

Preface

About this book

In more than twenty years of university teaching, I spent countless hours translating textbook information into language comfortable to students who were engaged with the material. Prior to my career in academia, I spent nearly thirty years managing information technology in the healthcare industry. The person who recommended me for my first university teaching position told the department chair that the basics of computing hardware and software “made sense” to me. After fifty years of the material making sense to me and helping others make sense of it, and after I had retired from teaching, I convinced myself that I could explain it in writing in a way that would be clear to university students.

This book is suitable for those with no prior study of computer systems. It may be helpful to have had a prior course in a high-level programming language such as Java or Python.

The careful reader will notice that the level of detail in this book is highly variable. That is the result of a conscious decision to delve into those parts that are likely to be mysterious to students and treat the parts with which most students are comfortable more lightly. This book principally addresses students of information technology. They will have full semester classes in subjects like operating systems and information security, but almost none will have a course in computer architecture. The chapters on digital logic and how the CPU and memory work have enough detail to stand alone. Subjects like information security are written to provide a starting point for further study.

The careful reader will also notice numerous references to people, their contributions to computing, and the dates of those contributions. Students who may read this book have never known a world without iPhones. I believe it is important that they know the inventions that make 21st century computing possible did not spring fully-formed from some Silicon Valley corporate campus.

Computing Concepts for Information Technology

Conventions

Boldface indicates defined words and important concepts.

Italics are for emphasis, for foreign words and abbreviations, publication titles, and to highlight proper names in the index.

SMALL CAPS are function names, operators, logic signals, and instruction mnemonics.

Monospaced text is used for code, of which this book has very little.

Acknowledgements

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Thanks also to Betty Abbott, Cindy Neck, and Anthony Trauring for their painstaking and careful reading and for their helpful suggestions.

Errata

I had an enormous amount of help with this book, but any errors that remain are mine alone. As errors are discovered and reported, I will maintain a list of errata here: <https://www.professorbrown.net/concepts/errata.html>

The latest edition of the book is available here: <https://www.professor-brown.net/concepts/>

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