

- **1 Introduction to Matlab** (p. 1)
- **1.1 The Advantages of Matlab** (p. 1)
- **1.2 Disadvantages of Matlab** (p. 3)
- **1.3 The Matlab Environment** (p. 3)
- **1.4 Using Matlab as a Screenshotpad** (p. 16)
- **1.5 Summary** (p. 18)
- **1.6 Exercises** (p. 19)
- **2 Matlab Basics** (p. 21)
- **2.1 Variables and Arrays** (p. 21)
- **2.2 Initializing Variables in Matlab** (p. 24)
- **2.3 Multidimensional Arrays** (p. 31)
- **2.4 Subarrays** (p. 34)
- **2.5 Special Values** (p. 37)
- **2.6 Displaying Output Data** (p. 39)
- **2.7 Data Files** (p. 42)
- **2.8 Scalar and Array Operations** (p. 44)
- **2.9 Hierarchy of Operations** (p. 48)
- **2.10 Built-in Matlab Functions** (p. 51)
- **2.11 Introduction to Plotting** (p. 52)
- **2.12 Examples** (p. 59)
- **2.13 Debugging Matlab Programs** (p. 67)
- **2.14 Summary** (p. 69)
- **2.15 Exercises** (p. 73)
- **3 Branching Statements and Program Design** (p. 81)
- **3.1 Introduction to Top-Down Design Techniques** (p. 81)
- **3.2 Use of Pseudocode** (p. 86)
- **3.3 Relational and Logical Operators** (p. 87)
- **3.4 Branches** (p. 94)
- **3.5 Additional Plotting Features** (p. 108)
- **3.6 More on Debugging Matlab Programs** (p. 125)
- **3.7 Summary** (p. 128)
- **3.8 Exercises** (p. 130)
- **4 Loops** (p. 137)
- **4.1 The while Loop** (p. 137)
- **4.2 The for Loop** (p. 143)
- **4.3 Logical Arrays and Vectorization** (p. 157)
- **4.4 Additional Examples** (p. 163)
- **4.5 Summary** (p. 178)
- **4.6 Exercises** (p. 179)
- **5 User-Defined Functions** (p. 187)
- **5.1 Introduction to Matlab Functions** (p. 189)
- **5.2 Variable Passing in Matlab: The Pass-By-Value Scheme** (p. 194)
- **5.3 Optional Arguments** (p. 204)
- **5.4 Sharing Data Using Global Memory** (p. 209)
- **5.5 Preserving Data Between Calls to a Function** (p. 217)
- **5.6 Function Functions** (p. 222)

- **5.7 Subfunctions and Private Functions** (p. 225)
- **5.8 Summary** (p. 227)
- **5.9 Exercises** (p. 229)
- **6 Complex Data, Character Data, and Additional Plot Types** (p. 241)
- **6.1 Complex Data** (p. 241)
- **6.2 String Functions** (p. 252)
- **6.3 Multidimensional Arrays** (p. 266)
- **6.4 Additional Two-Dimensional Plots** (p. 268)
- **6.5 Three-Dimensional Plots** (p. 276)
- **6.6 Summary** (p. 281)
- **6.7 Exercises** (p. 283)
- **7 Sparse Arrays, Cell Arrays, and Structures** (p. 287)
- **7.1 Sparse Arrays** (p. 287)
- **7.2 Cell Arrays** (p. 294)
- **7.3 Structure Arrays** (p. 306)
- **7.4 Summary** (p. 314)
- **7.5 Exercises** (p. 316)
- **8 Input/Output Functions** (p. 319)
- **8.1 The textread Function** (p. 319)
- **8.2 More about the load and save Commands** (p. 321)
- **8.3 An Introduction to Matlab File Processing** (p. 323)
- **8.4 File Opening and Closing** (p. 325)
- **8.5 Binary I/O Functions** (p. 328)
- **8.6 Formatted I/O Functions** (p. 332)
- **8.7 Comparing Formatted and Binary I/O Functions** (p. 342)
- **8.8 File Positioning and Status Functions** (p. 347)
- **8.9 Function uiimport** (p. 356)
- **8.10 Summary** (p. 358)
- **8.11 Exercises** (p. 360)
- **9 Handle Graphics** (p. 363)
- **9.1 The Matlab Graphics System** (p. 363)
- **9.2 Object Handles** (p. 365)
- **9.6 Finding Objects** (p. 375)
- **9.3 Examining and Changing Object Properties** (p. 365)
- **9.4 Using set to List Possible Property Values** (p. 372)
- **9.5 User-Defined Date** (p. 374)
- **9.7 Selecting Objects with the Mouse** (p. 377)
- **9.8 Position and Units** (p. 380)
- **9.9 Printer Positions** (p. 384)
- **9.10 Default and Factory Properties** (p. 385)
- **9.11 Graphics Object Properties** (p. 387)
- **10.1 How a Graphical User Interface Works** (p. 391)
- **9.12 Summary** (p. 387)
- **9.13 Exercises** (p. 387)
- **10 Graphical User Interfaces** (p. 391)
- **10.2 Creating and Displaying a Graphical User Interface** (p. 392)

- **10.3 Object Properties** (p. 406)
- **10.4 Graphical User Interface Components** (p. 407)
- **10.5 Dialog Boxes** (p. 422)
- **10.6 Menus** (p. 425)
- **10.7 Tips for Creating Efficient GUIs** (p. 436)
- **10.8 Summary** (p. 443)
- **10.9 Exercises** (p. 446)
- **Appendix A ASCII Character Set** (p. 449)
- **Appendix B Answers to Quizzes** (p. 451)
- **Index** (p. 465)