BARTŁOMIEJ FILIPEK

# C++17 IN DETAIL

LEARN THE EXCITING FEATURES OF
THE NEW C++ STANDARD!

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## Learn the Exciting Features of The New C++ Standard!

Bartłomiej Filipek

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*for Wiola and Mikołaj*

# Contents

# About the Author

**Bartłomiej Filipek** is a C++ software developer with more than 11 years of professional experience. In 2010 he graduated from Jagiellonian University in Cracow with a Masters Degree in Computer Science.

Bartek currently works at Xara, where he develops features for advanced document editors. He also has experience with desktop graphics applications, game development, large-scale systems for aviation, writing graphics drivers and even biofeedback. In the past, Bartek has also taught programming (mostly game and graphics programming courses) at local universities in Cracow.

Since 2011 Bartek has been regularly blogging at his website: bfilipek.com. In the early days the topics revolved around graphics programming, and now the blog focuses on Core C++. He also helps as co-organizer at C++ User Group in Krakow. You can hear Bartek in one @CppCast episode where he talks about C++17, blogging and text processing.

Since October 2018, Bartek has been a C++ Expert for Polish National Body that works directly with ISO/IEC JTC 1/SC 22 (C++ Standard Committee). In the same month, Bartek was also awarded by Microsoft and got his first MVP title for years 2019/2020.

In his spare time, he loves assembling trains and Lego with his little son. And he's a collector of large Lego models.

# Revision History

- 10th August 2018 - the first release. The book is 90% ready!
  - The missing tasks: write a chapter about string operations, rewrite the filesystem chapter, rewrite parallel STL chapter, add more examples to the third part
- 31st August - minor release
  - Added section about nested namespaces in the General Language Features chapter
  - Added section about using statement in folding expressions in the Template chapter
  - Added more information about the overload pattern, in the Template chapter and `std::variant` chapter
  - A useful example of `std::visit` with multiple variants, in the Variant chapter
  - improved "Enforcing Code Contracts With `[[nodiscard]]` chapter
  - improved "Refactoring with optional" chapter - added info about `std::variant`
  - Grammar, typos, formatting issues, rewording
- 28th September 2018 - major release
  - New chapter - String Conversions
  - New chapter - Searchers & String Matching
  - Updated chapter about Parallel Algorithms Chapter, perf results, better explanations
  - Added notes about `gcd, lcm, clamp` in the Other STL Changes Chapter
  - Better explanations in many chapters like Variant, string_view, General Language
  - Typos, Grammar, formatting issues
- 3rd October 2018 - hot fixes
  - fixed line numbering in the demo section, grammar, typos, punctuation, clarification of the benchmark in String Conversions
- 4th November 2018 - major release
  - Parallel Algorithms was rewritten and is 3X larger than before, including new examples and better descriptions
- 21st December 2018 - major release
  - New chapter - How to Parallelise CSV Reader

# Preface

After the long awaited C++11, the C++ Committee has made changes to the standardisation process and we can now expect a new language standard every three years. In 2014 the ISO Committee delivered C++14. Now it's time for C++17, which was published at the end of 2017. As I am writing these words, in the middle of 2018, we're in the process of preparing C++20.

As you can see, the language and the Standard Library evolves quite fast! Since 2011 you've got a set of new library modules and language features every three years. Thus staying up to date with the whole state of the language has become quite a challenging task, and this is why this book will help you.

The chapters of this book describe all the significant changes in C++17 and will give you the essential knowledge to stay at the edge of the latest features. What's more, each section contains lots of practical examples and also compiler-specific notes to give you a more comfortable start.

It's a pleasure for me to write about new and exciting things in the language and I hope you'll have fun discovering C++17 as well!

Best regards,

Bartek