

Write once, **test everywhere?**

Cross platform development and testing with Eclipse

Agenda

- ▶ **Introduction & motivation**
- ▶ **Affected areas**
- ▶ **Demo: differences & varieties**
- ▶ **Conclusions**
- ▶ **Tips & solutions**

Introduction / motivation

- ▶ **Eclipse RCP - a cross-platform platform**
- ▶ **necessitate cross-platform awareness**
 - development
 - testing

Operating System	Version	Hardware	JRE	Windowing System
Windows	7	x86 32-bit	Sun Java 5 Update 14 IBM Java 5 SR6b	Win32
		x86 64-bit		
	Vista	x86 32-bit	Sun Java 5 Update 14 IBM Java 5 SR6b BEA JRockit 27.4.0	
		x86 64-bit	Sun Java 5 Update 14 IBM Java 5 SR6b	
	XP	x86 32-bit	Sun Java 6 Update 3 Sun Java 5 Update 14 Sun Java 1.4.2 Update 16 IBM Java 5 SR6b IBM Java 1.4.2 SR10 BEA JRockit 27.4.0	
		x86 64-bit	Sun Java 5 Update 14 IBM Java 5 SR6b	
Red Hat Enterprise Linux	5.0	x86 32-bit	Sun Java 6 Update 3 Sun Java 5 Update 14 Sun Java 1.4.2 Update 16 IBM Java 5 SR6b IBM Java 1.4.2 SR10 BEA JRockit 27.4.0	GTK
		Power 64-bit	IBM Java 5 SR6b	
	4.0	x86 64-bit	Sun Java 5 Update 14 IBM Java 5 SR6b	
SUSE Linux Enterprise Server	11	x86 32-bit	Sun Java 5 Update 14 IBM Java 5 SR6b	GTK
		x86 64-bit		
		Power 64-bit	IBM Java 5 SR6b	
Ubuntu Long Term Support	9.04	x86 32-bit	Sun Java 5 Update 14 IBM Java 5 SR6b	GTK
		x86 64-bit		
Sun Solaris	10	x86 32-bit	Sun Java 5 Update 14	GTK
		SPARC		
HP-UX	11i v2	ia64	HP-UX Java 5 Update 7	Motif 2.1
IBM AIX	5.3	Power	IBM Java 5 SR6b	Motif 2.1
Apple Mac OS X	10.5	Universal	Apple Java 10.5 Update 1	Carbon
		Universal 32-bit		Cocoa
		Universal 64-bit		

(Af/In)-fected Areas

▶ Area 1 - Compiling

JRE – 1.4.2 → 1.6

▶ Area 2 - Deployment

required Plug-ins / Fragments

▶ Area 3 - Startup

Launcher

▶ Area 51 - GUI

underlying Windowing System

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		Universal 64-bit		

Area 1, 2, 3

▶ **Compiling + Deployment + Launching**

MANIFEST.MF – Execution Environments

Target Platforms

Product configuration

PDE Build

▶ **Area 1-3: “well known” & “often discussed”**



Area 51 - GUI



Not “well known” – but “knowledge is power”

Demo

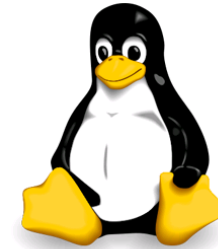
► Scenario

Eclipse 3.5 R1 - IDE for Java Developers



► Runtime Environment

- | | |
|------------------|-------|
| 1. Windows | 32bit |
| 2. Linux GTK | 32bit |
| 3. MacOS X Cocoa | 64bit |



Obvious differences (1/2)

▶ **SWT - native Look&Feel**

▶ **Look**

Widget

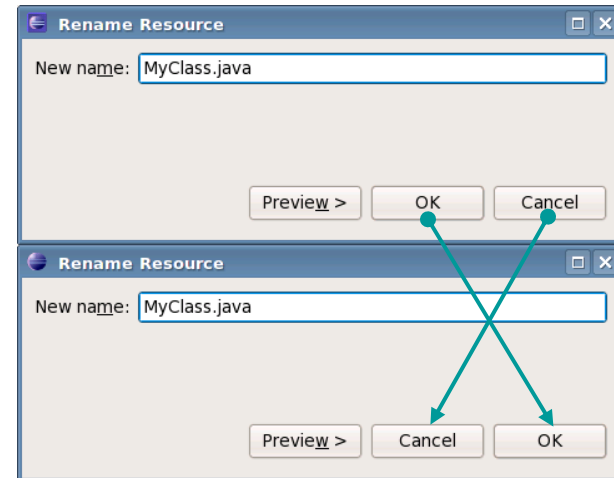
Size&Location: absolute vs. relative

Fonts

Colors

Layout (Dialogs, Wizards, ...)

button order (e.g. 3.4 ↔ 3.5 GTK)



Obvious differences (2/2)

Application

Menu Bar + Menu Items

Native Dialogs – non-java
file chooser,
color picker,
printing, ...

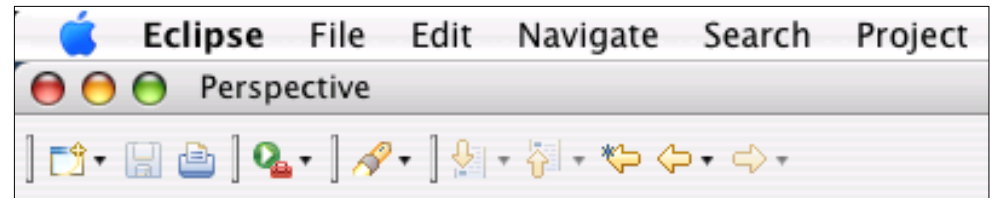
Shortcuts (M1-3 + Key)

Toolbar layout

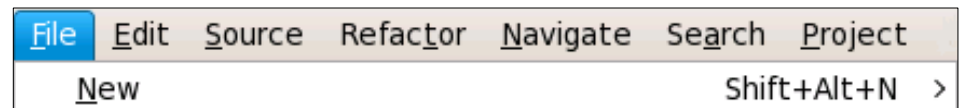
Tooltips

detached Views

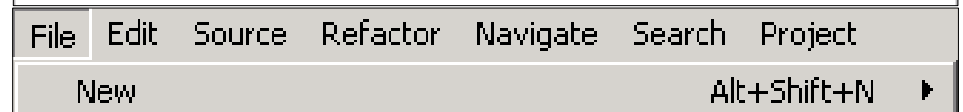
....



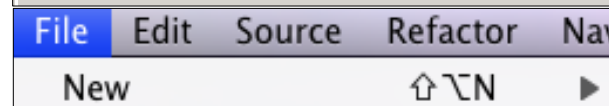
Unix OS



Win OS



MacOSX





Non-obvious differences (1/3)

▶ Feel

setting, extending (multi-)

usage of **modifier keys**

gaining and losing

number of **clicks**

opening and closing

usage of **mouse buttons**

selection

focus

context menus



Non-obvious differences (2/3)

cut,

modifier keys, **gestures**

expanding and collapsing

auto **expansion level**

copy&paste
drag&drop

trees

Non-obvious differences (3/3)

▶ Performance

e.g. large trees ($> 2^{14}$) on Mac are rendered 200 times faster

▶ UI is likely to change

Look&Feel due to OS, SWT, RCP dependencies

▶ Bugs - platform specific

caused by RCP, SWT, JRE, OS

Conclusion

▶ Steps to take

1. Don't panic!

- Where there's a will there's a way.

2. Be aware!

- Consider known issues.

3. Specify once & test'em all!

- Use the right tools.



The right tool...

- ▶ **Platform independent**
 - High level actions
 - tough object recognition
- ▶ **easy to maintain tests**
 - readable
 - modular & single sourcing
- ▶ **experienced tester**



Thank You!

▶ **Any questions?**