

Should a Fortran-savvy educator learn Java, Flash, both, or neither?

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Physics Education Technology Project

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- Highly interactive, visual physics simulations (~35)
- Fun, real world, visual/conceptual models
- Research-based and user-tested
- Freeware, online or downloadable

<http://phet.colorado.edu>

JAVA:

- Programming language from Sun
- Compiler is free
- Clients require ~ 15 Meg download to run on PC or Mac

FLASH:

- Animation tool and scripting language from Macromedia
- Authorware ~\$100
- Flash viewer is free
- Clients require ~500K browser plug-in

Java and Flash are both...

- Platform-independent (mostly)
- Immune to viruses (they say)
- Widely available (hmm...)
- Powerful (truly!)

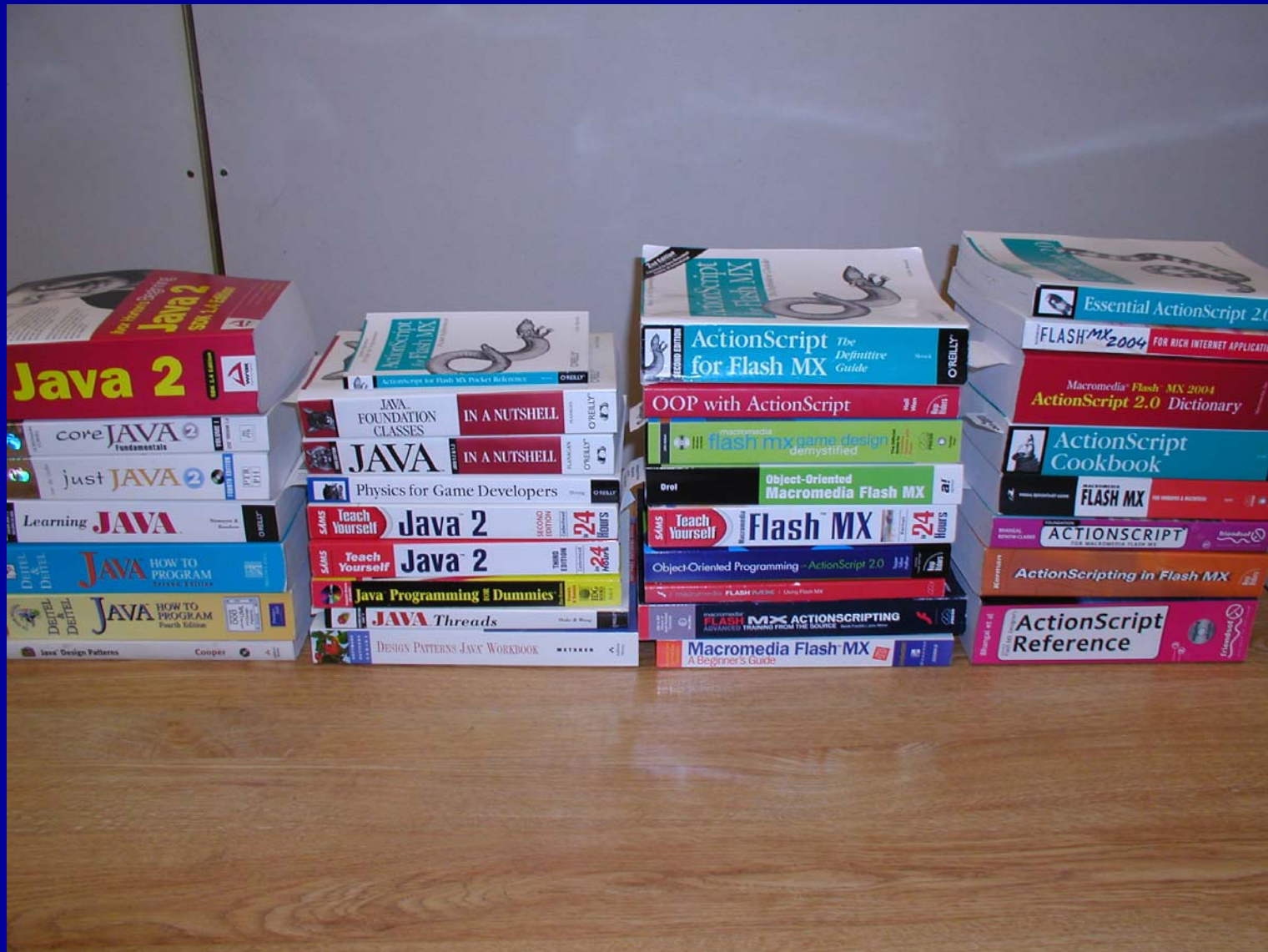
~ ideal for creation and wide Internet delivery of educational software

Java and Flash are both..

- **Complex:** Difficult to master without previous experience in Object Oriented Programming
- **Evolving:** Java appears to have stabilized, but Flash is still undergoing major revisions at ~2 year intervals.

Flash → Flash MX → Flash MX 2004

My Java/Flash books

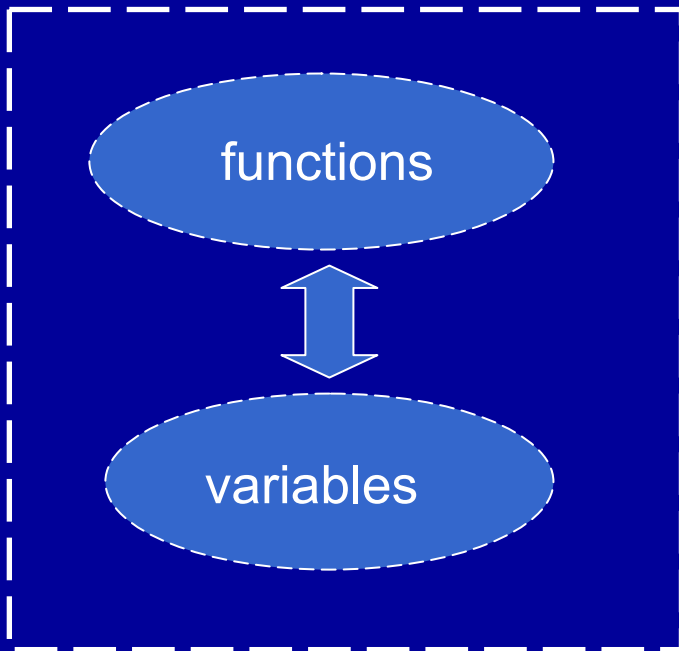


What is Object Oriented Programming?

It is not Procedural Programming.

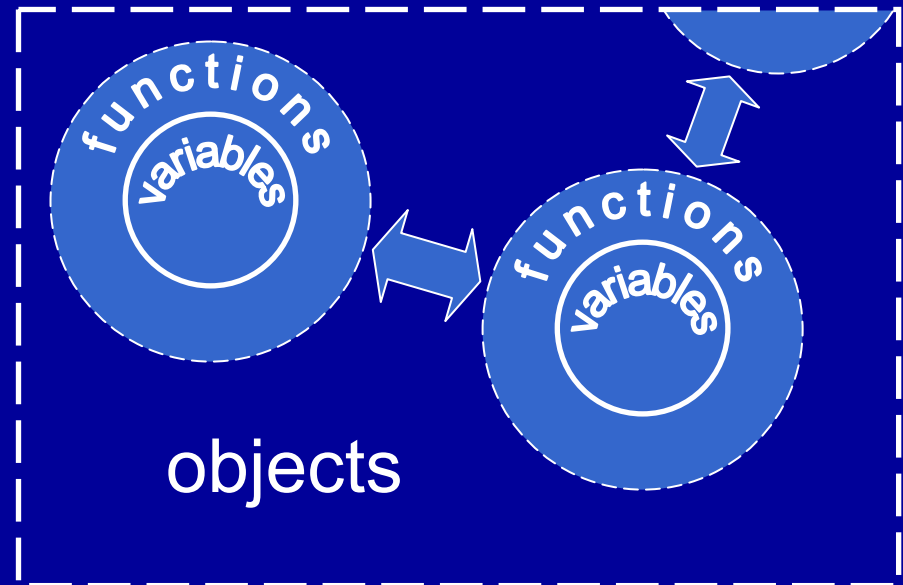
Procedural Programming

(Fortran, Basic, Pascal, ...)



OO Programming

(Java, C++, ...)



Why Object Oriented Programming?

- More “natural” (to the unfossilized young)
- Much less debugging needed
- Easier to maintain, extend, update

Java has some advantages:

Java vs. Flash

A “real” programming language :

- compiled, fast
- full-featured
- compiler free

A scripting language plus graphics tools:

- interpreted, slow
- limited features
- Authorware ~\$100

Flash has some advantages:

Java vs. Flash

- On fewer machines
- Bigger plug-in (15M)
- Bigger programs
- Bit-mapped graphics
- No GUI graphics tools

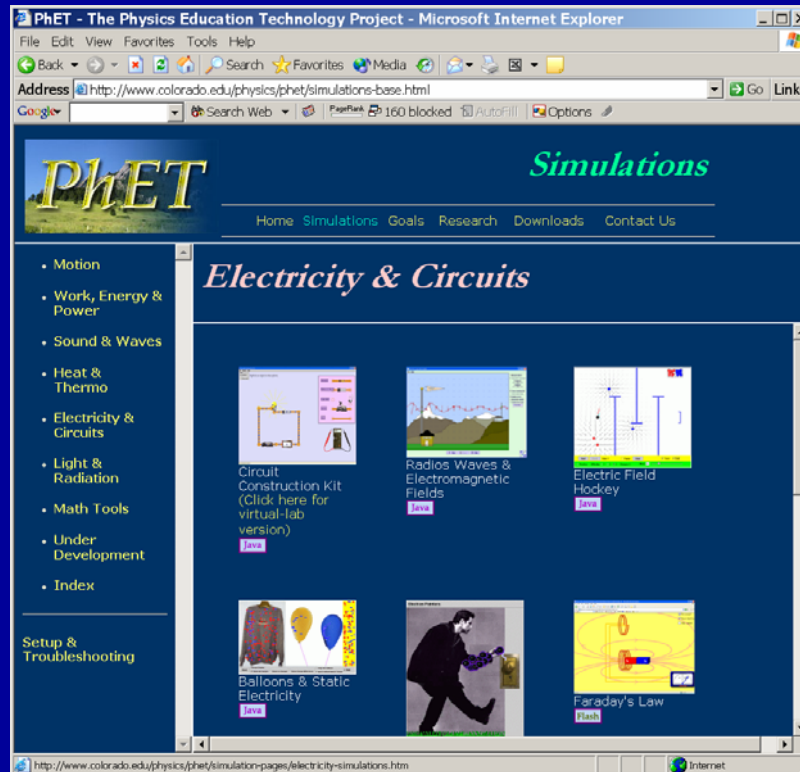
- On more machines
- Smaller plug-in (0.5M)
- Smaller programs
- Vector graphics
- User-friendly graphics tools

Conclusions:

- Use Java or Flash to create sophisticated, interactive simulations that can be delivered widely and safely over the Internet
- Use Java if you need speed, or have a very complex simulation.
- Use Flash if you want the most users.
- Use someone else unless you have lots of time.

Website

phet.colorado.edu



freeware