Compilers: Principles, Techniques, and Tools

Compilers: Principles, Techniques, and Tools[1] is a computer science textbook by Alfred V. Aho, Monica S. Lam, Ravi Sethi, and Jeffrey D. Ullman about compiler construction for programming languages. First published in 1986, it is widely regarded as the classic definitive compiler technology text.[2]

It is known as the **Dragon Book** to generations of computer scientists[3][4] as its cover depicts a knight and a dragon in battle, a metaphor for conquering complexity. This name can also refer to Aho and Ullman's older *Principles of Compiler Design*.

First edition

The first edition (1986) is informally called the "red dragon book" to distinguish it from the second edition[5] and from Aho & Ullman's 1977 *Principles of Compiler Design* sometimes known as the "green dragon book".[5] Topics covered in the first edition include:

- Compiler structure
- Lexical analysis (including regular expressions and finite automata)
- Syntax analysis (including context-free grammars, LL parsers, bottom-up parsers, and LR parsers)
- Syntax-directed translation
- Type checking (including type conversions and polymorphism)
- Run-time environment (including parameter passing, symbol tables and register allocation)
- Code generation (including intermediate code generation)
- Code optimization

Second edition

Following in the tradition of its two predecessors, the second edition (2006) features a dragon and a knight on its cover, and is informally known as the **purple dragon**. Monica S. Lam of Stanford University became a co-author with this edition.

The second edition includes several additional topics, including:

- Directed translation
- New data flow analyses
- Parallel machines
- Garbage collection
- New case studies

Updated second edition
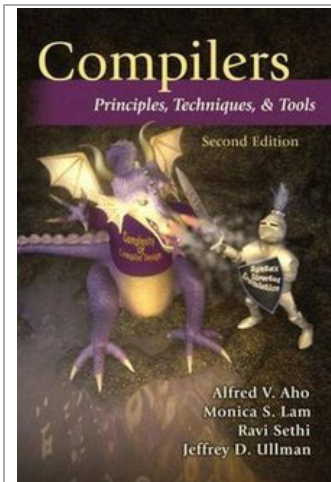
Compilers: Principles, Techniques, and Tools	
The cover of the second edition (North American), showing a knight and dragon	
Author	Alfred V. Aho, Monica S. Lam, Ravi Sethi, and Jeffrey D. Ullman
Language	English
Publisher	Pearson Education, Inc
Publication date	1986, *2006*
ISBN	0-201-10088-6
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Dewey Decimal	005.4/53 19
LC Class	QA76.76.C65 A37 1986

In order to cover recent developments and issues, there is an updated second edition from Pearson Education India (4 July 2023), with contributions from Sorav Bansal. This revised and updated edition has new chapters on Programming Language Semantics and Undefined Behaviour Semantics.

See also

- *Structure and Interpretation of Computer Programs*

References

1. Aho, Sethi, Ullman, *Compilers: Principles, Techniques, and Tools*, Addison-Wesley, 1986. ISBN 0-201-10088-6
2. "The Top 9 1/2 Books in a Hacker's Bookshelf" (http://grokcode.com/11/the-top-9-in-a-hackers-bookshelf/). Retrieved 23 October 2010.
3. Alex Martelli; Anna Martelli Ravenscroft; David Ascher (2005). *Python cookbook* (https://books.google.com/books?id=1Shx_VXS6ioC&pg=PT623). O'Reilly Media. p. 587. ISBN 978-0-596-00797-3. Retrieved 21 October 2011.
4. Ian Stephenson (2005). *Production rendering: design and implementation* (https://books.google.com/books?id=BCC5aTR34C4C&pg=PA139). Springer. p. 139. ISBN 978-1-85233-821-3. Retrieved 21 October 2011.
5. Mad Macz (January 2002). *Internet Underground: The Way of the Hacker* (https://books.google.com/books?id=Q5OHEW8_gysC&pg=PA219). PageFree Publishing, Inc. p. 219. ISBN 978-1-930252-53-0. Retrieved 21 October 2011.

Further reading

- Aho, Alfred Vaino; Lam, Monica Sin-Ling; Sethi, Ravi; Ullman, Jeffrey David (2006). *Compilers: Principles, Techniques, and Tools* (2 ed.). Boston, Massachusetts, USA: Addison-Wesley. ISBN 0-321-48681-1. OCLC 70775643 (https://www.worldcat.org/oclc/70775643). [1] (http://wps.pearsoned.com/aw_aho_compilers_2/0,11227,2663889-,00.html)

External links

- Book Website at Stanford with link to Errata (https://suif.stanford.edu/dragonbook/)