Amit Handa
Amy Fowler
Andreas Schaefer
Andreas Sterbenz
Andrew Xuelei Fan
Azeem Jiva
Brian Doherty
Chet Haase
Chris Campbell
Chris Hegarty
Daniel Fuchs
Danny Coward
David Dagastine
David Herron
Doug Kohlert
Éamonn McManus
Gilad Bracha
Graham Hamilton
Hans Muller
Jaya Hangal
Jean-François Denise
Joe Darcy
Jon Masamitsu
Joshua Marinacci
Kathy Walrath
Keith McGuigan
Kelly O'Hair (bsc)
Kelly O'Hair (jn)

Joshua Marinacci
2006/03/09 21:47

Once more Matisse Rocks

I would just like to say that I'm more and more impressed with Matisse. It does it's absolute best to provide a realistic preview of running components at design time. Today I was building some component tests and was amazed...

Éamonn McManus
2006/03/09 15:09

Madrid: Presentation on JMX Technology

Luis-Miguel Alventosa from Sun's JMX Technology team will be presenting Monitoring and Management in Java SE 5.0 at Java Expo '06 in Madrid, on Tuesday the 21st of March.

Daniel Fuchs
2006/03/09 13:35

JMX presentation at Java Expo 06 @ Sun Tech Days in Madrid, Spain

... *Luis-Miguel Alventosa*, from the JMX team, will be presenting **Monitoring and Management in Java SE 5.0** at **Java Expo '06** in Madrid. ...

Andreas Schaefer
2006/03/08 22:39

AOP: The Sanity's Madness

Greg Hamilton blogged about **AOP: Madness and Sanity** talking about where and where not to use AOP and I nearly threw up, figuratively speaking, of course. Primary AOP is a concept that wants to relive the developer from some of ...

Andreas Schaefer
2006/03/08 21:31

JDK Community: Dream or Reality

Yesterday Ray Gan blogged about the **JDK Community** listing some of the facts about the Peabody project. If you never heard about that project then you are not alone and I only now about it because Joshua Marinacci gave a ...

Graham Hamilton
2006/03/08 19:50

AOP: Madness and Sanity

The much-abused term "AOP" covers a wide range of uses, some of them eminently sane and some of them eminently crazy. Here are some comments on both the good and the bad.

Ray Gans
2006/03/08 02:15

Where we are with the JDK Community

Sun started the JDK Community on java.net about a year ago. I'd like to provide an update to where we stand now (I've got numbers) and where we're going. We also want to hear from you too.

Kohsuke Kawaguchi
2006/03/07 18:14

Canonicalization support in JAXB RI 2.0

I just implemented the experimental canonicalization (c14n) support in the JAXB RI 2.0.

Daniel Fuchs

Tracking JMX: What's going on in my MBeanServer?

Planeta JDK

- Releases semanais (weekly builds)
 - Binários
 - Linux, windows, Solaris (sparc, x86)
 - AMD64 (windows, solaris, linux)
 - Código fonte
 - Relatórios de mudanças (Changelog)

Java Platform, Standard Edition 6 Binary Snapshot Releases

March 09, 2006

[Previous Snapshot Releases](#)

[Java Docs \(51.14 MB JAR | HTML\)](#)

[Summary of changes in Mustang](#)

[Feedback forum](#)

[JDK 6 Source Snapshot Releases](#)

Please note:

This list offers files for different platforms - please be sure to select the proper file(s) for your platform. Carefully review the files listed below to select the ones you want, then click the link(s) to download.

If you choose to download and install self-extracting JRE or DEBUG Jar bundles then you need to change the file permission to be executable in the bin directory after the installation.

For JRE bundle:

```
cd <INSTALL_DIR>/jre1.6.0/bin
chmod +x *
```

For DEBUG bundle:

```
cd <INSTALL_DIR>/jdk1.6.0/fastdebug/bin
chmod +x *
cd <INSTALL_DIR>/jdk1.6.0/fastdebug/jre1.6.0/bin
chmod +x *
```

Linux Platform

- ◆ **Linux RPM in self-extracting JDK file**
[jdk-6-beta2-bin-b75-linux-i586-09_mar_2006-rpm.bin](#), 48.26 MB
- ◆ **Linux self-extracting JDK file**
[jdk-6-beta2-bin-b75-linux-i586-09_mar_2006.bin](#), 49.87 MB
- ◆ **Linux self-extracting JRE Jar file**
[jre-6-beta2-bin-b75-linux-i586-09_mar_2006.jar](#), 29.06 MB
- ◆ **Linux self-extracting DEBUG Jar file**
[jdk-6-beta2-bin-b75-linux-i586-debug-09_mar_2006.jar](#), 91.22 MB

Bugs fixed current Mustang (6.0) build b75

Category	ID	Synopsis
hotspot:compiler2		
	6272923	CI wrongly reports array class as unloaded after constrained class is reported
	6373350	Error: meet not symmetric
	6375289	BufferBlob leaks
hotspot:jvmti		
	6390772	class parameter to FollowReferences and IterateThroughHeap is == filter and
hotspot:monitoring_management		
	6381301	Bug in terminating capabilities string in runtimeService.cpp
hotspot:runtime_system		
	6354559	Labels can leak C heap memory
	6373938	JVM crashes when resolving a method after loading a class
java:apt		
	6370261	apt must pass through shared JSR 269 javac options
java:char_encodings		
	6378295	ASCII range encoder bugs in Greek charset (ISO-8859-7)
java:classes_annot_processing		
	6362067	Messenger methods do not print out source position information
	6365040	Support multiple processor arguments for javac -processor options
	6378728	-proc:only generates classes if no processors found
java:classes_awt		
	6271145	"Clean up and return" after JNU_ThrowOutOfMemoryError
	6356322	EmbeddedFrame returns wrong GraphicsConfiguration on multiscreen system
	6366006	REG: Choice stops working after opening and disposing a modal dialog in iter
	6367771	Specification for modal dialog hidden should be corrected
	6373369	Bug in WListPeer.getMaxWidth()
	6374308	redundant ItemEvent/ActionEvent is triggered for empty List, XAWT

Legal, mas cadê as novidades ?



Planeta JDK

- Requisições antigas são implementadas
- Principais alterações
 - Desempenho
 - Java no Desktop
 - Web Services
 - Suporte a scripts

Planeta JDK

- Definida pela JSR 270

202: Java Class File Specification Update

199: Java Compiler API

269: Pluggable Annotation Processing API

260: Javadoc Tag Update

221: JDBC 4.0

223: Scripting for the Java Platform

105: XML Digital Signature

173: Streaming API for XML

222: JAXB 2.0

181: WS Metadata

250: Common Annotations

224: JAX-WS 2.0 (formerly JAX-RPC 2.0)

Ease of Development

XML

Web Services

Vamos passear um pouco e conhecer as novidades, com o Mustang



Correndo com o Mustang

- Imagem de abertura (splash screen)
- Pode ser definida
 - Por API (classe `SplashScreen`)
 - Manifest.mf
 - Opção de linha de comando

Correndo com o Mustang

- Linha de comando

```
java -splash:/sistema/tela_abre.jpg
```

- Manifest

```
Splashscreen-Image: image.gif
```

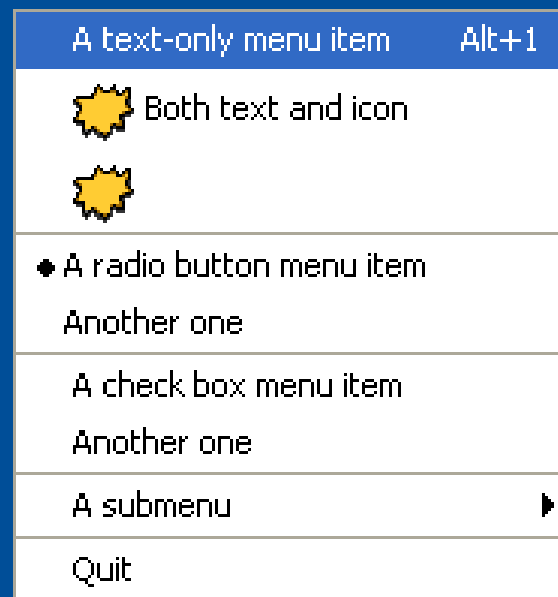
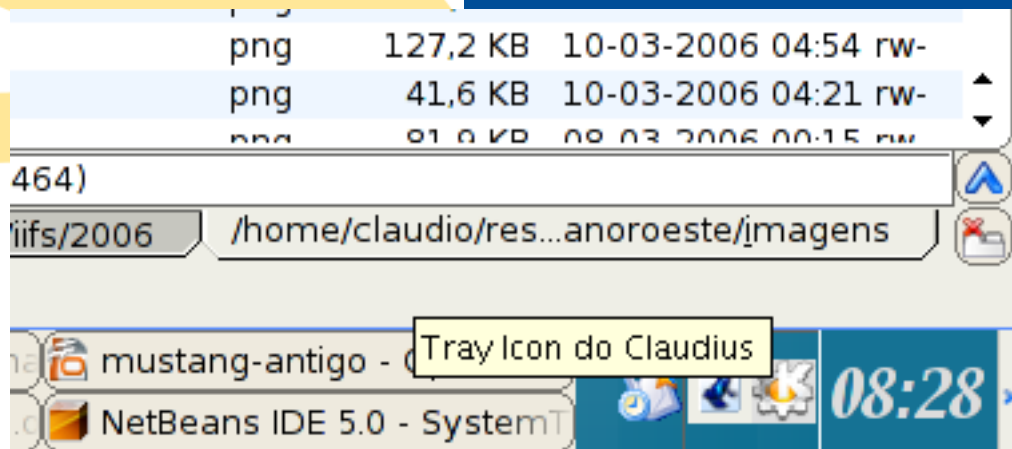
- API

```
SplashScreen splash =  
    SplashScreen.getSplashScreen();
```

Correndo com o Mustang

- Ícone na barra de inicialização (tray icon)
- Baseado no JDIC
- Suporte
 - Tooltips, menu de contexto, listeners

Correndo com o Mustang



Correndo com o Mustang

- Fidelidade no Desktop
 - Look and Feel
 - Windows Vista
 - GTK
 - Fontes cleartype (ou subpixel hinting)
 - Percepção de tela cinza removida
 - Suporte melhorado ao JDIC

File Edit View Go To Source Build Run Refactor CVS Tools Window Help



Build Main Project	F11
Clean and Build Main Project	Shift+F11
Generate Javadoc for "AnimTransExample"	
Compile "AnimatingGUI.java"	F9
Stop Building	

Projects

- AnimatedTransitions
- AnimTransExample**
 - Source Packages
 - animtransexample
 - AnimatingGUI.java
 - GradientContainer.java
 - PersonFinder.java
 - ScrollEffect.java
 - ScrollTest.java
 - Thumbnail.java
 - button-bold.png
 - Test Packages
 - Libraries
 - Test Libraries
 - TimingFramework



```

tField("<sample text>");
);
ScrollPane(table);

JComponent transitionContainer = new GradientContainer();
ScreenTransition transitionPanel = new ScreenTransition(transitionContainer,
    this);

JButton containedButton = new JButton("blah");
JPanel buttonContainer = new JPanel();
JPanel buttonPanel = null;
JComponent thumbnail = new Thumbnail();
static final int FRAME_W = 300;
static final int FRAME_H = 300;
int currentScreen = 1;

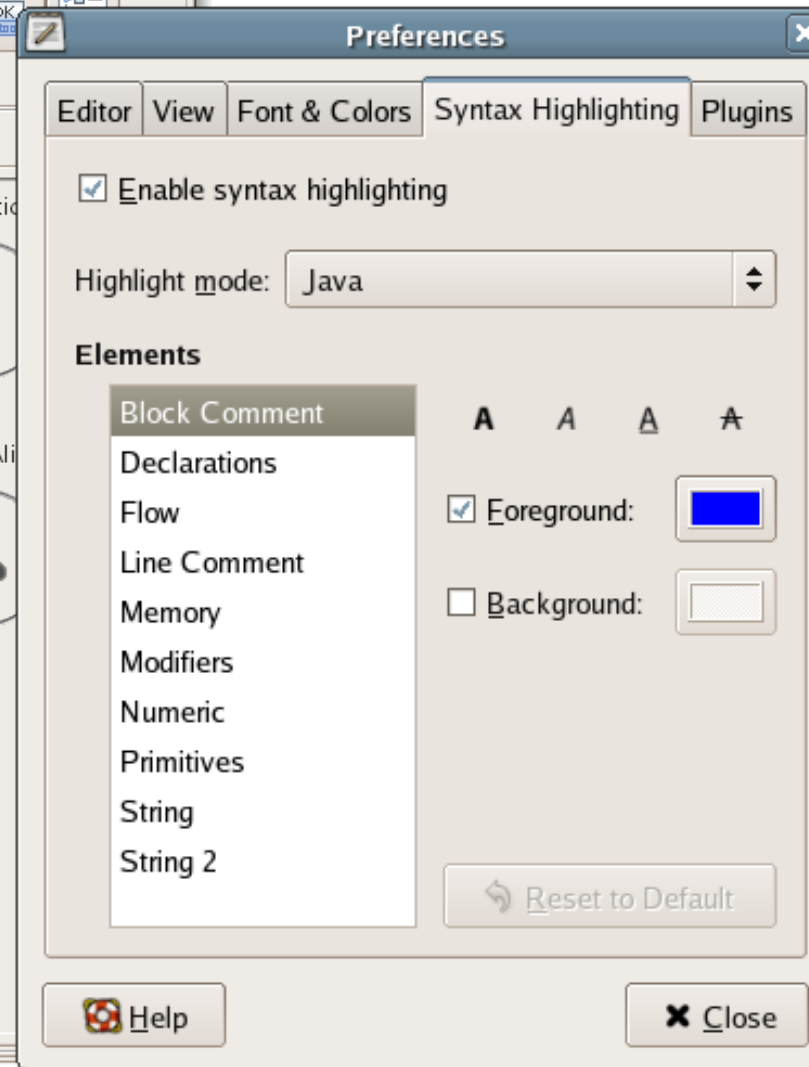
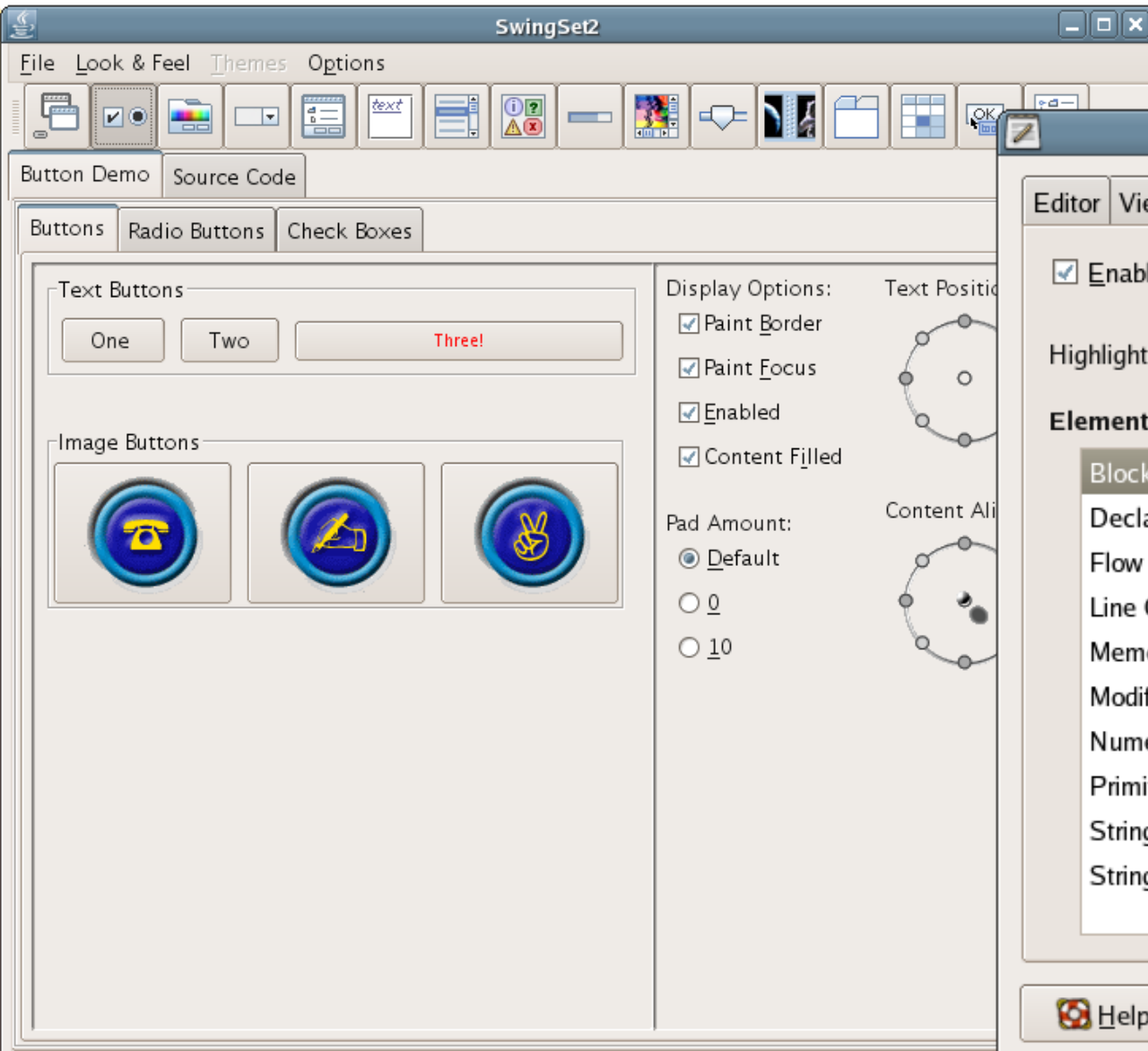
public AnimatingGUI() {
    buttonContainer.add(containedButton);
    buttonContainer.setBorder(new BevelBorder(BevelBorder.LOWERED));
    ComponentEffect moveEffect = new Move(null, null);
    ComponentEffect rotateEffect = new Rotate(null, null, 360, 15, 10);
    CompositeEffect compositeEffect = new CompositeEffect(moveEffect);
    compositeEffect.addEffect(rotateEffect);
    ComponentEffect.setEffect(label, compositeEffect,
        ComponentEffect.TransitionType.CHANGING);
    setLayout(new BorderLayout());
    setupButtons();
    add(transitionContainer, BorderLayout.CENTER);
    int yPanel = buttonPanel.getY() + buttonPanel.getHeight() + 5;
    setupFirstScreen();
    buttonPanel.addActionListener(this);
  
```

50:75 INS

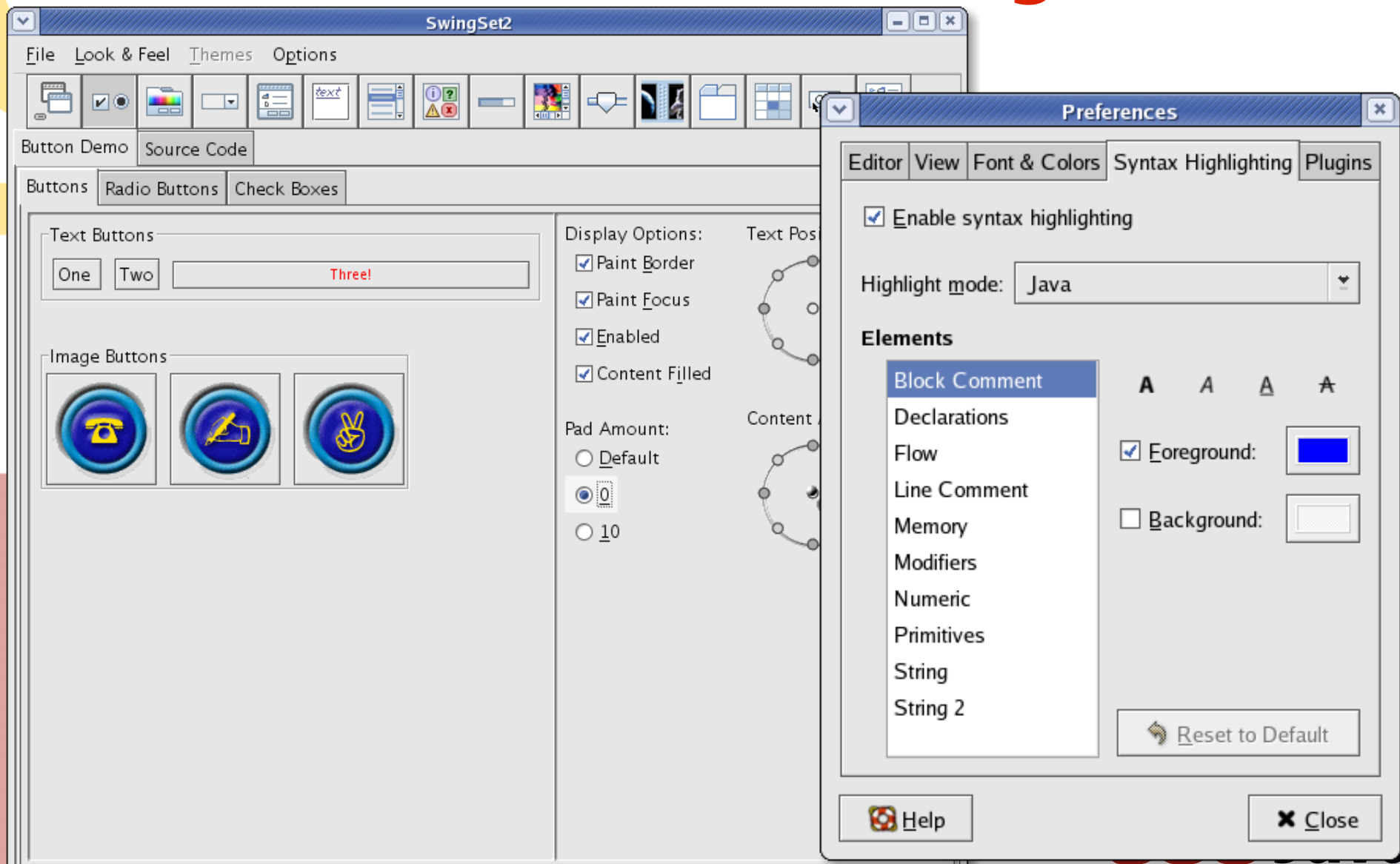
D..

- 8/30...
- 8/30...
- 8/30...
- 8/30...
- 8/30...
- 8/30...
- 8/30...
- 8/29...
- 8/29...
- 8/29...
- 8/29...
- 8/29...
- 8/29...

Correndo com o Mustang



Correndo com o Mustang



Correndo com o Mustang

The image shows a screenshot of the SwingSet2 IDE. The main window, titled "SwingSet2", has a menu bar with "File", "Look & Feel", "Themes", and "Options". Below the menu bar is a toolbar with various icons. The main area is divided into two panes: "Button Demo" and "Source Code". The "Button Demo" pane has three tabs: "Buttons", "Radio Buttons", and "Check Boxes". The "Buttons" tab is active, showing a "Text Buttons" section with three buttons labeled "One", "Two", and "Three!". The "Image Buttons" section shows three buttons with icons: a telephone, a pencil, and a peace sign. To the right of the buttons are "Display Options" (Paint Border, Paint Focus, Enabled, Content Filled) and "Pad Amount" (Default, 0, 10). The "Source Code" pane is currently empty.

Overlaid on the right side is the "Preferences" dialog box. It has a menu bar with "Editor", "View", "Font & Colors", "Syntax Highlighting", and "Plugins". The "Syntax Highlighting" tab is active. It contains a checked checkbox for "Enable syntax highlighting" and a "Highlight mode" dropdown set to "Java". Under the "Elements" section, there is a list of code elements: "Block Comment", "Declarations", "Flow", "Line Comment", "Memory", "Modifiers", "Numeric", "Primitives", "String", and "String 2". To the right of this list are four "A" icons for font style, a checked "Foreground" color selector (blue), and an unchecked "Background" color selector (white). A "Reset to Default" button is at the bottom right of the dialog. The dialog also has "Help" and "Close" buttons at the bottom.

Press Shift-F10 to activate popup menu

Correndo com o Mustang

- JFC e Swing
 - SwingWorker é parte do JDK gerenciamento de threads
 - Filtros e Ordenação em JTable
 - Double Buffering em frames
 - Melhor desempenho em ImageIO

Correndo com o Mustang

- Coringas na declaração do classpath
- Antes de mustang

```
export CP=/libs/arquiv.jar:/libs/all.jar  
java -classpath $CP MinhaClasse
```

- Depois

```
java -classpath /libs/*.jar MinhaClasse
```

Correndo com o Mustang

- Java WebStart
 - Gerenciamento otimizado do cache
 - Look and Feel mais atraente
 - Configuração de proxy automático
 - Integração com o Desktop
 - Instalar, remover do painel de controle
 - Criação de menus
 - mime-type

Correndo com o Mustang

Antes de mustang



 *Java™ Loading...*

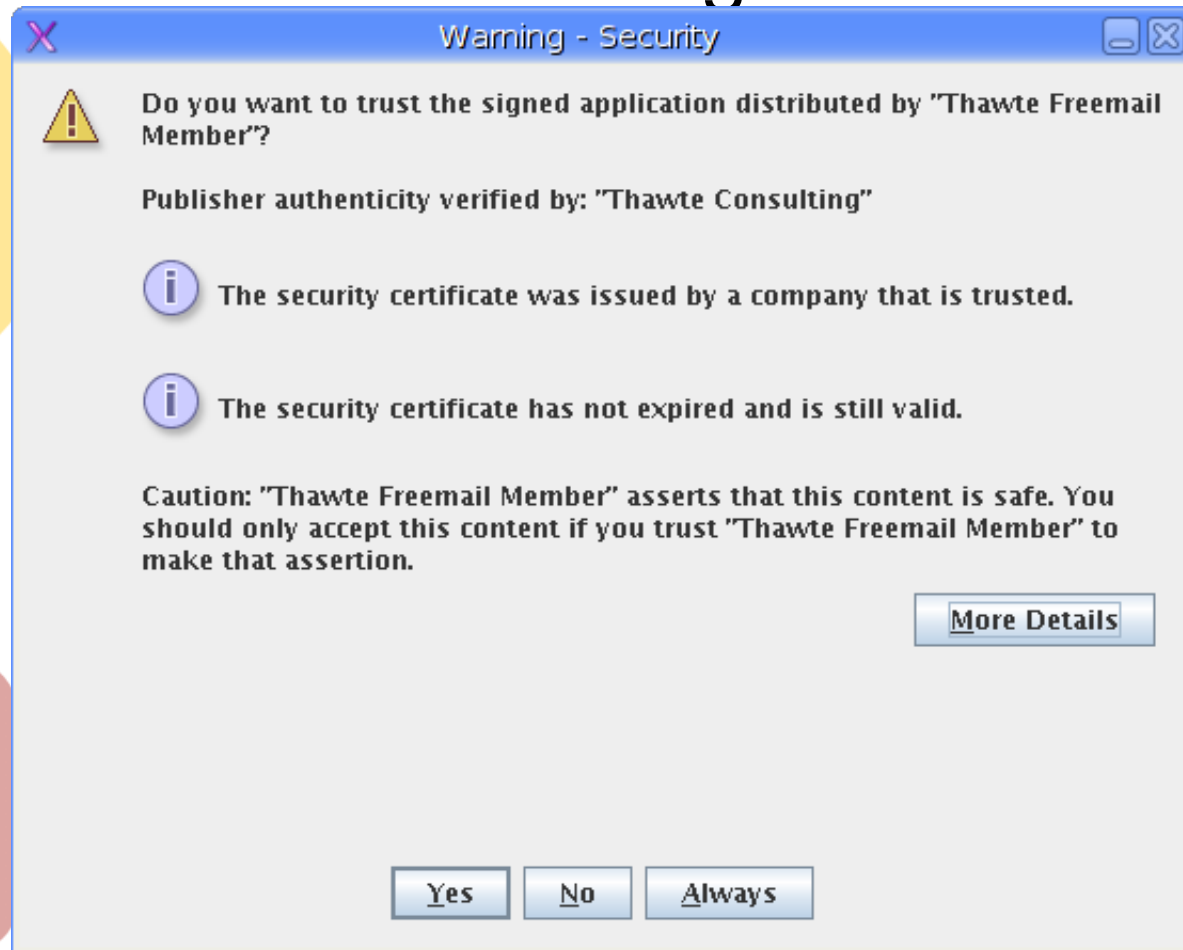
Com mustang



Java™ starting...

Correndo com o Mustang

Antes de mustang



Correndo com o Mustang

Com mustang



Correndo com o Mustang

Com mustang



Correndo com o Mustang

- Leitura de senhas no console I/O

```
char[] password;  
do {  
    password = System.console().readPassword(  
        "Enter password (minimum of %d  
characters): ", 8);  
} while (password.length < 8);
```

- Antes disso era necessário implementar a troca do caracter de echo por algum coringa

Correndo com o Mustang

- `java.ioFile`
- Espaço livre no disco

```
public long getTotalSpace();  
public long getFreeSpace();  
public long getUsableSpace();
```

- **Permissões**

```
public boolean setReadable(boolean, boolean)  
public boolean setReadable(boolean readable)  
public boolean setWritable(boolean writable,  
boolean ownerOnly)  
public boolean setWritable(boolean writable)  
public boolean setExecutable(boolean executable,  
boolean ownerOnly)  
public boolean setExecutable(boolean executable)
```

Correndo com o Mustang

- DNS internacionalizado
 - `www.maçã.com.br`
- Dead Key no linux
 - aspas duplas

```
xmodmap -e "keycode 48 = dead_acute quotedbl"
```

Correndo com o Mustang

- Conectividade
 - Acesso a parametros de rede
 - broadcast address
 - mac address
 - network mask

```
Link encap:Ethernet Endereço de HW 00:04:76:41:D4:FC
inet end.: 192.168.1.5 Bcast:192.168.1.255 Masc:255.255.255.0
endereço inet6: fe80::204:76ff:fe41:d4fc/64
```

- timeout de conexão LDAP
- gerenciamento otimizado do HTTP Keep-Alive

Correndo com o Mustang

- Web Services
 - Java Architecture for XML-WebServices (JAX-WS) 2.0
 - JAXB 2.0
 - XML Digital Signature API
 - Lightweight HTTP Server to JAX-WS Callbacks
 - Streaming API for XML

Controles e Emoções



Correndo com o Mustang

- Monitoramento
 - Permite conectar o `jconsole` sem configurar a JVM alvo
 - Melhor interface visual do `jconsole`
 - Melhoria no diagnóstico de `OutOfMemoryError`
 - Suporte a `DTrace` (solaris sparc apenas)
 - Thread dumps remotos com `jstack`

Correndo com o Mustang

- Ferramentas

- `jconsole`: monitoramento de memória, threads e MBeans
- `jstack`: geração de thread dump local e remoto
- `jinfo`: parametrização de uma JVM
- `jstat`: estatísticas de comportamento da JVM
- `jmap`: snapshot do heap
- `jhat`: análise do hprof

Connection Window

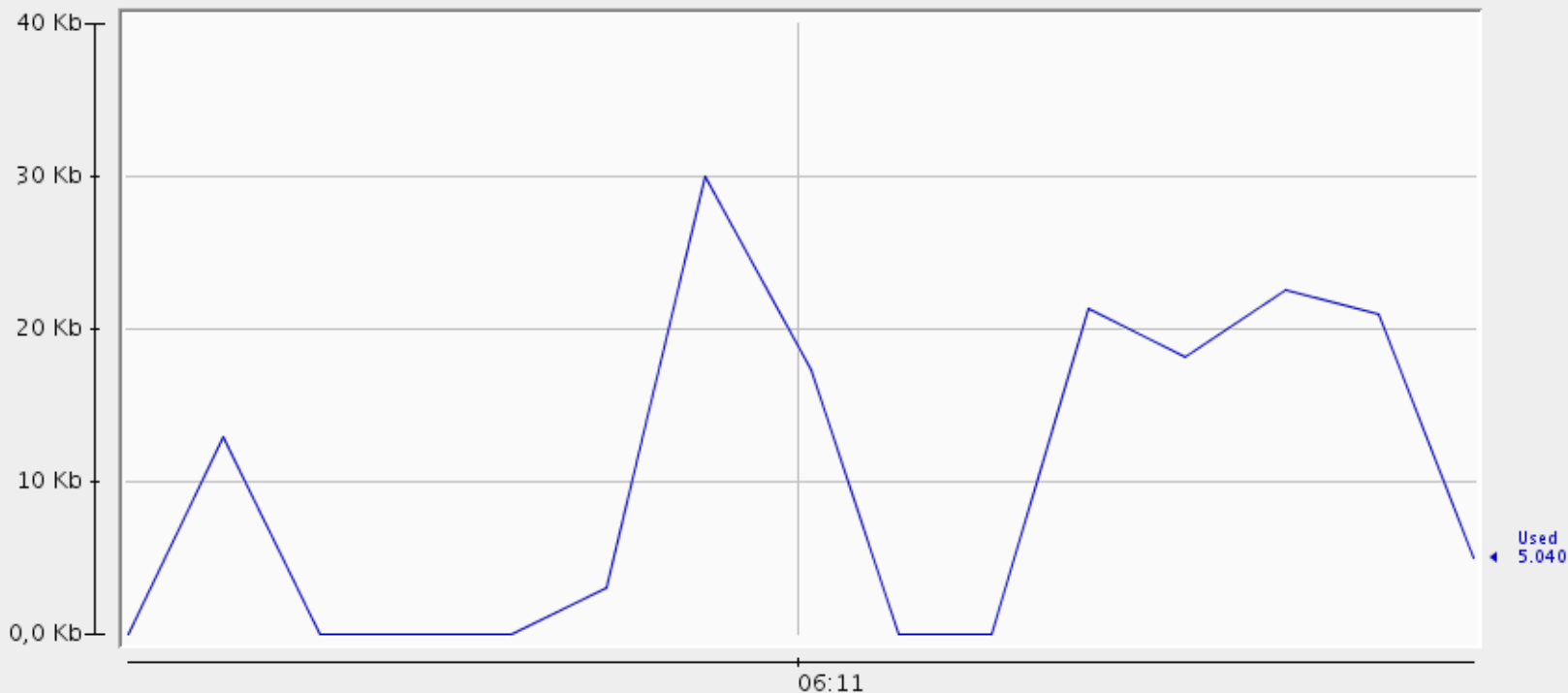
pid: 12269 Java2Demo.jar

Overview Summary **Memory** Threads Classes MBeans VM

Chart: Memory Pool "Survivor Space"

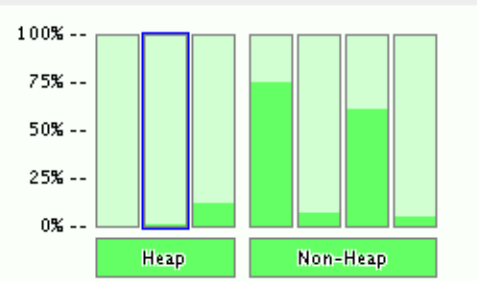
Time Range: All

Perform GC



Details

Time: 2006-03-10 06:11:28
Used: 4 kbytes
Committed: 64 kbytes
Max: 448 kbytes
GC time: 0,273 seconds on Copy (52 collections)
 2,357 seconds on MarkSweepCompact (20 collections)



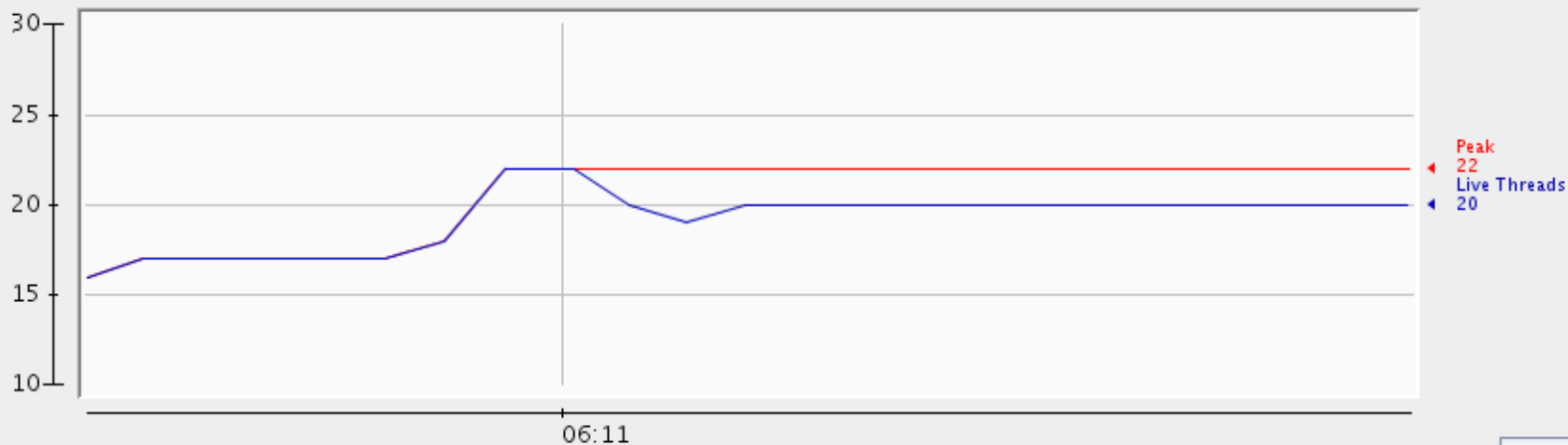
Connection Window

pid: 12269 Java2Demo.jar

- Overview
- Summary
- Memory
- Threads**
- Classes
- MBeans
- VM

Time Range: All

Number of Threads



Threads

- Reference Handler
- Finalizer
- Signal Dispatcher
- Java2D Disposer
- AWT-XAWT
- AWT-Shutdown
- AWT-EventQueue-0
- DestroyJavaVM
- Attach Listener
- RMI TCP Accept-0
- RMI TCP Connection(1)-192.3
- RMI Scheduler(0)
- JMX server connection timeo
- RMI TCP Connection(2)-192.3

Filter

Detect Deadlock

Correndo com o Mustang

- Diagnóstico de `OutOfMemoryError`
 - Atualmente com JDK 5
Exception in thread "main"
`java.lang.OutOfMemoryError`
 - Com mustang

```
Exception in thread "main" java.lang.OutOfMemoryError:  
Java heap space  
at ConsumeHeap$BigObject.(ConsumeHeap.java:22)
```

```
-----  
Exception java.lang.OutOfMemoryError:  
requested 16 bytes for CHeapObj-new. Out of swap space?
```

Correndo com o Mustang

- Debug
 - Suporte inicial a outras linguagens através de JNI
 - Incursão em classes que não foram compiladas com opção '-g'

Correndo com o Mustang

- Scripts

- `jrunscript`

- Linguagens como JavaScript e Python, podem funcionar com Java nativamente e com mais desempenho

Correndo com o Mustang

- Houveram diversas melhorias focadas em desempenho e percepção de resposta
 - Melhoria na alocação de registros do HotSpot client
 - Image IO (Java 2D)
 - Uso de epoll para New I/O Selector
 - Double buffering em frames e widgets

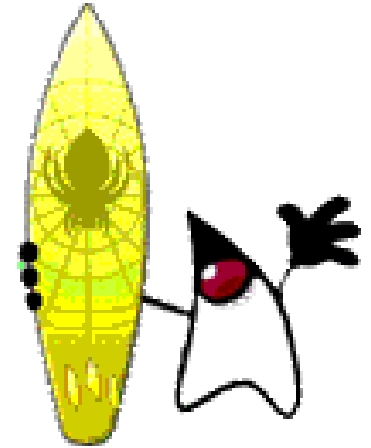
Demonstração



Faça o mustang correr com você

- Você pode usar o Mustang hoje
- Faça o download
<https://mustang.dev.java.net>
- Possui desempenho melhor que as versões anteriores
- E você ainda participa de uma comunidade vibrante

Muito Obrigado



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<http://www.soujava.org.br>

<https://mustang.dev.java.net>