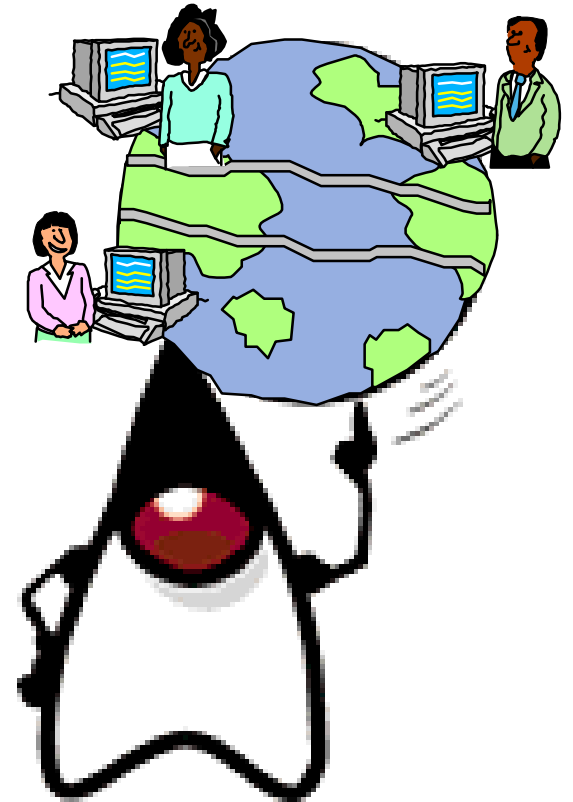


World of Javatm

George Farr
Phil Coulthard
IBM Toronto Lab



tm Java is a trademark of Sun Microsystems, Inc

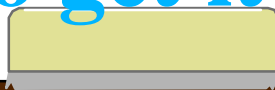


Agenda



AS/400 Application Development

- What is this Java stuff?
- Will Java replace RPG, C, or C++?
- House of Java
- Using Java
- Java and the Internet
- Java and the AS/400
- New Stuff: Servlets, JSPs and EJBs
- Where to get it all!





Agenda



AS/400 Application Development

What is
this Java
stuff?





What Is Java?



AS/400 Application Development



- **OO language**, based on C++, Smalltalk, ...
- Created by **Sun Microsystems**, end of 1995
- Originally for sprucing up **Web pages** via "applets"

▸ *Downloadable to Java-enabled web browsers*



- Also usable for standalone **applications**

▸ *New focus is using Java as a server language*

- **Interpreted**, but compilers are appearing

▸ *OS/400 has a compiler as of V4R2!*



- Extremely **fast adoption** and maturity rate!



Why all the fuss?



AS/400 Application Development



- **Name**

- ▶ *Its cool. Well, that's important*

- **Internet**

- ▶ *Java is designed foremost for internet programming*

- **Portability**

- ▶ *Run same code on Windows, OS/400, Network Stations, Toaster ovens,*

- **Accessability**

- ▶ *Java is free from the Web. Best possible price.*



The Name...



AS/400 Application Development

- **Name**

- ▶ *Originally "Oak"*

- Language originally designed by Sun engineers for programming small consumer devices

- ▶ *Redirected / renamed in 1995*

- to an internet and web-browser language
 - But also a very good general purpose language
- Right attributes:
 - Small but full function
 - Secure, designed for communications in mind
 - Downloadable on demand

- ▶ *Name "Java" came from the coffee engineers drank?*



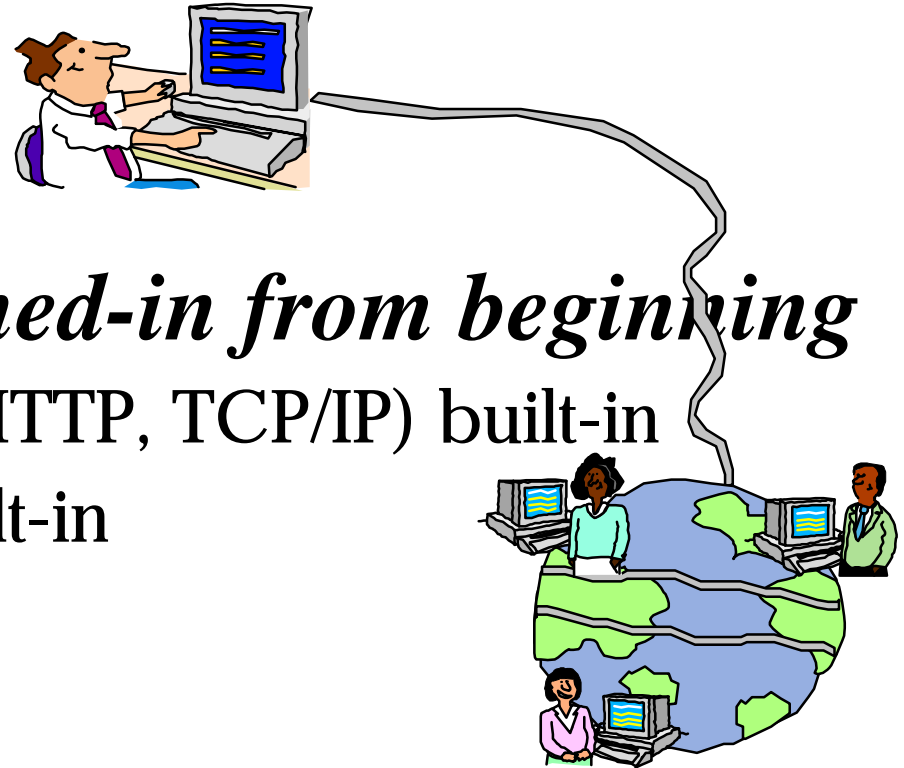


The Internet...



AS/400 Application Development

● Internet



▶ *Internet support designed-in from beginning*

- Communications support (HTTP, TCP/IP) built-in
- Multi-threading support built-in
- Security built-in

▶ *First web page programming language*

- Write applets in Java
- Run them inside HTML-authored web pages
- Applets downloaded on demand with web page



Portability



AS/400 Application Development

- **Portability**

- ▶ ***Interpreted language***

- Just need the interpreter ("Java Virtual Machine") on any operating system or web browser to run Java



- ▶ ***Rich functionality "built-in"***

- Rather than having to code to system APIs, you code to Java APIs
- Java APIs part of interpreter, so they are supported everywhere it is

- ▶ ***Industry buy-in***

- Sun writes each release of Java language for Solaris and Windows operating systems
- "Licensees" like IBM license and port to their system



Accessibility



AS/400 Application Development

- **Accessibility**

- ▶ ***Java is free!***

- Vendors (like IBM) pay to license it
- Users (like you) get it for free!
- Interpreter comes with system or browser
- Development kit comes with system or is downloadable from the web



- ▶ ***Lots of options for learning***

- Many free tutorials, articles, discussion forums on the web (search for "Java" at www.yahoo.com)
- A thousand books! (www.amazon.com)

- ▶ ***Tools are optional***

- Minimal requirement: development kit plus editor
- But tools do add value! Most have free/cheap versions

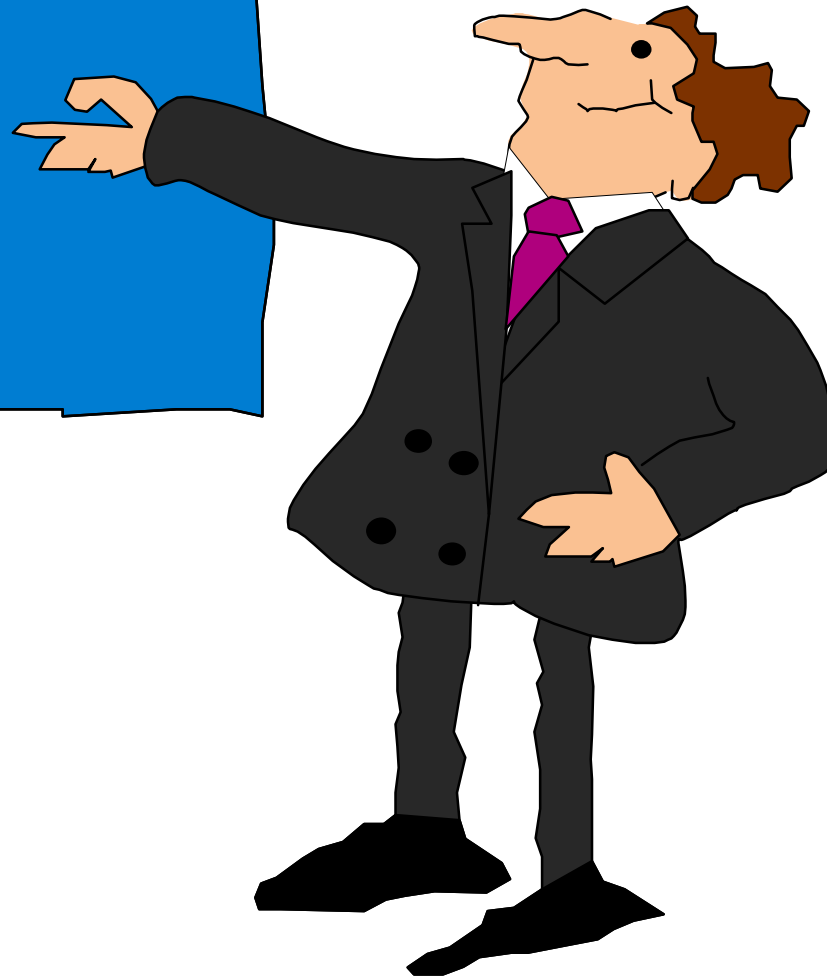


Agenda



AS/400 Application Development

Will Java
replace
RPG?





Java the Language



AS/400 Application Development

- **Versus RPG**

- ▶ *Object oriented versus procedural*
- ▶ *Interpreted versus compiled per operating system*
- ▶ *Syntax is free format - very much like C/C++*
- ▶ *Strongly typed like RPG (all variables must be declared)*

- **Versus C++**

- ▶ *A subset of C++:*
 - No pointers, memory management, operator overloading, include files, make files, multi-inheritance
- ▶ *A superset of C++:*
 - Garbage collection, thread support, networking
 - Class libraries part of language, not vendor add-ins

▶ ~~*One half the learning curve, triple the productivity*~~



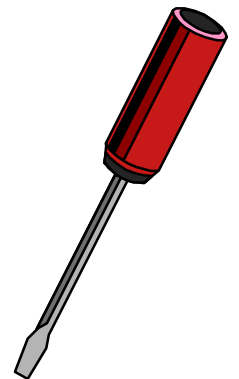
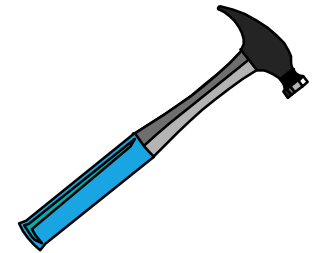
Will Java replace RPG?



AS/400 Application Development

NO!

- **RPG was then what Java is now...**
 - ▶ *the right language at the right time*
- **Use Java where it makes sense...**
 - ▶ *GUI "front end"*
 - ▶ *New "pieces" added to existing applications*
 - ▶ *New applications if OO desired*
- **Use RPG IV where it makes sense...**
 - ▶ *Host (AS/400) batch code*
 - ▶ *Reports*
 - ▶ *Business logic*





Will Java replace



AS/400 Application Development

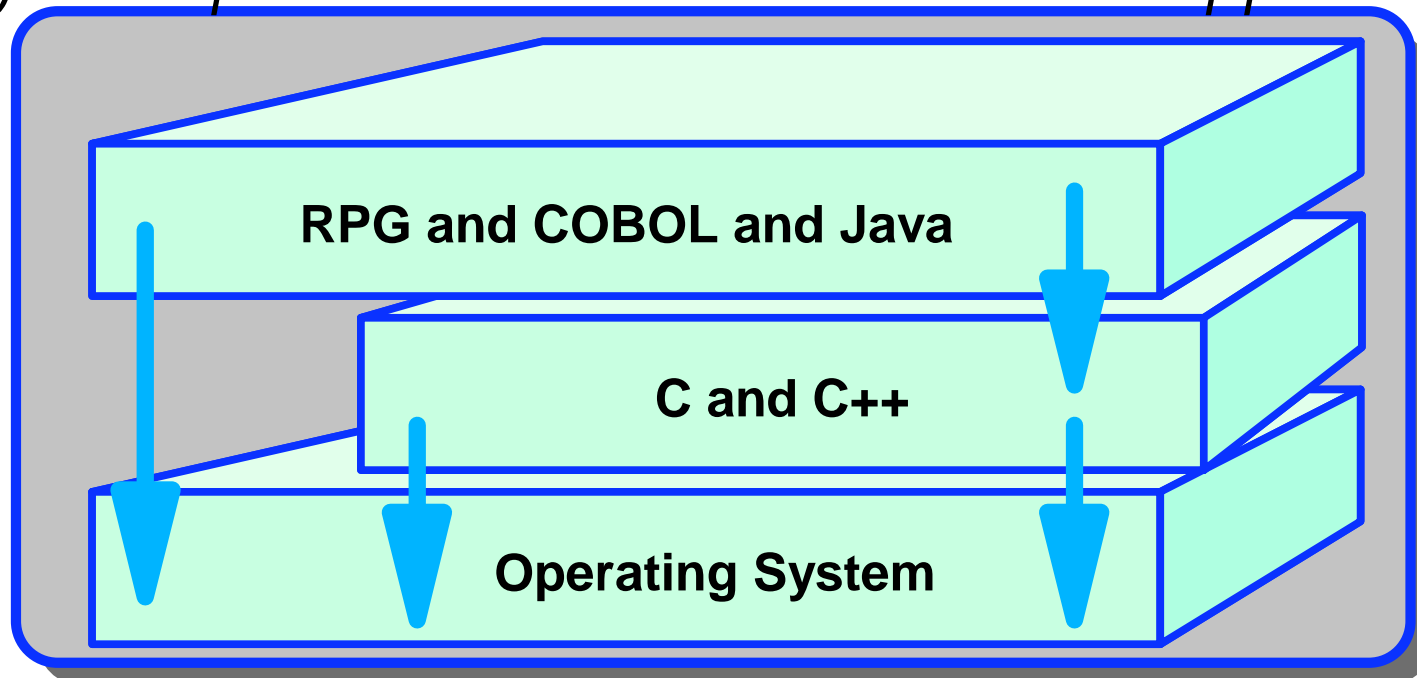
C&C++?

- **No...**

- ▶ *C & C++ are system languages*
- ▶ *They enable efficient access to low level OS functions*

- **But...**

- ▶ *They have proved unsuitable for business applications!*





Agenda



AS/400 Application Development

The
House of
Java





Java Landscape



AS/400 Application Development

- **How is Java packaged?**

- ▶ *In a "Java Development Kit" (JDK)*

- **How do you get Java?**

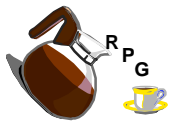
- ▶ *With your OS or Web browser, or download from the web*

- **How much does Java cost?**

- ▶ *Nothing*

- **What is in the JDK?**

- ▶ **JAVAC** ==> *source code compiler*
- ▶ **JAVA** ==> *bytecode interpreter (runtime). Also in OS's.*
- ▶ *...other command-line tools*
- ▶ *class libraries ("packages")*
- ▶ *documentation (in the form of HTML)*



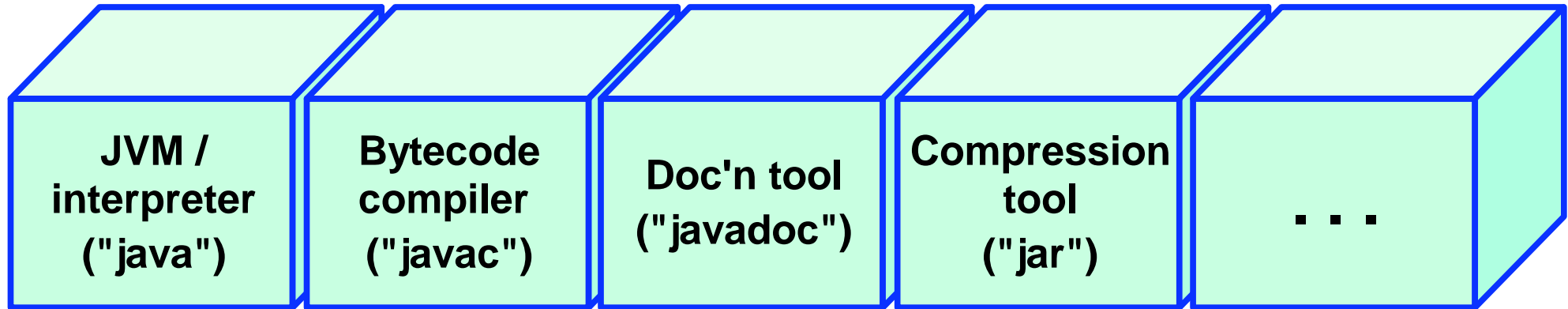
JDK Contents



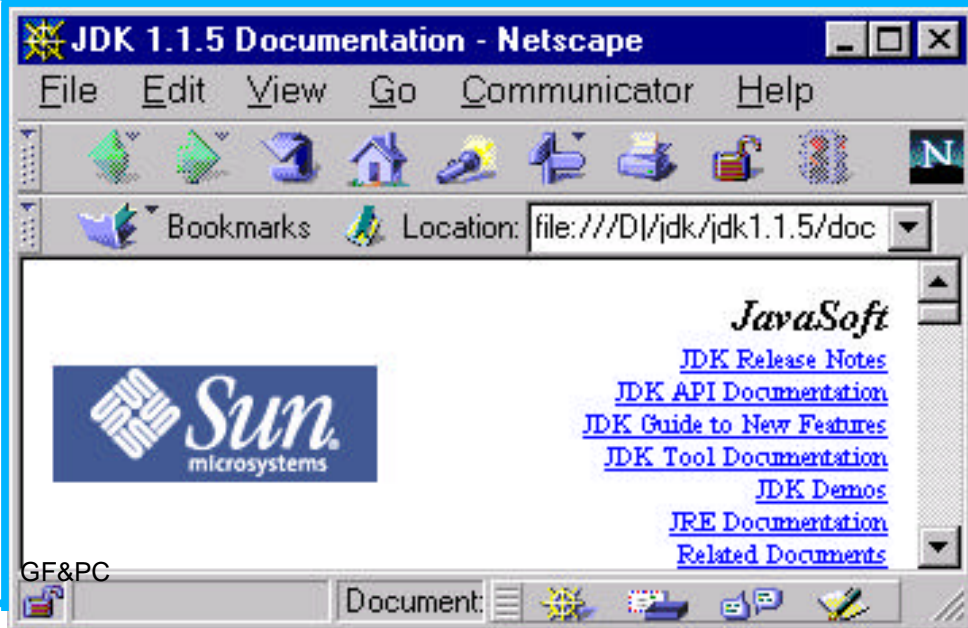
AS/400 Application Development

- **JDK Contains....**

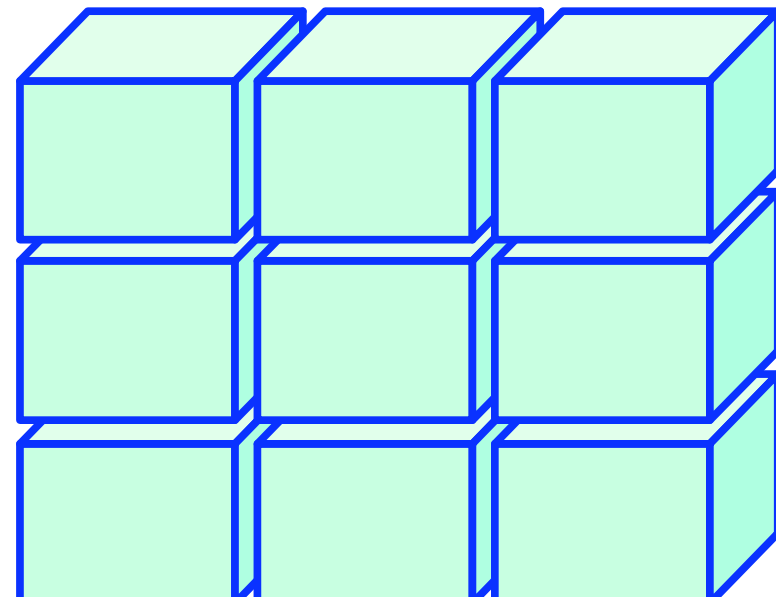
Command line tools



Documentation



Packages = Class Libraries

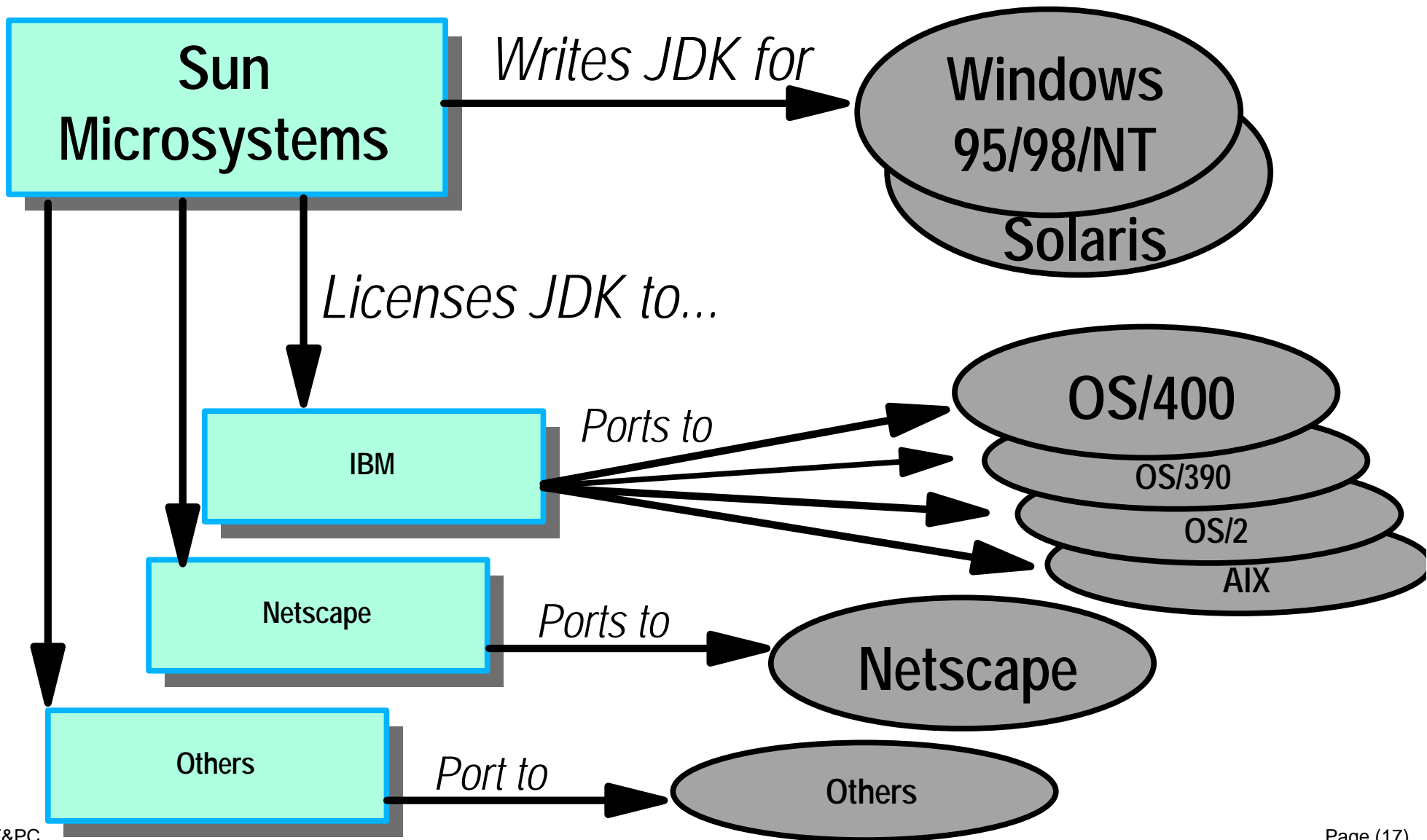




JDK Licensing



AS/400 Application Development

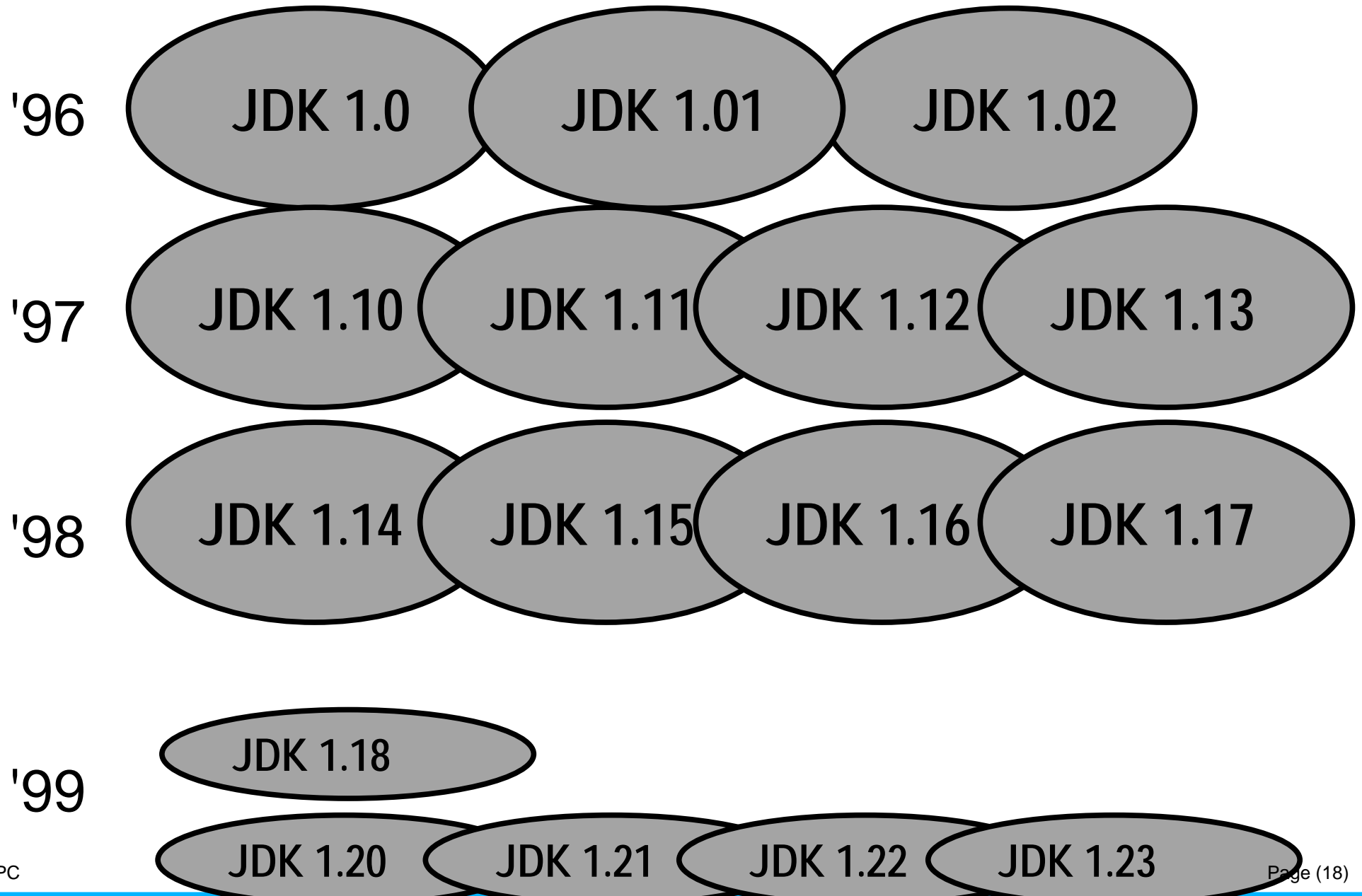




JDK Currency



AS/400 Application Development





Java Terms



AS/400 Application Development

- **JVM: Java Virtual Machine**
 - ▶ *Java interpreter. Comes with JDK, OS's, Web Browsers and Network Stations ("thin clients")*
- **Applications and Applets**
 - ▶ *Java standalone and Web Browser programs*
- **Classes**
 - ▶ *Compiled Java source files*
- **Bytecode**
 - ▶ *What Java source is compiled into, and JVM "interprets"*
- **Java Beans**
 - ▶ *Classes that follow conventions. "Components"*



Java Tools



AS/400 Application Development

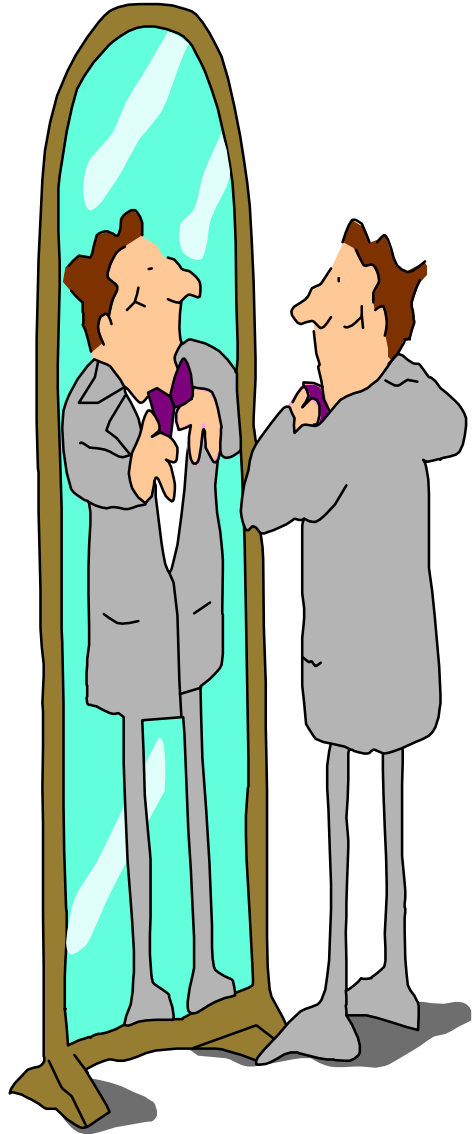
- **What about Java tools?**
 - ▶ *Not free! However, they are optional*
 - ▶ *All you need to get started is the JDK and an editor*
- **Why buy a Java development tool?**
 - ▶ *They build on JDK and add great function, productivity*
- **What tools are there?**
 - ▶ *Many, many.*
 - ▶ *Only two have AS/400 unique support:*
 - IBM **VisualAge for Java**, Inprise **JBuilder/400**
- **How should I start?**
 - ▶ *Trial version of a tool or learn Java with JDK + books + editor (like CODE/400's) first, then choose full Java tool*



Virtual Machine



AS/400 Application Development



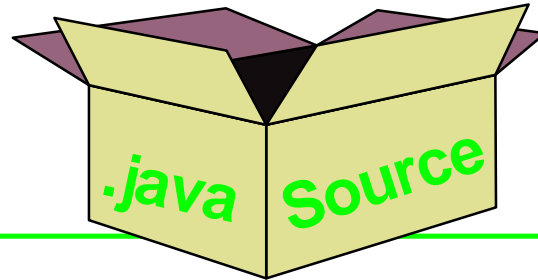
- **What is a Virtual Machine?**
 - ▶ *Abstraction of an Operating System*
 - Supplies "services" a program typically needs, shielding program from OS
 - Calls necessary OS services for you
 - ▶ *An interpreter, which reads and interprets (e.g., runs) "bytecodes"*
 - Java source code is "compiled" into bytecodes
- **Once ported to an OS, Java code can be run there!**



JVM Everywhere

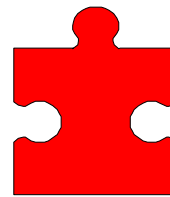
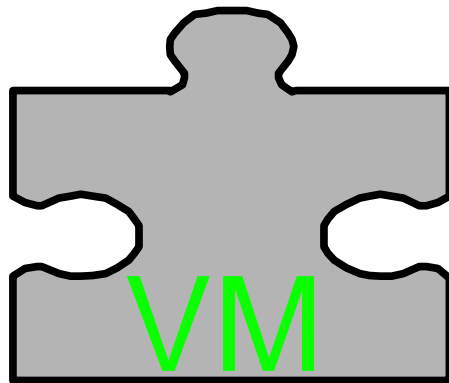
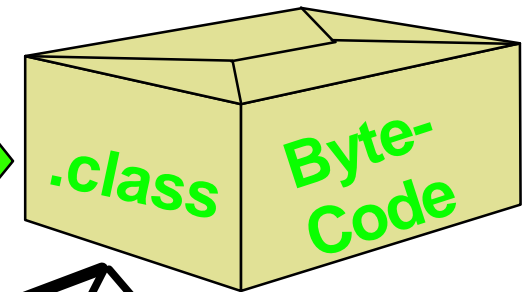


AS/400 Application Development

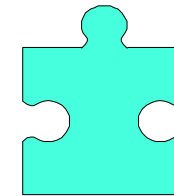


```
class CoffeeApp
{
    public static void main (String args[])
    {
        System.out.println("Wake up and...");
    }
}
```

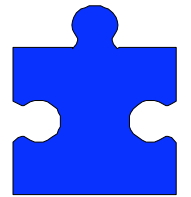
Compile



Web
Browsers



Operating
Systems



Network
Stations

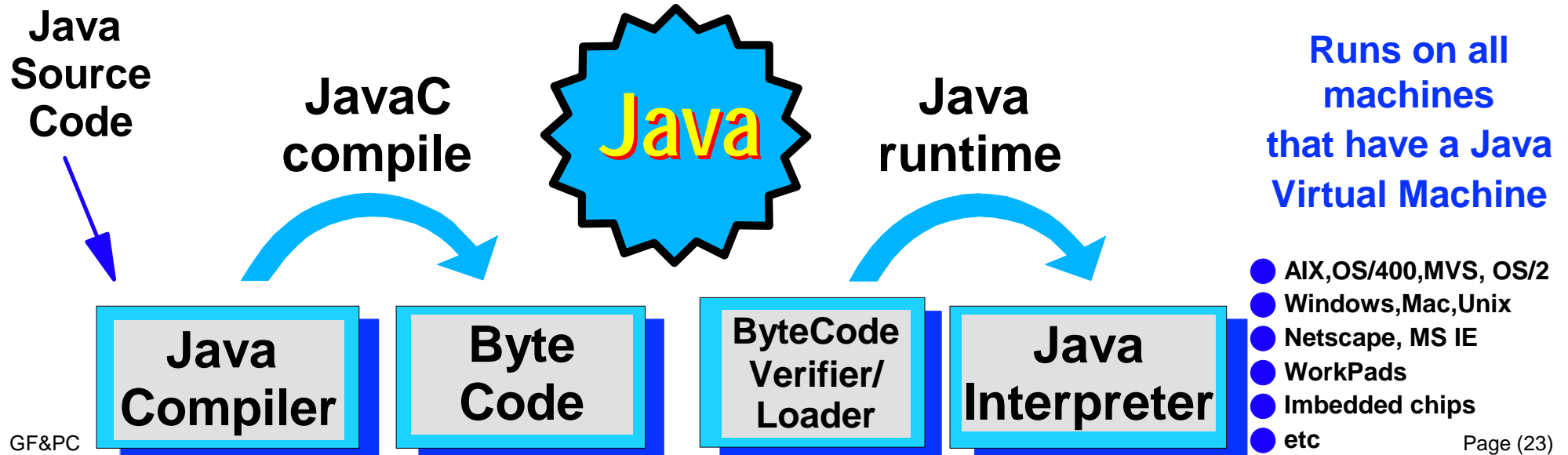
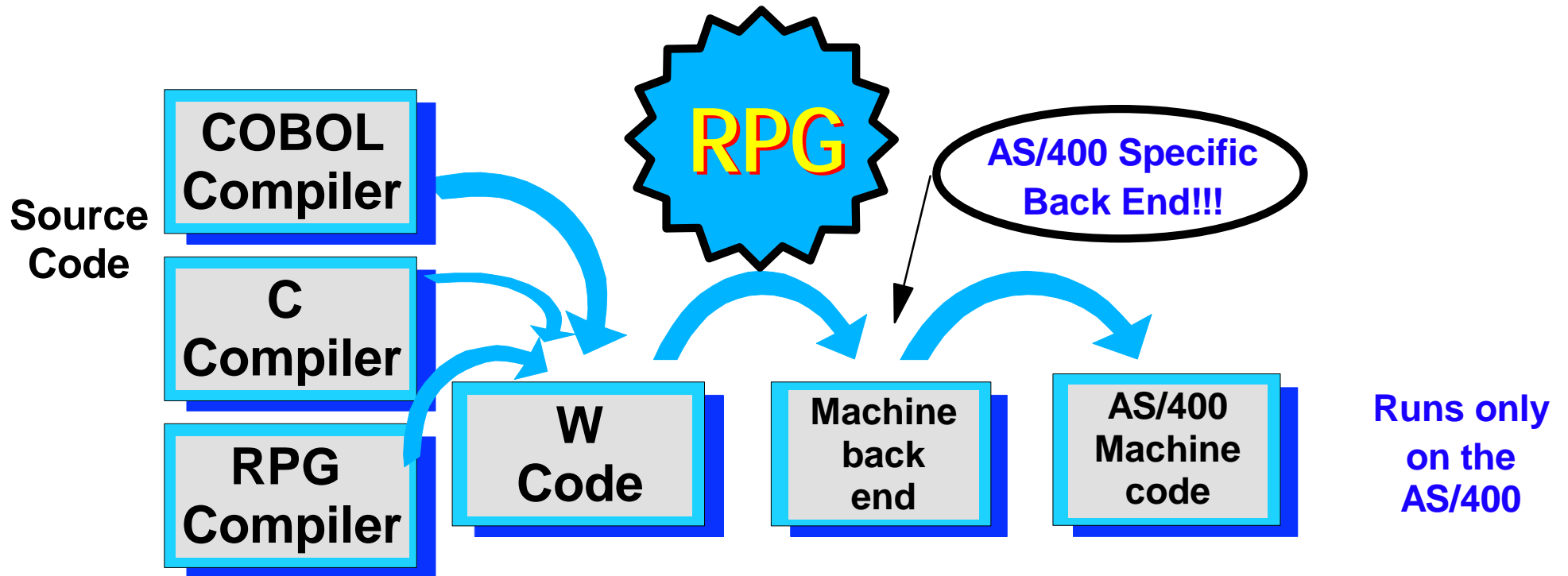
✓ *"Write once, run anywhere"*



Compiling To ByteCode



AS/400 Application Development



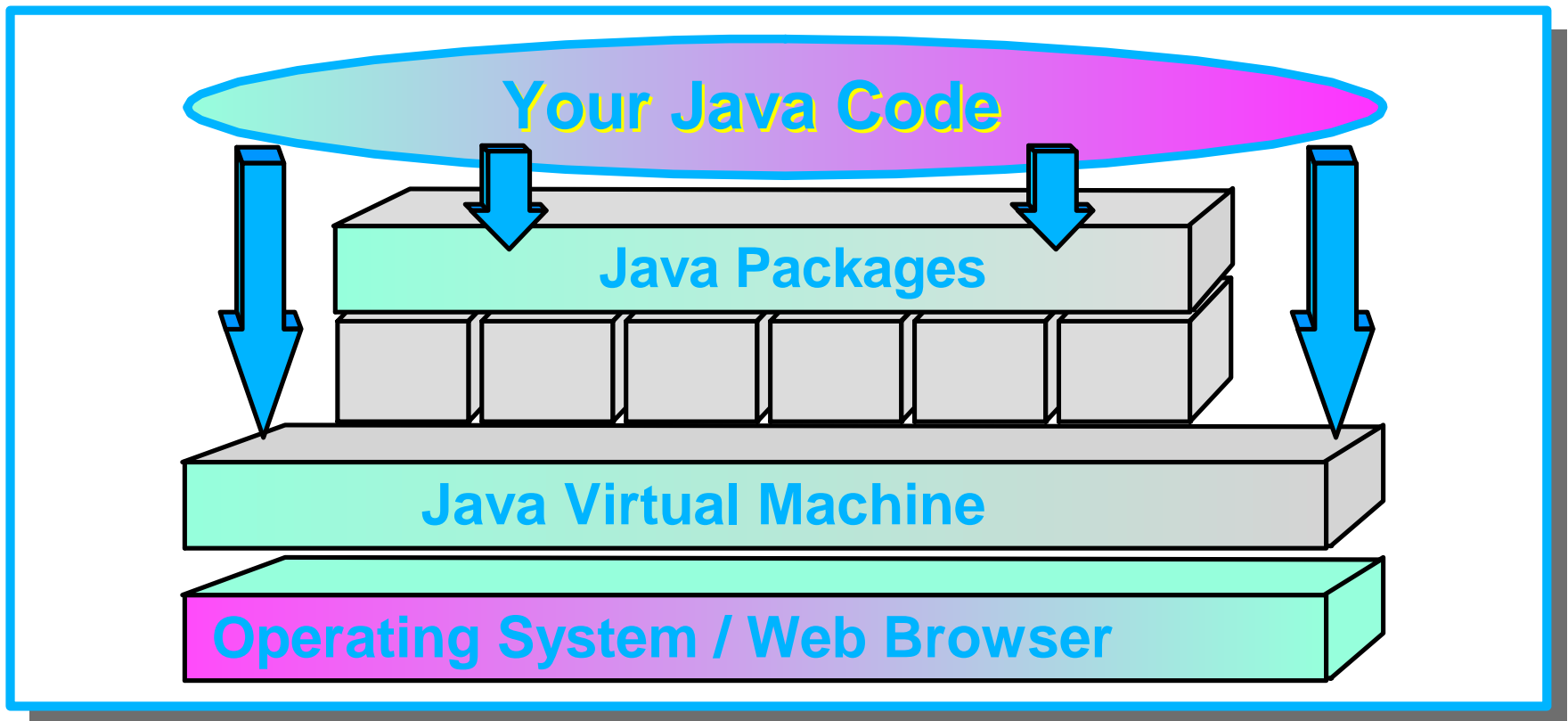


The Java Platform



AS/400 Application Development

- **Java is often referred to as a "platform"**
 - ▶ **Operating System independent code!**
 - ▶ **"Write once, run everywhere"!**
 - ▶ **Supplies as many Operating System functions as possible, sheilding your code from real OS**





Packages in 1.1.x



AS/400 Application Development

Package Description

java.lang	<i>Base set of language classes, like Object and Class</i>
java.util	<i>Utility "value add" classes like Vector and Date</i>
java.awt	<i>Abstract windowing toolkit, user interface components</i>
java.awt.event	<i>Abstract windowing toolkit, user input events</i>
java.applet	<i>Base class for creating applets that run in a web browser</i>
java.image	<i>Classes for working with images like .gif files</i>
java.text	<i>Internationalization classes for writing "locale sensitive" code</i>
java.sql	<i>Framework for JDBC drivers, which is "implemented" by database vendor supplied JDBC drivers.</i>
java.io	<i>For working with streams, such as flat files</i>
java.math	<i>Math classes (hey, just like high school!)</i>
java.net	<i>Networking classes for writing own TCP/IP and HTTP communications code</i>
java.rmi	<i>Remote method invocation, the object oriented way to write distributed applications: See docs/guide/rmi/index.html</i>
java.security	<i>Framework for implementing digital signatures and message digests. See docs/guide/security/index.html</i>

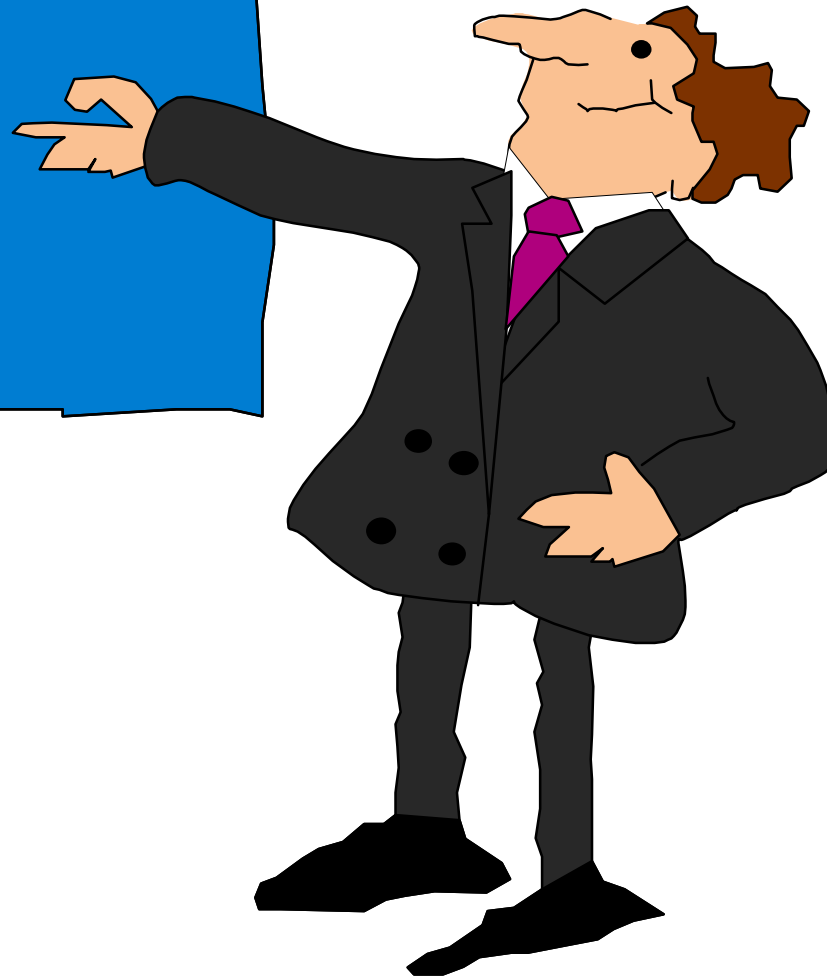


Agenda



AS/400 Application Development

Using
Java





Putting Java to Use...



AS/400 Application Development

- **Where might you use Java, today?**

- ▶ *User Interface*
- ▶ *Small new piece of business logic*
- ▶ *Small new piece of additional function*
- ▶ *Getting a Java "bean" off the shelf and using it with an existing RPG application*
- ▶ *Web page applets*

- **Where might you use Java, tomorrow?**

- ▶ *For new applications, including the AS/400 business logic*
- ▶ *As an integrated part of a Lotus Domino application*

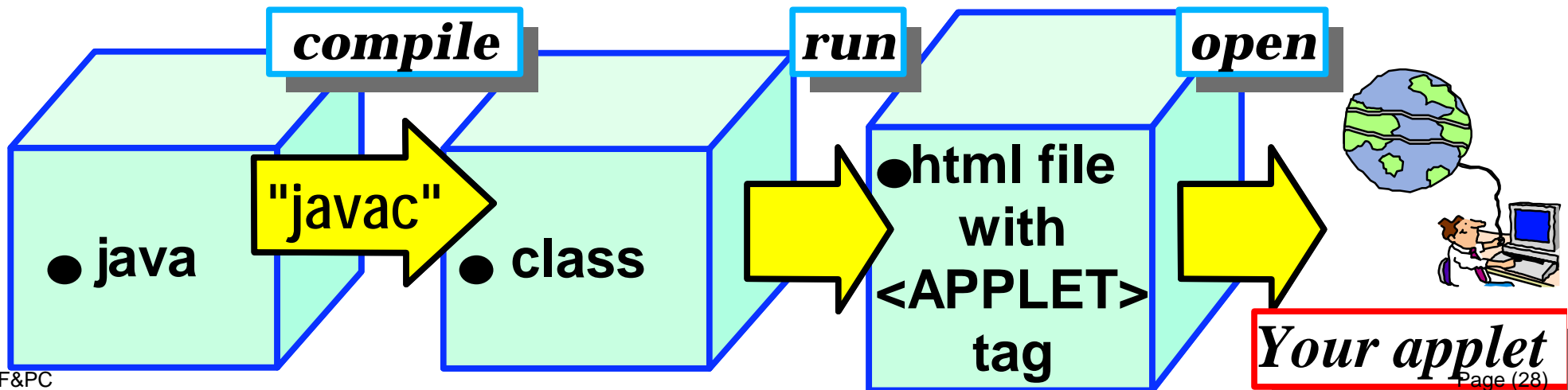
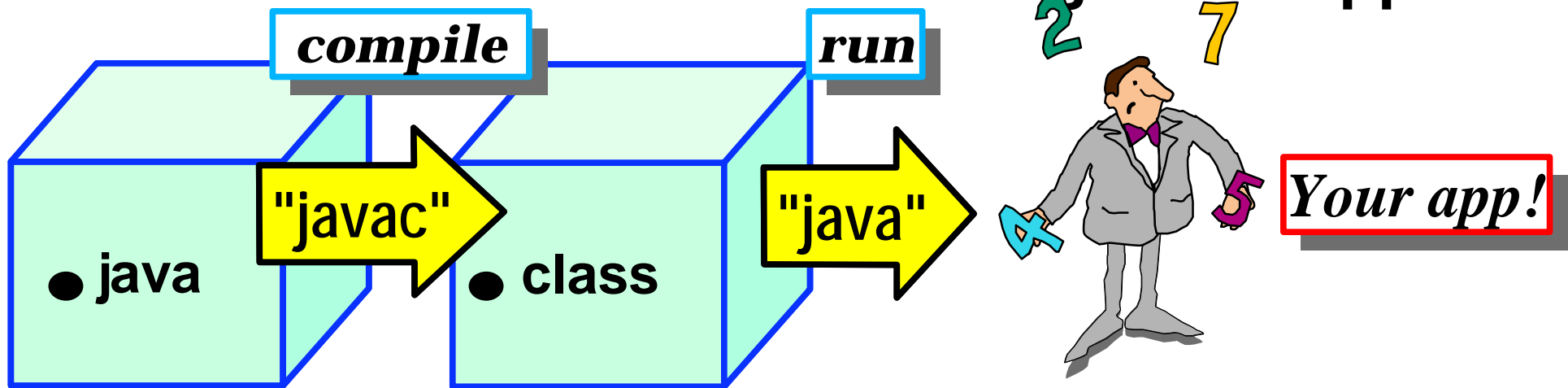


Java LifeCycle



AS/400 Application Development

- Use **JAVAC** to compile
- Use **JAVA** to run application
- Use **HTML** file with **<APPLET>** tag to run applet



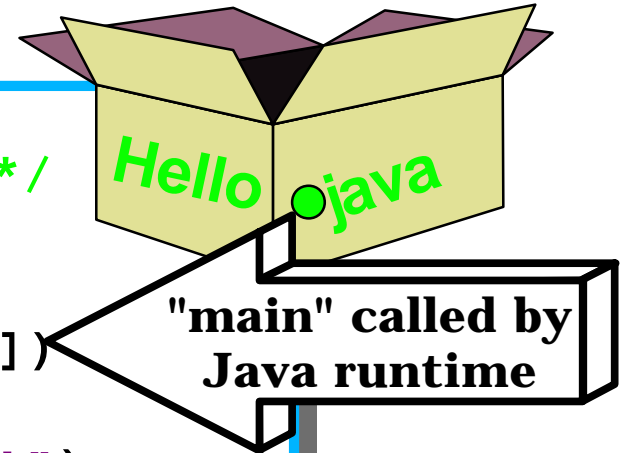


Compiling Java



AS/400 Application Development

```
/* Prototypical Hello World application */  
public class Hello  
{  
    public static void main(String args[])  
    {  
        System.lout.println("Hello World!");  
    }  
}
```



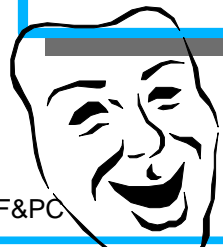
E:\mycode> javac Hello.java
Hello.java:6: No variable lout defined in class System
 System.lout.println("Hello World!");
 ^
1 error



```
System.out.println("Hello World!");
```



E:\mycode> javac Hello.java



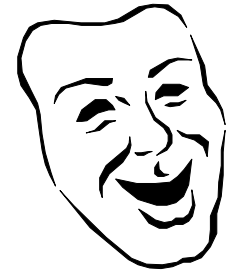
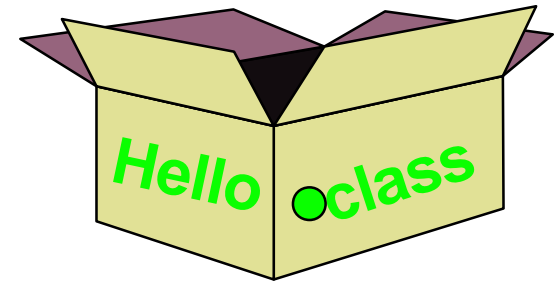


Running Java Apps



AS/400 Application Development

```
E:\mycode>java Hello  
Hello World!
```



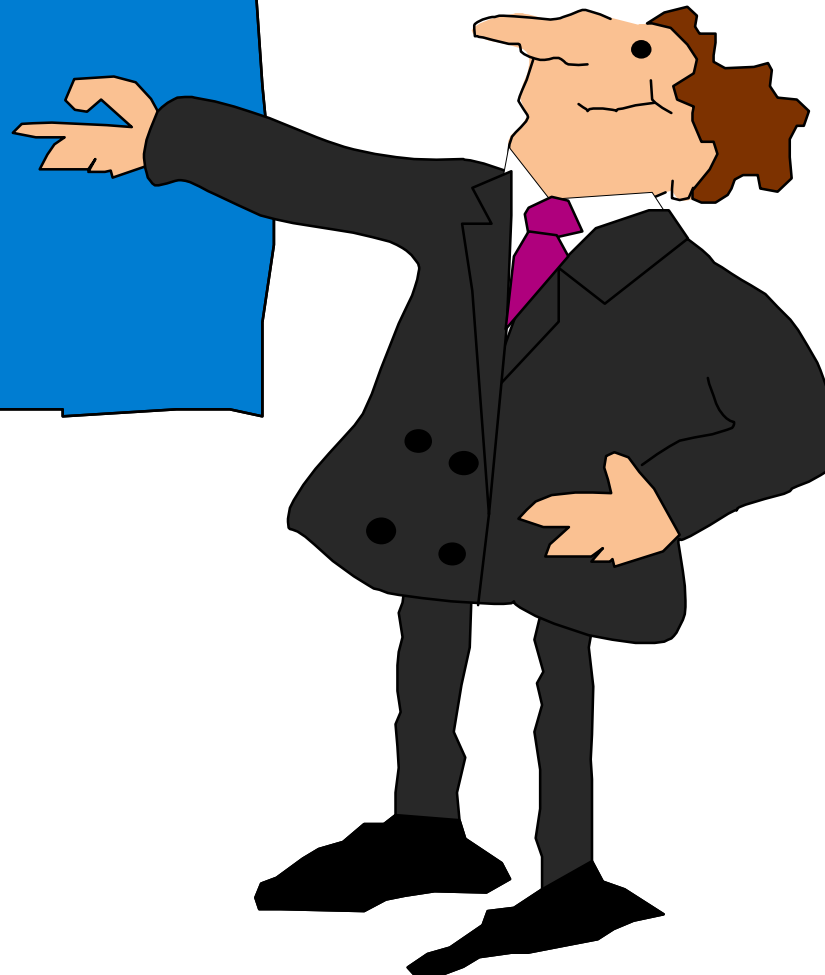


Agenda



AS/400 Application Development

Java and the Internet





Applet Vs Application



AS/400 Application Development

APPLETS

- Run only in web browser pages
 - ▶ HTML "APPLET" tag
 - ▶ Entry point is "init" method
- Use real estate of web browser
- Have security restrictions ("sandbox")

APPLICATIONS

- Run from command line
 - ▶ java MyApp
 - ▶ Entry point is "main" method
- Use own frame and dialog windows
- Have no security restrictions



- **Tag based language. UIM-like but interpreted**
- **Tag syntax: `<tag>` and `</tag>` (ending)**
 - ▶ *`<html>` and `</html>` -> start and end of each file*
 - ▶ *`<head>` and `</head>` -> start and end of page head*
 - ▶ *`<body>` and `</body>` -> start and end of page body*
 - ▶ *``, `` and ``, `` -> Unordered, Ordered list*
 - ▶ *`` and optional `` -> List Items*
 - ▶ *`<h1>`, `<h2>`, `<h3>` and `</hn>` -> Headings 1, 2, 3 ...*
 - ▶ *`<p>` and optional `</p>` -> start and end Paragraph*
 - ▶ *`<hr>` -> Horizontal Rule*
 - ▶ *`<u>```, `<i>``</i>`, ```` -> Underline, Italic, Bold*



Applet Tag



AS/400 Application Development

- Another HTML tag Web Browsers support
- Points to a Java class on the server
 - ▶ **<APPLET params>** and **</APPLET>** -> start,end.
 - ▶ *params=...*
 - **CODE=** -> name of class file. CODE=MyApplet.class
 - **CODEBASE=** -> name of subdirectory. Optional
 - **ARCHIVE=** -> name of JAR file containing applet
 - **WIDTH=** , **HEIGHT=** -> size in pixels
 - **ALIGN=** -> Alignment options: LEFT, RIGHT, BOTTOM, TOP, TEXTTOP, MIDDLE, ABSMIDDLE, BASELINE, ABSBOTTOM
 - **VSPACE** , **HSPACE** -> vertical, horizontal space
 - ▶ **<PARAM NAME= ... VALUE= ...>** *Hardcoded-parameters*



Java and the Web



AS/400 Application Development

- **HTML, image and Java class files go on server, like your AS/400**
- **Served "on demand" to Web browsers by HTTP Server software**
- **For AS/400, use Integrated File System**
 - ▶ *See "OS/400 TCP/IP Configuration and Reference V4R3" manual.*
 - <http://as400bks.rochester.ibm.com>
- **Need to work with ISP to put onto Web**

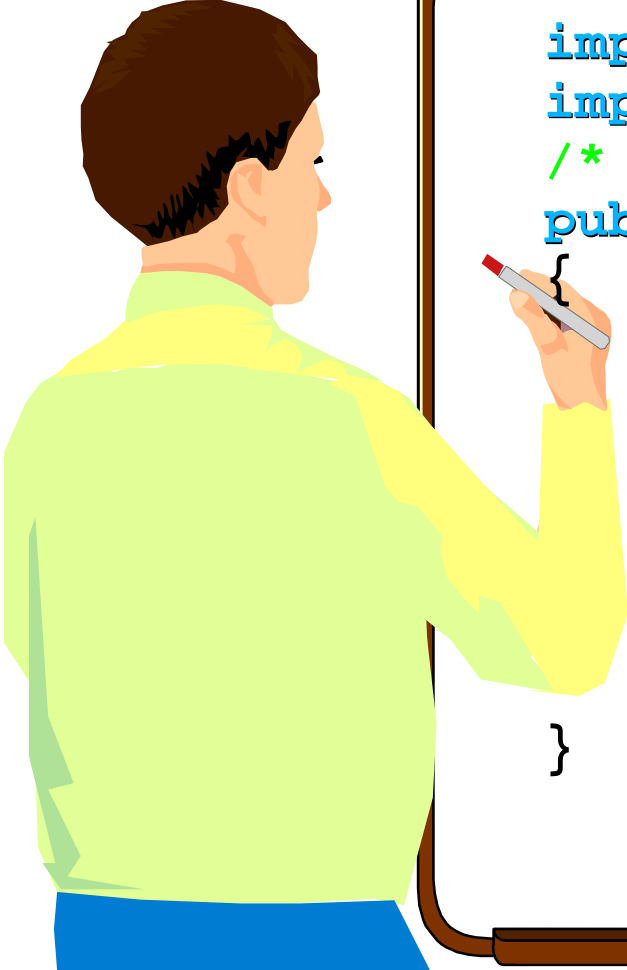


My First Applet



AS/400 Application Development

- Type this in *HelloApplet.java*



```
import java.awt.*;
import java.applet.*;
/* Prototypical Hello World applet */
public class HelloApplet extends Applet
{
    public void init()
    {
    }
    public void paint(Graphics g)
    {
        g.drawString("Hello World!");
    }
}
```



HelloApplet.java



"init" called by
browser R/T

```
E:\mycode>javac HelloApplet.java
```

What editor to use? Any editor! For example: **CODE/400!**



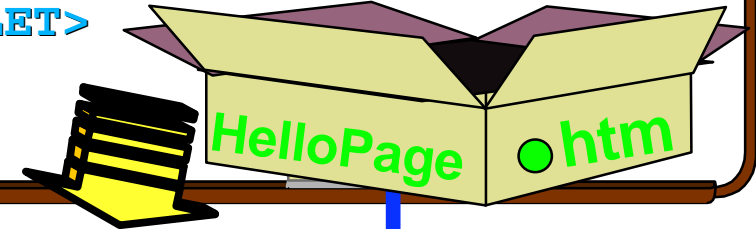
My First Applet



AS/400 Application Development

- Type this in *HelloPage.htm*

```
<HTML>
<HEAD>
<TITLE>Hello World Sample</TITLE>
</HEAD>
<BODY>
<p>Well, here it is...
<APPLET CODE=HelloApplet.class
        WIDTH=100 HEIGHT=100>
</APPLET>
</BODY>
</HTML>
```



E:\mycode>start HelloPage.htm

Congratulations! You
are now a Java
programmer!





Web Terms



AS/400 Application Development

- **Internet**

- Accessable to everyone in the world

- **Intranet**

- Only accessable to your company. Use "firewall" software to prevent external user access

- **Extranet**

- Only accessable to your company, and other selected companies (eg, suppliers).

- **URL**

- Universal Resource Locator. Unique resource IDs

- **ISP**

- Internet Service Provider. Put you on the 'Web!

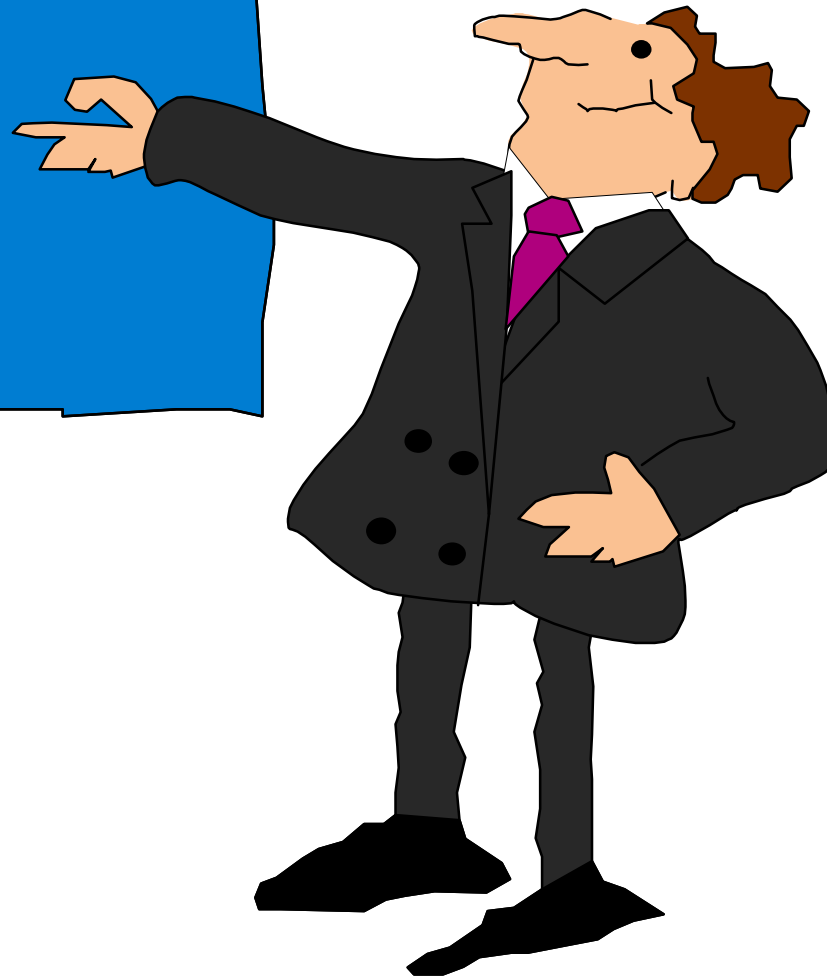


Agenda



AS/400 Application Development

Java and
the
AS/400



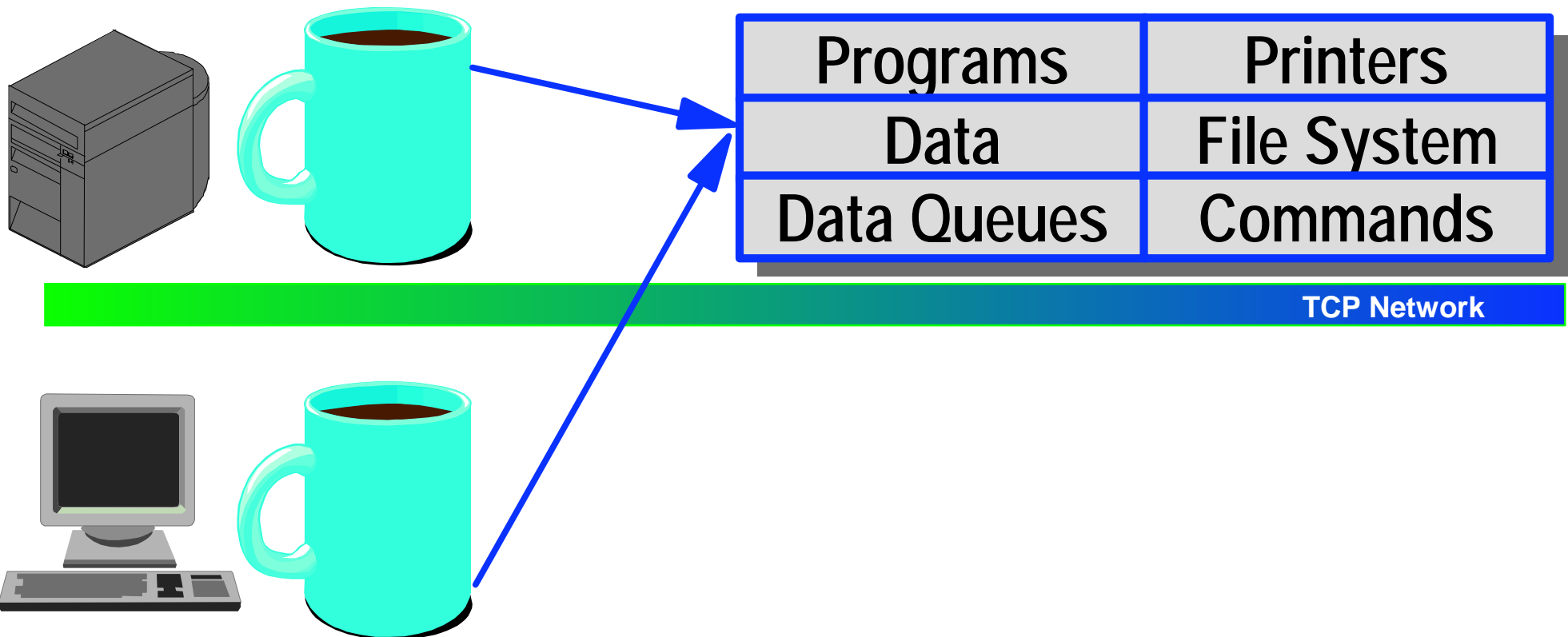


Where Java Runs



AS/400 Application Development

- Java can be run on the AS/400 itself or
- Java can be run on a client like Windows or the web and "talk" to the AS/400





Java on the '400



AS/400 Application Development

- **OS/400 V4R2 introduced "built-in" JVM and "Direct Execution" compiler**
 - ▶ *JDK 1.1.4 Level Initially (PTF to 1.1.6)*
 - ▶ *Class files converted to PowerPC instruction set at "first touch" or on demand*
 - ▶ *Resulted "direct execution" object stored in *JVAPGM object*
 - ▶ *Recreated if class file changes*
 - ▶ *Can mix interpreted and "compiled" classes together*
 - ▶ *Includes "Remote AWT" support for running GUI apps*
- **OS/400 V4R3: JDK 1.1.6 (ptf soon for 1.1.7)**
- **OS/400 V4R4: JDK 1.1.7**



Java on the '400



AS/400 Application Development

- **Server Models of AS/400 Recommended**
- **RISC only!**
- **Java .CLASS files live in Integrated File System (IFS), not lib/file(member) system**
- **JVM built-in and shipped with SLIC**
- **JDK utilities (JAVAC, JAVA, JAR, etc) run inside "POSIX" QSHELL environment:**
 - ▶ *New as of V4R2*
 - ▶ *Install: OS400 Option 30*
- **Class libraries (packages) part of no-charge Licensed Program Product 5769-JV1**

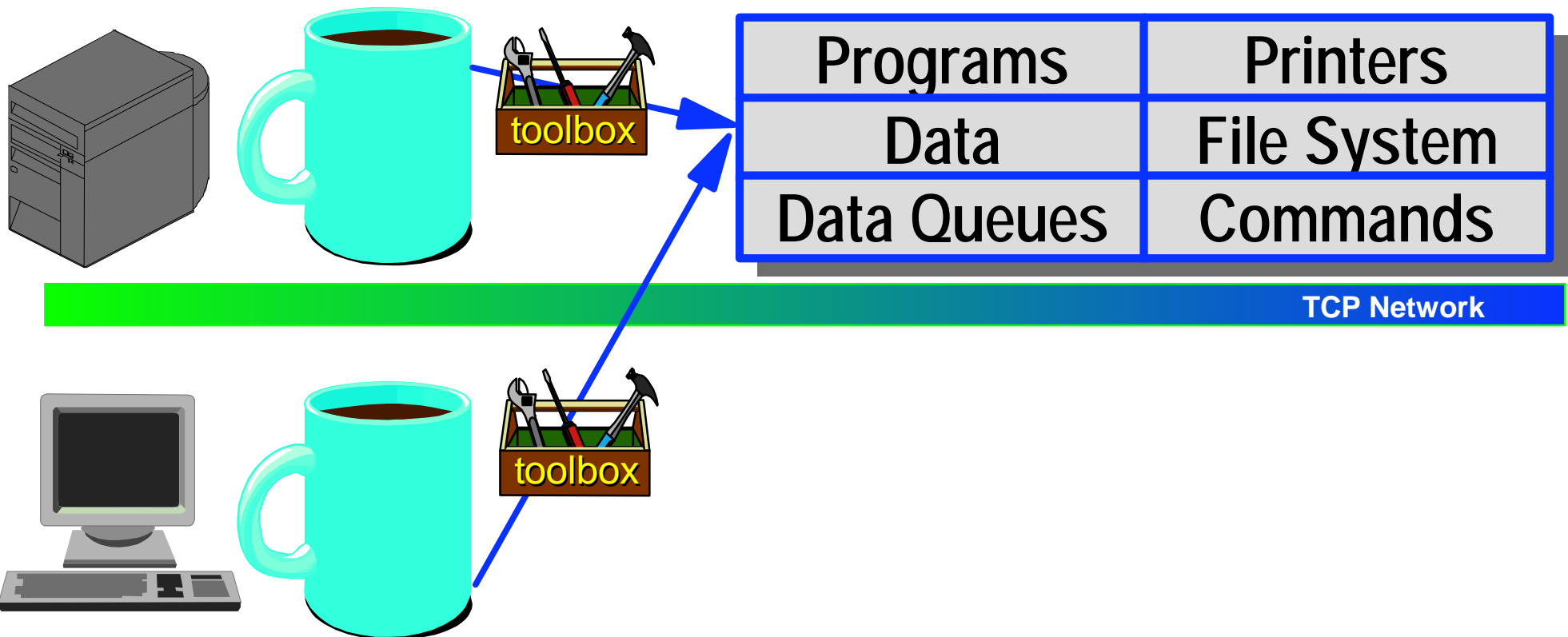


Toolbox for Java



AS/400 Application Development

- The bridge from Java to AS/400 resources is a set of classes called AS/400 Toolbox for Java
 - *Written by team at IBM Rochester lab*





AS/400 Toolbox for Java



AS/400 Application Development

- **100% Java classes for:**
 - ▶ *JDBC access to DB2/400*
 - ▶ *DDM record level access to DB2/400 (needs V4R2)*
 - ▶ *Data Queue access*
 - ▶ *Print access*
 - ▶ *Program Call, Command Call*
 - ▶ *File system access*
 - ▶ *Client to server connections, remote login, etc*
 - ▶ *Much more...*
- **Benefits both CLIENT and SERVER**
- **Clients work with V3R2 or above servers**
- **Free! Comes with V4R2, VAJava, JBuilder**
- **Saves you writing your own TCP/IP code**



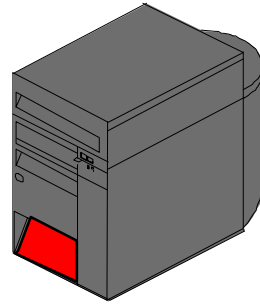
You and Java



AS/400 Application Development

- **What do I need?**

Java IDE
(eg **V**AJava)
targeting...



AS/400

client



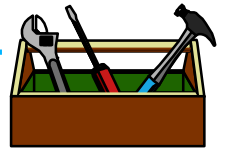
- AS/400 JDK

- ▶ Version4 Release2 or higher



- AS/400 Toolbox for Java

- ▶ www.as400.ibm.com/java



TCP Network

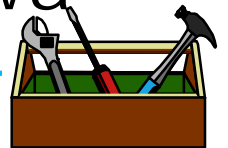
- Windows JDK

- ▶ www.javasoft.com



- AS/400 Toolbox for Java

- ▶ www.as400.ibm.com/java



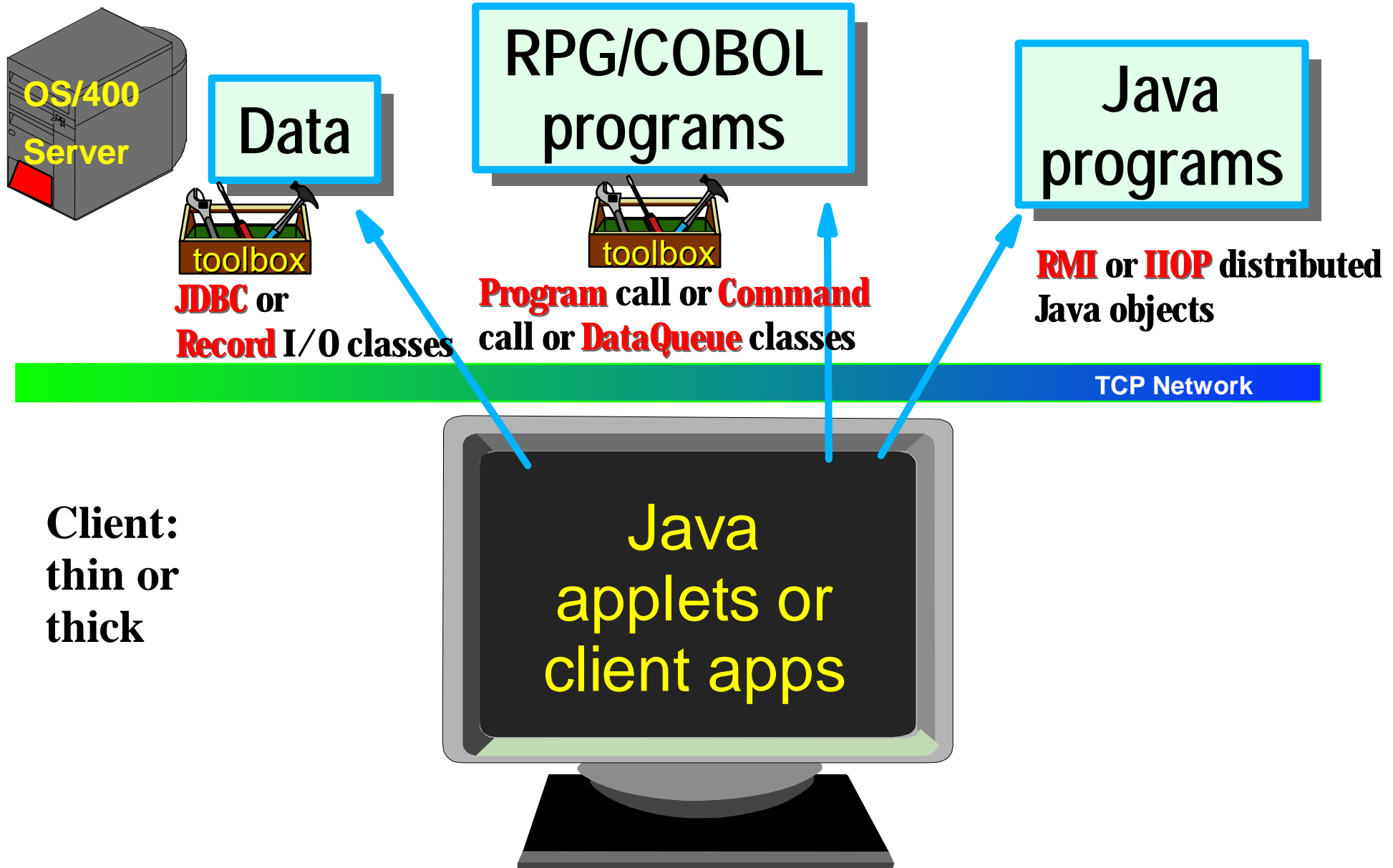


Java Client Scenarios



AS/400 Application Development

Communicating with client Java



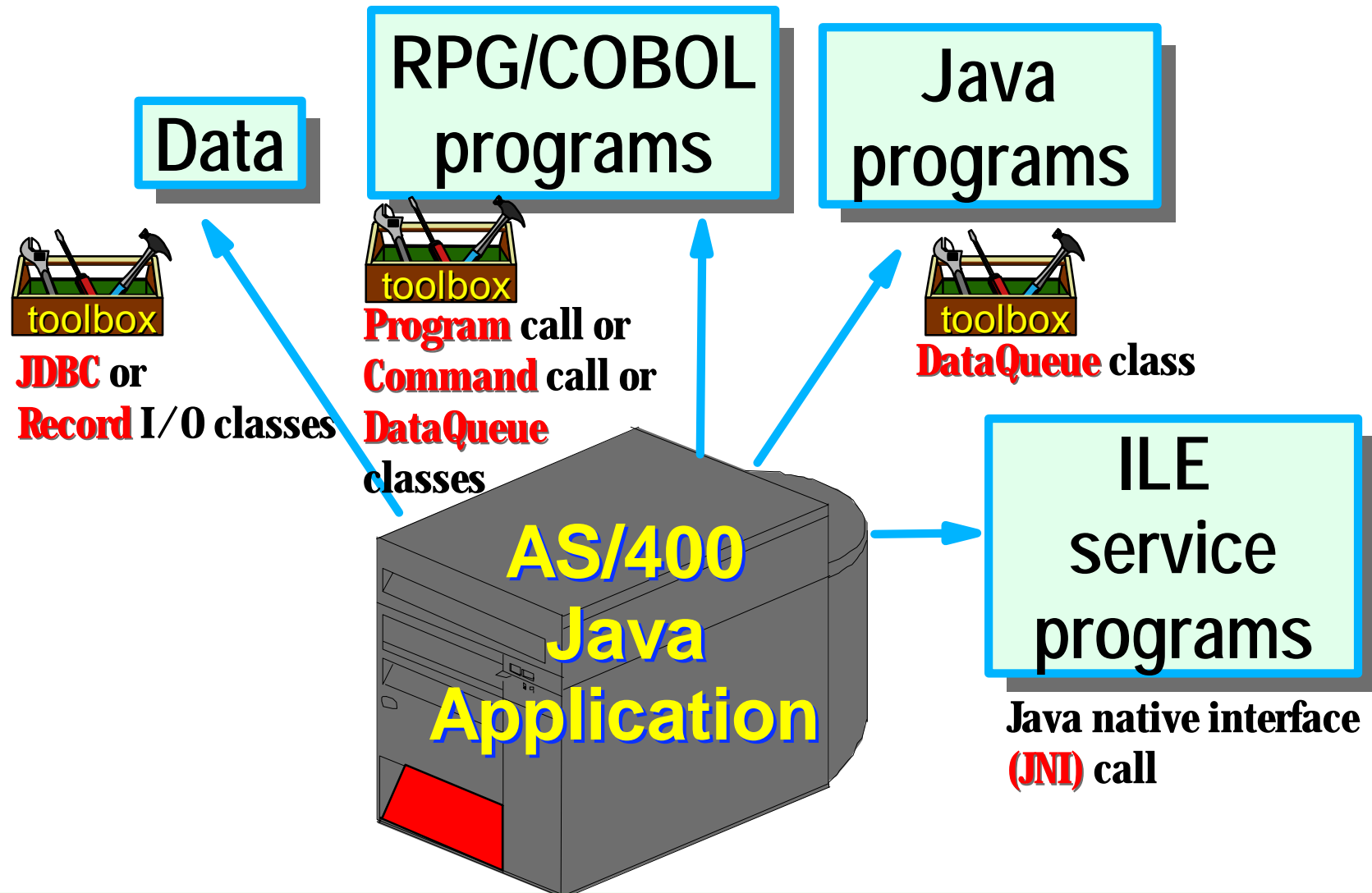


Java Server Scenarios



AS/400 Application Development

Communicating with server Java





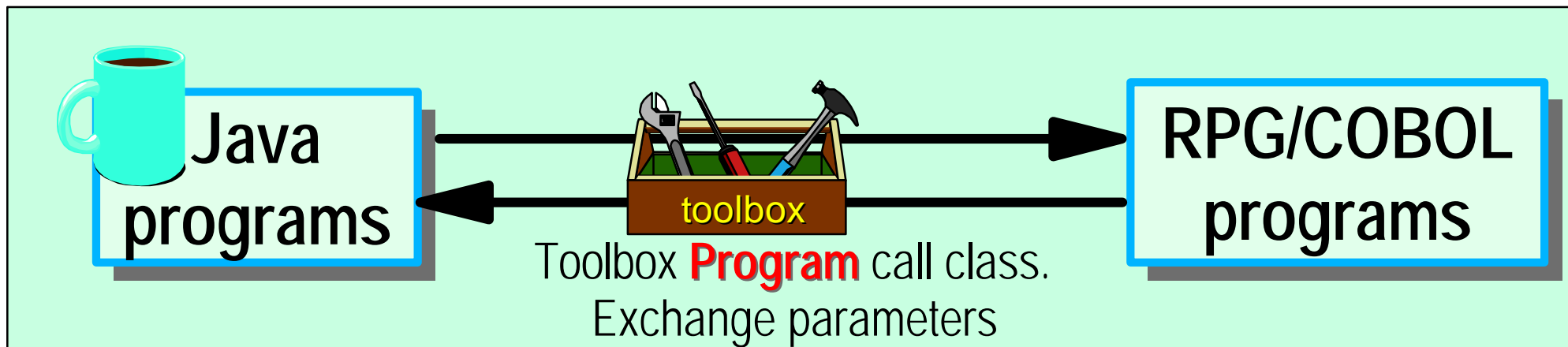
Java To/From RPG



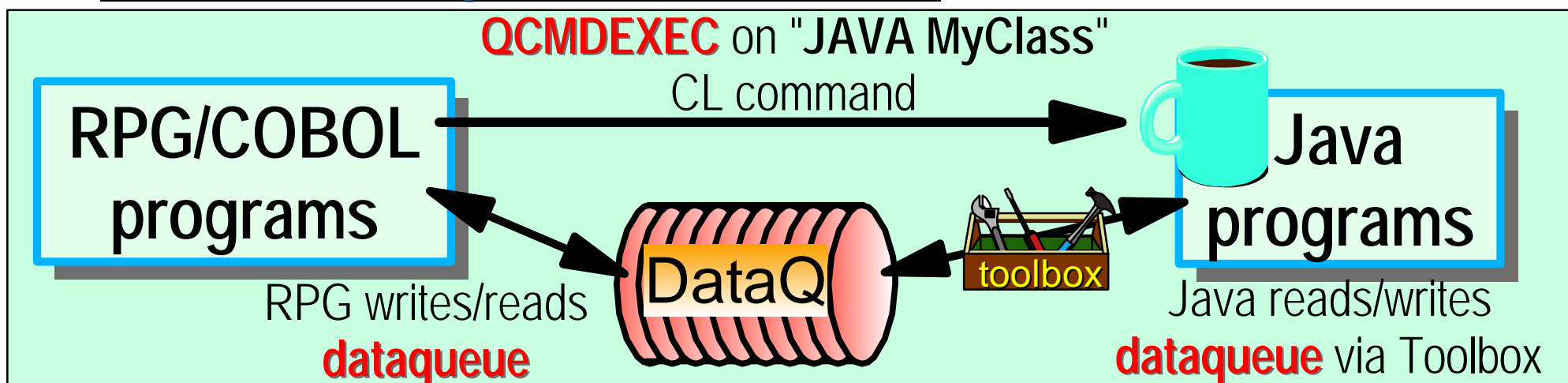
AS/400 Application Development

Server Java and RPG interoperation

• AS/400 Java calling RPG:



• RPG calling AS/400 Java:





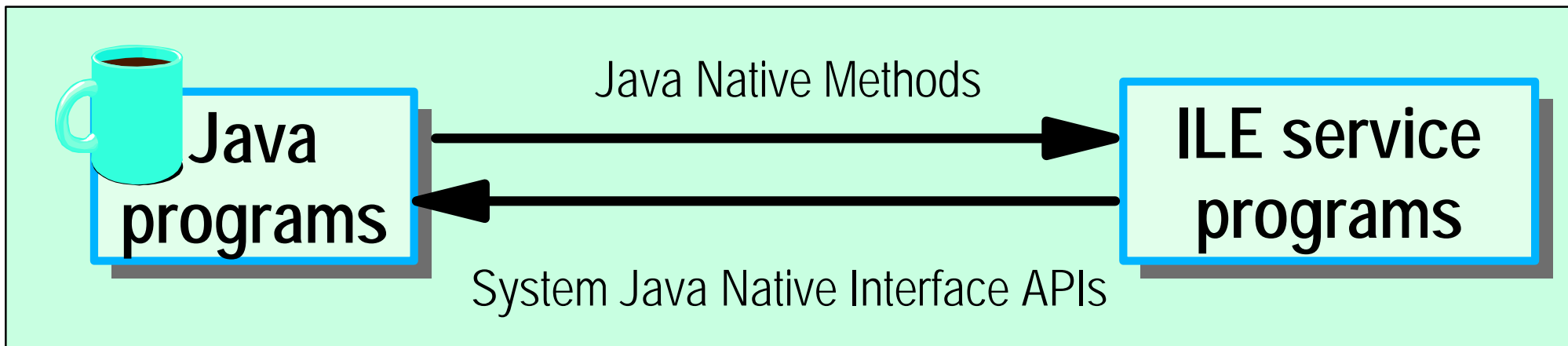
Java To/From RPG: V4R4



AS/400 Application Development

New Option: JNI to ILE *SRVPGMs

- Java calling RPG, RPG calling Java



Requires RPG and COBOL thread safe runtime

- V4R4 or above

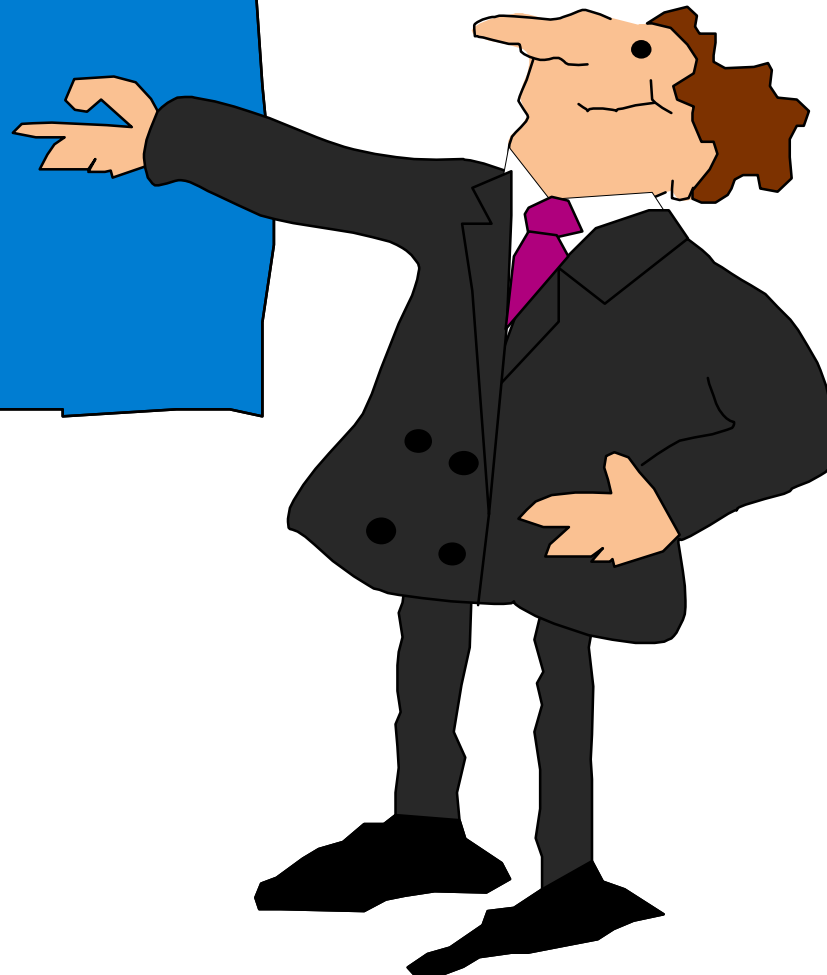


Agenda



AS/400 Application Development

New stuff:
Servlets,
JSPs and
EJBs



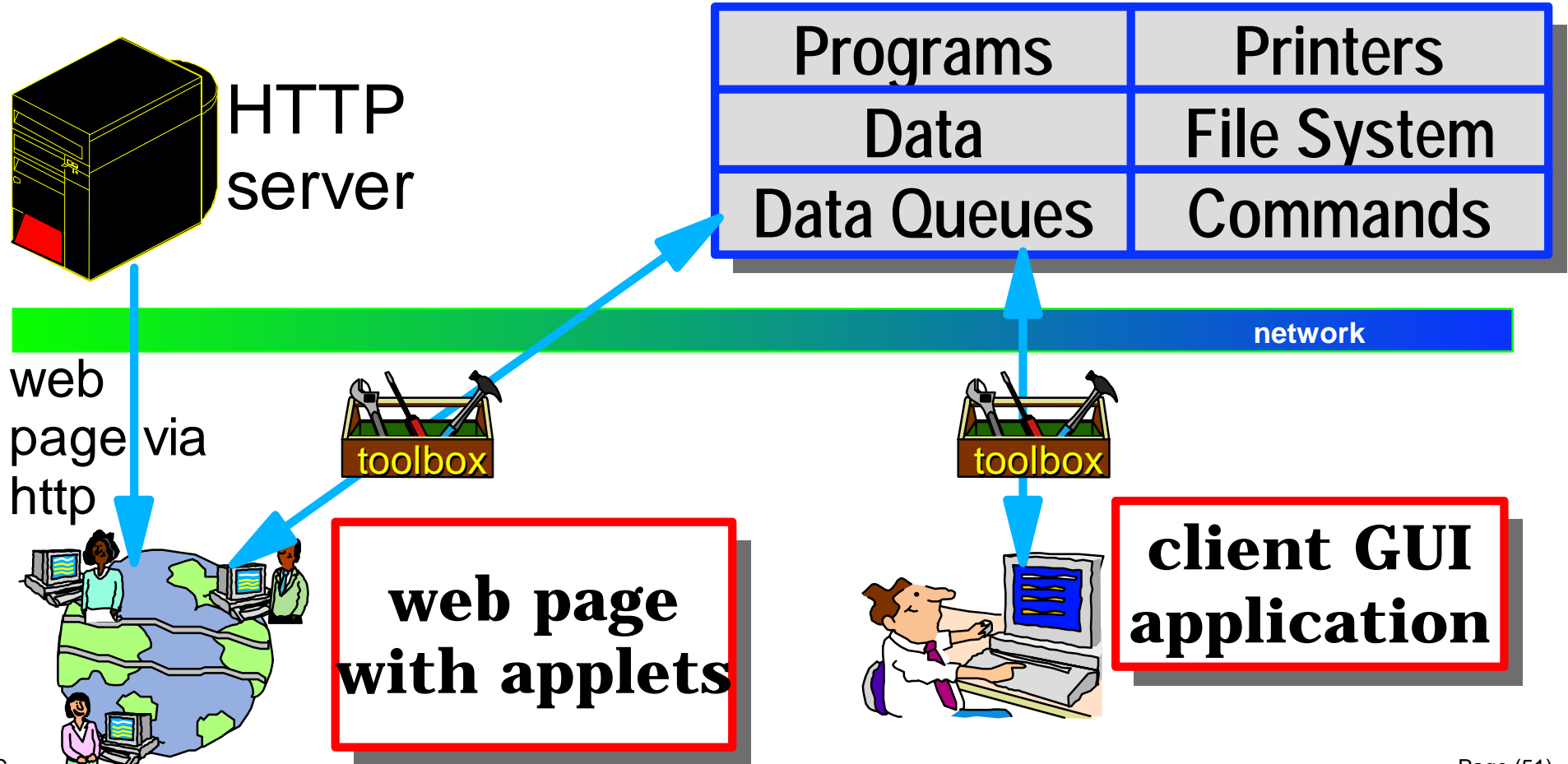


Today's World



AS/400 Application Development

- **Java's major initial role was (and is) a user interface language**
 - ▶ *Either as imbedded applets in web pages, or client apps*





It's a New World



AS/400 Application Development

- **Emerging new role as a server language!**
 - ▶ Major industry focus!
- **Goal: "thicker" servers, "thinner" clients!**
 - ▶ Robust, reliable, scalable, transactional, portable server Java applications build quickly and easy from re-usable components - called "**Enterprise Java Beans**" or **EJBs**
 - ▶ Thin "mainly HTML" web browser UI clients, generated "on demand" by Java server programs called "**Servlets**"



Enterprise Java Beans



AS/400 Application Development

- **Enterprise Java Beans:**

- ▶ *Industry standard for server-side re-usable Java components*

- **Must live in "Java Server" shell:**

- ▶ *Shell supplies function optionally available "for free" to all EJBs*
 - Transaction support, Persistence, Lifecycle management, Naming and Directory support, etc
 - Sun-supplied spec all shell-writers must adhere to
 - EJB programmers worry about function, not "plumbing" and "infrastructure"
 - EJBs portable between different vendor's shells





Enterprise Java Server



AS/400 Application Development

- IBM's "EJB shell" is called "***Enterprise Java Server***" or ***EJS***
 - ▶ *Part of WebSphere product (as of 1Q99)*
 - ▶ *Multi-platform: coming soon to an AS/400 near you!*



- Other option: ***Weblogic Tengah***
 - ▶ *Available in V4R3 of OS/400*



EJB Tooling



AS/400 Application Development

- IBM's EJB programmer tool is **VisualAge for Java Enterprise Edition**:
 - ▶ *EJB support available for 2.0 as beta (VA Developer Domain website)*
 - ▶ *Runs EJS directly inside IDE for rapid AD: code, run, test, debug directly in IDE. Export to remote target EJS when done*
- **Also requires WebSphere Studio tools**



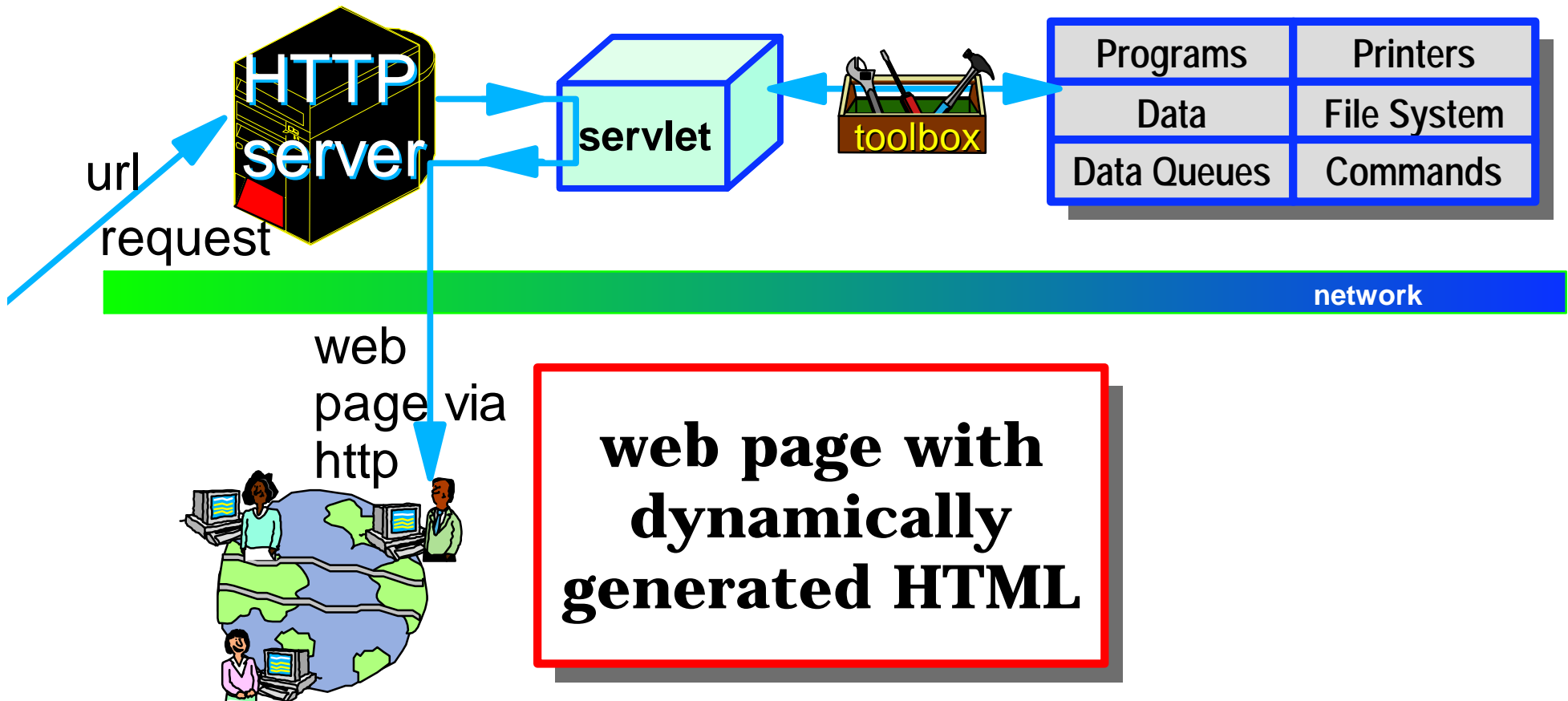


Servlets



AS/400 Application Development

- While you may use EJBs in the future, you can and should use servlets today!
- Servlets offer a new UI option:





- **Why servlets versus thick Java applets?**

- ▶ *HTML is very pervasive and very fast*
- ▶ *Can easily access information from local DB2500, RPG Programs, Java programs, EJBs, etc*
- ▶ *Vast majority of code lives/runs on server*

- **Why servlets versus CGI-bin?**

- ▶ *Java benefits for servlet coding*
 - Secure, safe, fail-safe, productive, pervasive, portable
- ▶ *Performance benefits*
 - Servlet loaded on first call, remains in memory
 - State information can be stored between calls (thus between web pages)





Servlets



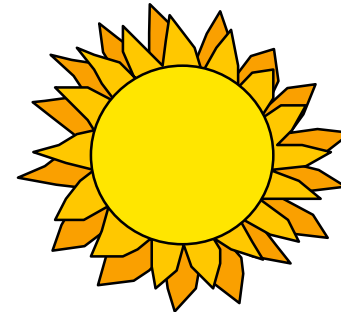
AS/400 Application Development

- **Servlet are industry standard:**

- ▶ *All HTTP servers do now or will support them*
 - Like HTTP Server on OS/400 V4R3 or above
 - IBM also supplies plug-ins to other servers to enable them to process servlets

- **Servlets are hot!**

- ▶ *Becoming very popular, very fast!*





What About That



AS/400 Application Development

Client?

- **Wait a minute!**
 - ▶ *If the client UI is HTML (again!) then what about the problems of HTML as a user interface?*
 - Static
 - Server call and new page required for simplest of error checking
 - Non-robust UI controls
- **Dynamic HTML to the rescue!**
 - JavaScript/JScript together with Content Style Sheets and Document Object Model now provide ability to write event driven, dynamic HTML pages! **DHTML** is the future of user interfaces! (*this week*)
 - Can always still augment with a few small Java applets!

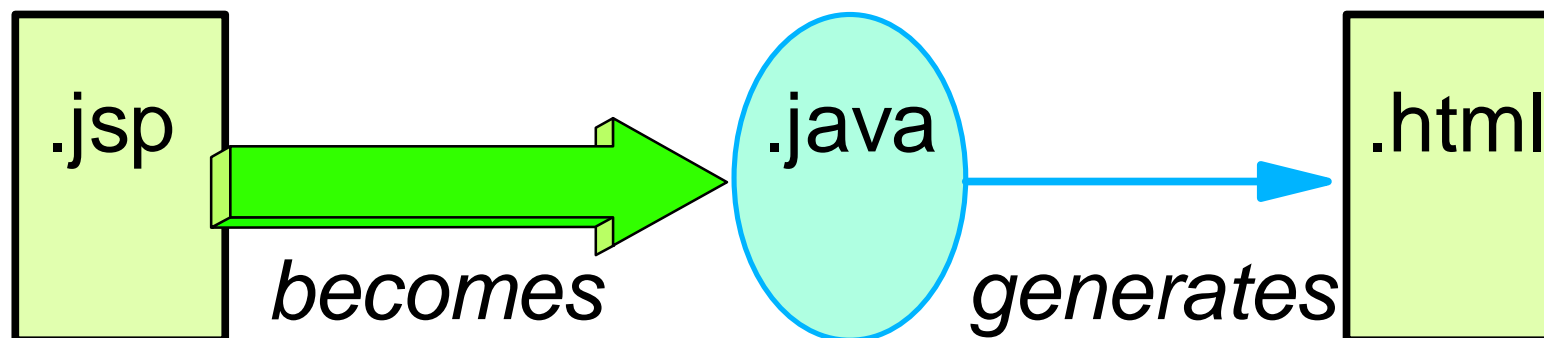


Java Server Pages



AS/400 Application Development

- **Easy way to write servlets**
- **Write a file containing HTML and imbedded Java code:**
 - ▶ *use Java programming logic around/in HTML source*
- **HTTP server "compiles" on first call into a Java servlet:**
 - ▶ *Java code becomes servlet logic*
 - ▶ *HTML source becomes "write" statements inside servlet*





Servlet Tooling



AS/400 Application Development

- IBM's Servlet programmer tool is **VisualAge for Java Enterprise Edition:**
 - ▶ *Initial Servlet support in VAJava 2.0*
 - ▶ *Beta support on VADD website for improved servlet support and Java Server Page support*
- Also requires WebSphere Studio tools for HTML and DHTML development





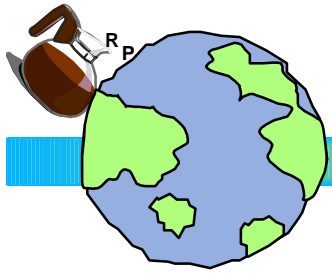
Summary...



AS/400 Application Development

- ✓ What is this Java stuff?
- ✓ Will Java replace RPG, C, or C++?
- ✓ House of Java
- ✓ Using Java
- ✓ Java and the Internet
- ✓ Java and the AS/400
- ✓ New Stuff: Servlets, JSPs and EJBs
- ✗ Where to get it all!



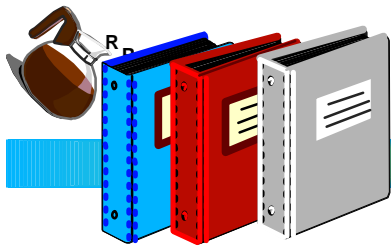


Websites



AS/400 Application Development

Website URL	Description
www.software.ibm.com/ad/vajava	IBM VisualAge for Java
www.software.ibm.com/ad/varpg	IBM VisualAge for RPG and CODE/400
www.ibm.com/java www.as400.ibm.com/java	IBM Java
www.javasoft.com	Sun Java
www.as400bks.rochester.ibm.com	IBM AS/400 online books and help
www.redbooks.ibm.com	IBM Redbooks
www.software.ibm.com/ad/tecteam	IBM Toronto services. Want to run this course onsite? We can...



Books



AS/400 Application Development

Book, URL	By, ISBN
Java for RPG Programmers www.emergingskills.com	Phil Coulthard, George Farr. ISBN 1-889671-23-1
JAVA and the AS/400 www.29thStreetPress.com	Daniel Darnell. ISBN 1-58304-033-1
Experience RPG IV www.advice.com/ibm	Maha Masri, Julie Santilli, Heather Rogers. ISBN 1-889671-22-3
VisualAge for RPG by Example www.amazon.com	Brian Meyers and Jef Sutherland. ISBN 1882419839
Core Java series www.amazon.com	Now a series of 3 books. Horstmann, Cornell
Teach Yourself Java in 21 Days www.amazon.com	Rogers Cadenhead, Laura Lamay. ISBN 1575213907
Programming VisualAge for Java www.amazon.com	John Akerly, Antonello Parlavecchia



- This session based on:

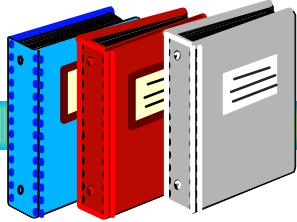
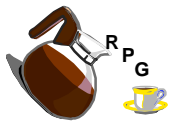
Java For RPG Programmers

ISBN 1-889671-23-1



Also recommended is the accompanying self-study workbook (or PIE college course) available at:

www.emergingskills.com



Red Books



AS/400 Application Development

Redbook	Order Number
Building AS/400 Internet-Based Applications with Java	SG24-5337-00
Building AS/400 Client/Server Applications with Java	SG24-2152-01
Builing AS/400 Applications with Java Version 2	SG24-2163-01
VisualAge for Java Enterprise Version 2: Data Access Beans - Servlets - CICS Connector	SG24-5265-00
Programming with VisualAge for Java Version 2	SG24-5264-00

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