


## Programming in the Small: C/C++/Java Pitfalls & Ada Benefits

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## Suggested Reading

- **C Traps and Pitfalls**
  - by Andrew Koenig (Addison Wesley)
- **Guidelines for the Use of the C Language in Vehicle Based Software**
  - Purchasing info at <http://www.misra.org.uk/misra@c.htm>
- **Multilanguage Programming on the JVM: The Ada 95 Benefits**
  - [http://libre.act-europe.fr/Why\\_Ada/ada-on-jvm.pdf](http://libre.act-europe.fr/Why_Ada/ada-on-jvm.pdf)


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## Other Relevant Material

- **Links**
  - <http://www.eji.com/cppcv3/>
    - A critique of C++
  - <http://www.cs.mdx.ac.uk/harold/srf/javaspa.html>
    - A critique of Java
  - <http://www.jaegers.net/humor/stroustrup.php>
    - Stroustrup's interview leaked :)
  - <http://www.web-hits.org/tx/codingunmaintainable.html>
    - How to write unmaintainable code
- **Books**
  - *Effective C++*, by Scott Myers (Addison Wesley)
  - *Java Pitfalls*, by Michael C. Daconta et al., (Wiley)
  - *Objects Unencapsulated: Java, Eiffel, and C++*, by Ian Joyner (Prentice Hall)


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## Important Note

- All C/C++/Java code examples showed in this lecture compile
  - Some are correct according to the C/C++/Java semantics
  - Others are specified to be errors in the standards but ...
  - ... an implementation is not required to detect them
- They contain coding errors undetected by most C/C++/Java compilers
- Most of the pitfalls shown in this lecture are written in C/C++
  - They can easily be converted to Java
- Some pitfalls only occur in C/C++ and not in Java
  - When this is the case it will be pointed out in the example
- This lecture is not an exhaustive list of C/C++/Java pitfalls
  - There are more

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## Note on the Ada Compiler

- In this course we use GNAT
  - GNAT is the GNU Ada 95 compiler
- GNAT is widely available
  - You can download the sources of GNAT
  - Pre-built GNAT binaries available for: Linux, Solaris, Windows
- Available at
  - <http://libre.act-europe.fr/GNAT/>

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