

# Preface

## Intended Audience

This book is an innovative introduction to Python and its audio-visual capabilities for beginning programmers, a resource for expert programmers and of interest to anyone involved in music. It is structured around four extensible, audio-visual projects on music and sound. The beginner will appreciate the ‘need to know’ basis of the presentation of Python for each project. Expert programmers will be able to go straight to the project code, run it and then extend it as they see fit. Musically interested readers will enjoy the historical and theoretical material at the beginning of each project, and it may even tempt them to try some coding—it is not too difficult! The projects are all self-contained but can be extended to incorporate aspects of the others. Above all, the book is suited for self-study, which should be playful (pun intended)!

## Prerequisites

A minimal understanding of your computer’s operating system is assumed. In particular, you should be able to

1. find, create and delete files or folders within the filing system
2. open, close, save and print files
3. run program files by opening or ‘double clicking’ them
4. that’s all!

## Typography

Normal text will appear in a Times Roman font, whereas Python code will appear in a monospaced `courier` font. The first use of a new program construct will be highlighted as `construct`. Control and modifier keys will appear between angle brackets and in a bold typeface as in **<return>** or **<enter>**.

## A Note on the Code

The code largely complies with functional and procedural paradigms, and a reference to object-oriented Python is contained in Appendix. In the **New Language Features** sections, it is intentionally repetitive and uses many print statements, rather than breakpoints, to explain its operation. The overall driver has been simplicity of exposition. After all as Albert Einstein said ‘Everything should be made as simple as possible, but not simpler’.

## Structure of Book

In order to achieve expertise in the audio-visual and animation capabilities of Python, four major projects in music and sound will be developed. The book is divided into six parts

1. Part I—Installation, shell, editor, Python syntax and package management
2. Part II—Sound visualisation
3. Part III—Sound creation
4. Part IV—Harmonic visualisation
5. Part V—Composition
6. Part VI—Future development

Part II–Part V comprise the projects and are each split into background and coding chapters.

Chapter 14 contains suggestions and guidelines for extending the projects. Finally, all the internet links and bibliography are in Appendix.

This book and its projects loosely parallel the historical development of music; from Rhythm II through Melody III to Harmony IV, and finally on to Composition V.

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