TEXTBOOK REVIEW

Python Programming in Context

FOURTH EDITION

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Before attempting to answer questions by which I was invited to evaluate the present textbook, I want to take a paragraph to comment about this book in general.

Python Programming in Context, Fourth Edition is a textbook written by Julie Anderson and Jon Anderson. The text, in its present edition (the *Fourth Edition*), proposes a comprehensive introduction to Python fundamentals, covering several highly interesting topics such as image processing, fractal geometry, cryptography, astronomy, the internet, data analysis, and data mining. This edition is meant for beginners and strongly emphasizes active, hands-on learning through real-world projects and problem-solving exercises. The *Fourth Edition* is updated to Python 3.10 from Python 3.8. Furthermore, unlike in previous editions, here the "while loop" control structure is introduced much earlier and more thoroughly in Chapter 2 in order to empower students to write event-controlled loop with greater ease.

Also, in the present edition, the development system Jupyter Notebook is used; this is a great choice of a development environment if only because Jupyter Notebook is not only widely popular but also freely available. Other valuable updates to the present edition include, Chapter 4: *Introducing the Python Collections*. For, this allows the use of the Matplotlib library for data graphing.

*** This individual participated in an incentivized review program; a complimentary copy and incentive were provided in exchange for an honest and unbiased review.**

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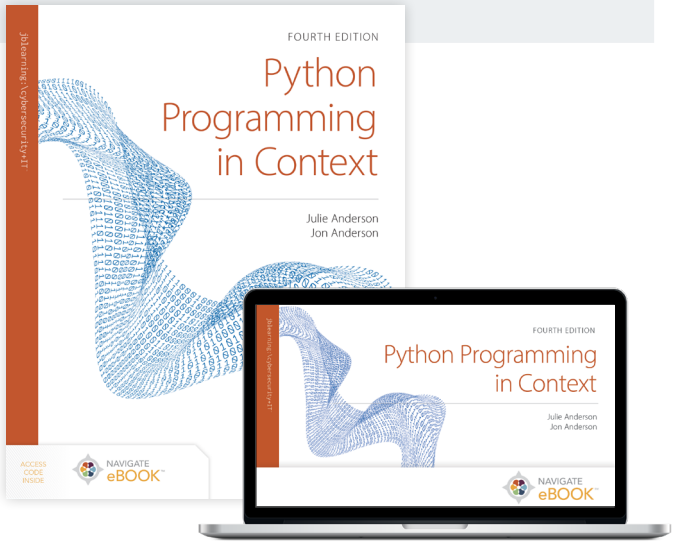
KEY REVIEW NOTES

- Recommends the book for its comprehensive introduction to Python fundamentals and emphasis on active, hands-on learning exercises
- Thinks the book provides a strong foundation for a career in programming when paired with continuing practice beyond the book's content
- Finds the in-chapter exercises as a good way to reinforce learning and help students learn material
- Feels this edition does a good job reinforcing and improving upon features from the prior edition
- Mentions that he would like to see more content dedicated to explaining the concept of a function, before introducing the notion of a method [and this, since methods are merely functions in disguise used within objects]. Also, consistency in the use of "turtle" vs "Turtle" when referring to Python objects, and a bit more expanded coverage on recent trends and technologies in the next edition will be helpful.



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What are your thoughts on this edition of *Python Programming in Context*?

Overall, the text seems like a well-structured and comprehensive introduction to Python programming. The book covers a wide range of topics, from the basics to advanced concepts, and provides a solid foundation for learners. I like how the authors incorporate real-world examples and applications to make the concepts more relatable and interesting. The book appears to be written in a clear and concise manner, making it accessible to beginners. Additionally, the inclusion of various exercises and projects helps learners reinforce their understanding and develop practical skills.

One minor critique, though, is that the first time that the book talks about the concept of a method, it does so very swiftly without taking the time necessary to really explain what a method is to the novice. This may cause serious comprehension issues especially for those students who have never before been introduced to object-oriented programming. The authors also talk about the primitive data types in Python as being objects without first taking the time to explain sufficiently clearly what an object is; so, this may be confusing to the novice in object-oriented programing or design.

Then the book passes abruptly from the concept of a method to the notion of a function. This to me can cause issues for those students for whom it is not clear what a method is nor what a function is. I believe it pedagogically sounder to explain first what a function is; and only then, can one soundly define methods as a special type of functions used for modelling actions undertaken by an object.

Another minor critique I want to underscore is what appears to me to be an inconsistency on the part of the authors. Indeed, in Python, "turtle" with a small "t" at the beginning of the identifier stands for an object or a class, whereas "Turtle( )" with a capital "T" is a method [of, say, the class "turtle"] that allows one to create or instantiate an object of that class by using the dereferencing operator " . "

But in the present edition, the authors aren't always consistent with these terms. At one place, they use the expression "turtle object" which is correct, but in another place, they used "Turtle object" which is inaccurate because of the capital "T".

Overall, I think ***Python Programming in Context*** is a great resource for anyone looking to learn Python programming.

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What is your opinion on this book's ability to give students the knowledge they need for a career in the programming field?

Based on the chapter-by-chapter review, I believe ***Python Programming in Context*** provides a solid foundation in programming concepts, data structures, and algorithms, which are essential skills for a career in the programming field. The book covers a wide range of topics, from basics to advanced concepts, that can prepare students for the entry-level positions or further studies in computer science. Additionally, the book focuses on practical applications, real-world examples, and projects that can help students develop problem-solving skills, critical thinking, and hands-on experience, making them more attractive to potential employers. Overall, I think ***Python Programming in Context*** provides a strong foundation for a career in programming, but like in any other field of study, students should be prepared to continue learning and expanding their skillset beyond the book's content.

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What are your thoughts on some of the updates and changes in the *Fourth Edition*?

I believe that most of the updates in this edition come to reinforce the great features already present in the preceding edition. The book provides a more comprehensive introduction to Python fundamentals and offers an overview of many more applied areas such as image processing, fractal geometry, cryptography, astronomy, the internet, data analysis, and data mining. It takes an active learning approach, starting each chapter with a real-world project that teaches core design techniques and Python programming while engaging students. This book is ideal for those who are learning the Python language.

What are your thoughts on the in-chapter exercises? How might they help your programming students better understand the material presented in each chapter?

The in-chapter and end-of-chapter exercises in the book are an excellent way to reinforce learning and help students better understand the material. Here is how:

In-chapter exercises:

- Break up the reading and keep students engaged
- Encourage active learning and immediate application of concept
- Help students check their understanding before moving on

"The book focuses on practical applications, real-world examples, and projects that can help students develop problem-solving skills, critical thinking, and hands-on experience."

"I believe *Python Programming in Context* provides a solid foundation in programming concepts, data structures, and algorithms, which are essential skills for a career in the programming field."

End-of-chapter exercises:

- Promote a more comprehensive assessment of understanding
- Encourage students to synthesize and apply what they've learned
- Offer a chance to explore topics in more depth or creatively
- By working through these exercises, students can:
- Develop problem-solving skills and think critically
- Reinforce conceptual understanding through practical application
- Build confidence in their ability to write Python code
- Identify areas where they need additional practice or review

Overall, the exercises are an essential component of the book, helping students move from reading to doing, and solidifying their learning.

How do you feel this current edition can fit into a cybersecurity program curriculum?

This edition like its predecessor can fit well into a cybersecurity program curriculum in several ways:

Foundational skills: Python is a crucial scripting language in cybersecurity, and this book provides a solid introduction to Python programming, which is essential for cybersecurity students to learn.

Data analysis and visualization: Cybersecurity often involves working with large datasets, and the book's coverage of data analysis, visualization, and manipulation using popular libraries like Pandas and Matplotlib can help students develop skills in this area.

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Automation and scripting: Python is used extensively in cybersecurity for automating tasks, scripting, and developing tools. The book's focus on practical applications and projects can help students learn to apply Python in a cybersecurity context.

Preparation for advanced topics: This book provides a solid foundation in Python programming, which can prepare students to learn more advanced cybersecurity-related topics, such as penetration testing, incident response, and threat intelligence analysis.

Complementary text: This book can be used as a complementary text in a cybersecurity course that focuses on Python programming and its applications in the field. At our school, we focus a lot on teaching our students the Python programming language, more so than any other language.

Thus, by incorporating ***Python Programming in Context*** into a cybersecurity program curriculum, students can gain a strong foundation in Python programming and its practical applications in cybersecurity, preparing them for more advanced topics and real-world challenges.

What other topics would you have liked to see treated in the present edition that have not been included in there?

Considering the book's focus on practical applications and real-world examples, I would have liked to see more coverage of recent trends and technologies:

For example:

- Machine learning and deep learning concepts
- Data science and visualization with popular libraries like Matplotlib and Seaborn
- Web development with modern frameworks like Django
- Introduction to cloud computing and Python's role in it

"It takes an active learning approach, starting each chapter with a real-world project that teaches core design techniques and Python programming while engaging students. This book is ideal for those who are learning the Python language."

- More extensive coverage of data structures and algorithms
- A chapter on debugging and testing techniques
- Brief introductions to related technologies like JavaScript, HTML/CSS, and SQL

Including these topics would have made the book an even more comprehensive resource for beginners looking to gain a broad understanding of the field and its applications. However, I also confess that adding much more content would have made the book longer, pricier, and potentially overwhelming for some learners.

In conclusion, I highly recommend this book. I also encourage the authors to fix my concerns expressed in Question 1, for that will render the book even more powerful.