

Basic Concepts in Data Structures

Basic Concepts in Data Structures acquaints the reader with the theoretical side of the art of writing computer programs. Instead of concentrating on the technical aspects of how to instruct a computer to perform a certain task, the book switches to the more challenging question of what in fact should be done to solve a given problem.

The volume is the result of several decades of teaching experience in data structures and algorithms. It is self-contained and does not assume any prior knowledge other than of some basic programming and mathematical tools. Klein reproduces his oral teaching style in writing, with one topic leading to another, related one. Most of the classic data structures are covered, though not in a comprehensive manner. Alternatively, some more advanced topics, related to pattern matching and coding, are mentioned.

SHMUEL TOMI KLEIN started teaching in high school, repeating to his classmates almost daily the lectures of their mathematics teacher. As a computer science undergraduate at the Hebrew University of Jerusalem, he acted as teaching assistant in the Statistics Department and has since given courses and lectures on data structures, algorithms, and related topics in English, French, German, and Hebrew.

Klein's research focuses on data compression and text-processing algorithms. He is a full professor and former chair of the Computer Science Department at Bar-Ilan University and a coauthor of more than 100 academic publications and 10 patents.

dedicated to

my spouse	Rina
and our children	Shoshanit and Itay Avital and Ariel Raanan and Yifat Ayal and Yahav

Basic Concepts in Data Structures

SHMUEL TOMI KLEIN

Bar-Ilan University, Israel



CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE
UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

4843/24, 2nd Floor, Ansari Road, Daryaganj, Delhi 110002, India

79 Anson Road, #06-04/06, Singapore 079906

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning, and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781107161276
10.1017/9781316676226

© Shmuel Tomi Klein 2016

This publication is in copyright. Subject to statutory exception and to the provisions of relevant collective licensing agreements, no reproduction of any part may take place without the written permission of Cambridge University Press.

First published 2016

Printed in the United States of America by Sheridan Books, Inc.

A catalogue record for this publication is available from the British Library.

Library of Congress Cataloging in Publication Data

Names: Klein, Shmuel T., author.

Title: Basic concepts in data structures / Shmuel Tomi Klein,
Bar-Ilan University, Israel.

Description: Cambridge, United Kingdom ; New York, NY : Cambridge University Press,
[2016] | Includes bibliographical references and index.

Identifiers: LCCN 2016026212 | ISBN 9781107161276 (hardback : alk. paper)

Subjects: LCSH: Data structures (Computer science)

Classification: LCC QA76.9.D35 K558 2016 | DDC 005.7/3—dc23

LC record available at <https://lcn.loc.gov/2016026212>

ISBN 978-1-107-16127-6 Hardback

ISBN 978-1-316-61384-9 Paperback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party Internet Web sites referred to in this publication and does not guarantee that any content on such Web sites is, or will remain, accurate or appropriate.