1 Introduction

- Page 11, first text line starting with “Here is a short program…”, replace this text with:

“Here is a short program that creates a button containing the above two expressions. (We will explain the need to wrap Symbol["..."] around the expressions here in Chapter 10.)”

Then replace following code with:

```
ButtonBox["Spikey",
  ButtonFunction:>
  CompoundExpression[
    Needs["Graphics`Polyhedra`"],
    Show[Symbol["Stellate"][Symbol["Polyhedron"][Symbol["Icosahedron"]]]],
    ButtonEvaluator:>>Automatic, Active:>>True] //DisplayForm
```

Delete paragraph beginning “The formatted version of the...”.
Change paragraph starting “Clicking the button...” to: “Clicking the button will cause the Mathematica code in the ButtonFunction to be evaluated and the graphic of the icosahedron will then be displayed in your notebook.”
3 Lists

- Page 55, 9 text lines from top: change “...and the The Mathematica Book...” to “...and The Mathematica Book...”.

4 Functional programming

- Page 95, Exercise 4: change interleave2 to interleave.

7 Recursion

- Page 198, Input In[3]: change to the following (switching b and ra in the third line of code):

```
In[3]:=
merge[a_, ra___, b_, rb___] :=
   If[a ≤ b,
      Join[{a}, merge[{ra}, {b, rb}]],
      Join[{b}, merge[{a, ra}, {rb}]]
   ]
```

All of the remaining inputs that use merge and MergeSort will now be correct.

- Page 205, In the text paragraph immediately above Figure 7.1, change the parenthetical “(B)” to “(b)”.

9 Graphics programming

- Page 278, Exercise 5: change “…appeared in Porta, Davis and Uhl, 1994.” to “…appeared in the Calculus&Mathematica courseware (Porta, Davis and Uhl 1994).”

- Page 298, Exercise 13: change “…from Exercise 13…” to “…from Exercise 12…”.

10 Front end programming

- Page 336, text paragraph beginning “You can use any Mathematica...”: change CompoundExpression[Get["Graphics`", LogPlot[Exp[x], {x, 1, 2}]] to CompoundExpression[Get["Graphics`"], LogPlot[Exp[x], {x, 1, 2}]]. That is, add closing bracket to Get["Graphics`"].
Here is the button code. Note that we have added an option to ButtonBox to set the background and also wrapped the ButtonBox text in StyleBox in order to add several font options there.

```
ButtonBox[StyleBox["Spikey",
  FontFamily->"Times",FontColor->White],
  ButtonFunction->CompoundExpression[
    Needs["Graphics`Polyhedra`"],
    Show[Graphics3D[Symbol["Stellate"]][Symbol["Icosahedron"]]],
    ButtonEvaluator->Automatic,
    Background->GrayLevel[.5],
    Active->True] //DisplayForm
```

Clicking the button will produce the stellated icosahedron as displayed above.

Note that we have wrapped each of the symbols Stellate and Icosahedron in Symbol["..."]. The reason this is necessary is a bit technical but is roughly as follows: Prior to evaluating any input, the kernel first parses that input and determines which context any symbols in that input live. So prior to evaluation, the symbols Stellate and Icosahedron are parsed and put in the current context (typically Global`). Then, when the evaluation takes place and the package is loaded, shadowing of symbols occurs and a warning message will be issued. By using Symbol["Stellate"], the string argument prevents the parser from putting a symbol in the wrong context. Actually, this code would be more robust if we used the full context name, Symbol["Graphics`Polyhedra`Stellate"], as this would work even if shadowing had occurred elsewhere.

11 Examples and applications

- Page 350, Exercise 3: change “In addition, you function...” to “In addition, your function...”.

12 Writing packages

- Page 413, first line: change “A 100 step off-lattice...” to “A 1000 step off-lattice...”.
References


Solutions to exercises

- Page 441-2, Solution 1: change pairSum to addPair (two occurrences).

- Page 445, Solution 3: change “…Times functions…” to “…Times function…”.

- Page 446, Solution 4: change interLeave2 to interleave.

- Page 463, Solution 9: the *bisect* function, as given in the text, is only valid for functions that are monotonically increasing. The following code corrects for the more general cases.

```mathematica
ln[31]:= bisect[f_, {a_, b_, ε_}] := Module[
   
   {midpt = N[(a + b)/2], low = a, high = b},
   While[Abs[f[midpt]] > ε, If[Sign[f[low]] = Sign[f[midpt]], low = midpt, high = midpt];
   midpt = N[(low + high)/2];
   midpt]

ln[32]:= f[x_] := Cos[x] - x

ln[33]:= bisect[f, {0, 1, 10^-12}]
Out[33]= 0.739085

ln[34]:= f[x_] := x^3 - 2

ln[35]:= bisect[f, {1, 2, 10^-12}]
Out[35]= 1.41421
```
\[ f(x) := 4 - x^2 \]

\[ \text{bisect}\{f, \{0, 4, 10^{-12}\}\} \]

\[ \text{Out[37]} = 2. \]

- **Page 483**, last text sentence: delete “The second form simply calls the first.”

- **Page 508**, first line: add “(Note: Graphics`Polyhedra` calls Geometry`Polytopes` in which some of the functions such as Cube, Dodecahedron, and others are defined. So you might want to examine Names of that package as well.)” immediately following this first line.

- **Page 514**, Solution 9: change “Exercise 9” to “Exercise 8”.

- **Page 523–525**, Solution 1: add the following text to the end of the second text paragraph and then modify the `ShowTable` code as below:

  “We also need to account for the situation when no headings are specified; this is done with the If statement inside the `GridBox`.”

\[ \text{In[7]} := \text{Options[ShowTable]} = \{\text{Headings} \rightarrow \{\}\}; \]

\[ \text{In[8]} := \text{ShowTable}[\text{data_}, \text{opts___}\?\text{OptionQ}] := \]  

\[ \text{Module}[\{\text{headstyle, headings}\}, \]  

\[ \text{headstyle}[\text{str_}] := \text{StyleBox}[\text{MakeBoxes}[\#, \text{StandardForm}] \& \text{str, FontFamily} \rightarrow \text{"Helvetica"}, \]  

\[ \text{FontWeight} \rightarrow \text{"Bold"}, \text{FontColor} \rightarrow \text{Blue}, \text{FontSize} \rightarrow 10\}; \]  

\[ \text{headings} = \text{Headings} /. \text{Flatten}[\{\text{opts}\}] /. \text{Options[ShowTable]}; \]  

\[ \text{DisplayForm[StyleBox[} \]  

\[ \text{GridBox[If[headings == \{\}, data,} \]  

\[ \text{Prepend[data, Map[headstyle, headings]]}, \]  

\[ \text{GridFrame} \rightarrow 2, \text{GridFrameMargins} \rightarrow \{\{1, 1\}, \{1, 1\}\}, \]  

\[ \text{RowLines} \rightarrow 1, \text{ColumnLines} \rightarrow 1, \]  

\[ \text{FontFamily} \rightarrow \text{"Times"}, \]  

\[ \text{Background} \rightarrow \text{GrayLevel}[.8], \text{SingleLetterItalics} \rightarrow \text{True}\}]\]

**Index**

- **Page 546** add index entry: Perl language, 162