

# *Index*

## *Symbols*

= (assignment) operator, 87  
== (comparison) operator, 83

## *Numbers*

2D and 3D graphics, 79  
32-Bits/Pixel (Colors pop-up menu), 143

## *A*

accessing  
    menu items, 246–248, 258  
    menus and menubars, 227, 253–256  
    views, 110–116, 210  
    windows, 103–107  
ActivateApp( ) (BRoster), 327  
Add methods (BMessage), 343–345,  
    352–354  
AddChild( ) (BWindow), 71, 116, 210–211,  
    229, 233  
AddData( ) (BMessage), 352–355  
AddItem( )  
    BMenu class, 230, 233, 245  
    BPopUpMenu class, 265  
AddPoints( ) (BPolygon), 167  
AddSeparatorItem( ) (BMenu), 246  
AlertMessage project (example), 347–354  
alerts (MyHelloWorld project  
    example), 93–97  
alignment (see location (positioning))

Alignment()  
    BStringView class, 284  
    BTextView class, 301  
AMP (asymmetric multiprocessing), 2  
angle of drawn characters, 278  
API (application programming interface), 6  
APPI resources, 44–46  
    editing, 61  
Application Kit, 7, 76, 323–330  
Application Server, 14, 76  
application-defined messages, 127, 331–358  
    adding/retrieving message  
        data, 343–347, 352–354  
    AlertMessage project  
        (example), 347–354  
    handling, 333–335  
applications (BApplication class), 13,  
    23–26, 76, 325–326  
application-information  
    resources, 44–46  
HelloApplication class (example), 70–71  
as instance of BLooper, 20  
roster of (BRoster class), 327–329  
SimpleApp program (example), 26–28,  
    65  
SimpleApplication class (example), 24,  
    70  
    window data members, 107  
apps folder, 32  
argv-only applications, 44  
assignment (=) operator, 87

asymmetric multiprocessing (AMP), 2  
**AttachedToView( )** (BView), 67  
**AttachedToWindow( )**  
 BView class, 67  
 MyDrawView class (example), 120, 175

**B**

B\_ABOUT\_REQUESTED message type, 127  
 B\_ALIGN\_CENTER constant, 284, 301  
 B\_ALIGN\_LEFT constant, 284, 301  
 B\_ALIGN\_RIGHT constant, 284, 301  
 B\_ALL\_WORKSPACES constant, 103  
 B\_ARGV RECEIVED message, 350–352  
 B\_BORDERED\_WINDOW window type, 101  
 B\_CELLS... constants, 144  
 B\_CMAP8 color space, 135  
 B\_CONTROL\_ON constant, 183  
 B\_COPY message, 293, 330  
 B\_CURRENT\_WORKSPACE constant, 103  
 B\_CUT message, 293, 330  
 B\_DOCUMENT\_WINDOW window type, 101  
 B\_FLOATING\_WINDOW window type, 101  
 B\_FOLLOW\_ALL constant, 67, 235, 242, 317  
 B\_FOLLOW\_BOTTOM constant, 242  
 B\_FOLLOW\_LEFT constant, 242, 264  
 B\_FOLLOW\_NONE constant, 236, 242, 310  
 B\_FOLLOW\_RIGHT constant, 242  
 B\_FOLLOW\_TOP constant, 242, 264  
 B\_FONT\_SIZE constant, 299  
 B\_FRAME\_EVENTS constant, 287  
 B\_GRAY1 color space, 135  
 B\_GRAY8 color space, 135  
 B\_H\_SCROLL\_BAR\_HEIGHT constant, 307  
 B\_HORIZONTAL constant, 308  
 B\_ITEMS\_IN\_COLUMN constant, 264  
 B\_ITEMS\_IN\_ROW constant, 264  
 B\_KEY\_DOWN message type, 129, 131–133  
 B\_KEY\_UP message type, 129  
 B\_MAIN\_SCREEN\_ID constant, 100  
 B\_MIXED\_COLORS pattern, 138, 150–152  
 bit definition, 153  
 B\_MODAL\_WINDOW window type, 101  
 B\_MOUSE\_DOWN message type, 129–130  
 B\_MOUSE\_UP message type, 129

B\_NAVIGABLE constant, 264  
 B\_NO\_BORDER constant, 314  
 B\_NOT\_CLOSABLE constant, 102  
 B\_NOT\_H\_RESIZABLE constant, 102  
 B\_NOT\_MINIMIZABLE window behavior, 102  
 B\_NOT\_MOVABLE constant, 102  
 B\_NOT\_RESIZABLE constant, 69, 102  
 B\_NOT\_V\_RESIZABLE constant, 102  
 B\_NOT\_ZOOMABLE constant, 69, 102  
 B\_OPEN\_PANEL constant, 362  
 B\_PASTE message, 293, 330  
 B\_PLAIN\_BORDER constant, 314  
 B\_PULSE\_NEEDED constant, 287  
 B\_QUIT\_REQUESTED message, 20  
 B\_RGB15 color space, 135  
 B\_RGB32 color space, 135  
 B\_RGBA32 color space, 135  
 B\_SAVE\_PANEL constant, 362  
 B\_SELECT\_ALL message, 293, 330  
 B\_SOLID\_HIGH pattern, 138, 150–152  
 bit definition, 153  
 B\_SOLID\_LOW pattern, 138, 150–152  
 bit definition, 153  
 B\_TITLED\_WINDOW window type, 101  
 B\_TWO\_STATE\_BUTTON constant, 194  
 B\_V\_SCROLL\_BAR\_WIDTH constant, 307  
 B\_VERTICAL constant, 308  
 B\_WILL\_ACCEPT\_FIRST\_CLICK constant, 103  
 B\_WILL\_DRAW constant, 264  
 background applications, 44  
 background color (views), 140, 301  
 backward compatibility, 4  
 BAlert class (MyHelloWorld project example), 93–97  
 BApplication class, 13, 23–26, 76, 325–326  
 application-information resources, 44–46  
 BRoster class and, 327–329  
 HelloApplication class (example), 70–71  
 as instance of BLooper, 20  
 messages (see application-defined messages)  
 SimpleApp program (example), 26–28, 65  
 SimpleApplication class (example), 24, 70  
 window data members, 107

- BArchivable class, 78  
base projects (see projects, creating new)  
BButton class, 178, 181–182, 189–193  
    MenuAndControl project  
        (example), 237–243  
BCheckBox class, 178, 198–203  
    turning on/off, 183, 198  
BClipboard class, 330, 354–358  
    ClipboardMessage project  
        (example), 356–358  
BColorControl class, 141–150, 179  
BControl class, 12, 177–225  
    BButton class, 189–193  
    BCheckBox class, 198–203  
    BPictureButton class, 193–198  
    BRadioButton class, 203–214  
    BTextControl class, 214–220  
    ControlDemo project example, 220–225  
    enabling/disabling or turning  
        on/off, 183  
    handling, 184–189  
    labels, 184  
    menus with (example), 237–243  
BDirectory class, 78, 371  
BDirectWindow class, 79  
be\_app variable, 20, 25  
be\_bold\_font pointer, 274  
be\_clipboard variable, 330  
be\_fixed\_font pointer, 274  
be\_plain\_font pointer, 274  
be\_roster variable, 327  
BeApp project stationery, 52  
beep( ), 116, 133  
BeginPicture( )  
    BPicture class, 194  
    BView class, 173  
BeIDE, 28–74  
    creating new projects, 47–65  
    file organization, 31–34  
    project contents, 34–47  
    project preferences, 63  
    search and replace utility, 59–61  
BEntry class, 360, 370  
BeOS  
    development environment (see BeIDE)  
    features, 1–5  
    programming environment, 28–30  
    programming fundamentals, 13–28  
software kits, 7–13  
    class descriptions in this book,  
        explained, 83–89  
    overview of, 75–80  
    structure, 5–6  
BeSTL project stationery, 52  
BFile class, 78, 371  
BFilePanel class, 361  
    FileBase project (example), 362–368  
    OpenSaveAsFile project  
        (example), 372–375  
    SaveAsFile project (example), 368–372  
BFont class, 272–273, 277  
    FontSetting project (example), 280–282  
BHandler class, 15, 76, 324  
    text editing menu items, 293  
bigtime\_t data type, 116  
BInvoker class, 293  
bit definitions of patterns, 152  
BList class, 328  
BLocker class, 78  
BLooper class, 15, 76, 127, 324  
    posting and dispatching  
        messages, 337–343  
    preferred handlers, 294  
BMediaNode class, 78  
BMenu class  
    BControls with (example), 237–243  
    creating menus, 229  
    selecting menu items, 230, 234, 239–242  
    SimpleMenuBar project  
        (example), 231–236  
    submenus (hierarchical  
        menus), 268–271  
BMenuBar class  
    adding menubars to windows, 228–230  
    BControls with (example), 237–243  
    SimpleMenuBar project, 231–236  
BMenuField class, 264–265  
    label/menu divider, 267  
BMenuItem class  
    accessing menu items, 246–248, 258  
    changing menu item labels, 250, 256  
    creating menu items, 229, 244–246, 256  
    disabling/enabling menu items, 252, 257  
    handling menu item selection, 230, 234,  
        239–242  
    marking menu items, 248–250

- BMenuItem class (*continued*)
  - menu items for text editing, 293
  - submenus (hierarchical menus), 268–271
    - (see also menus and menubars)
- BMessage class, 14, 126–133, 324, 336–358
  - adding/retrieving message data, 343–347, 352–354
  - application-defined messages, 127
  - controls and, 177, 184–189
  - interface messages, 127, 129
  - naming conventions, 186
  - system messages, 14, 20
    - (see also BHandler class; BLooper class)
- B\_MOUSE\_MOVED message type, 129
- BNode class, 78, 360
- /boot/apps folder, 32
- /boot/apps/Metrowerks folder, 33
- /boot/develop folder, 32
- /boot/home folder, 34
- borders of scroll views, 313
- B\_ORIGIN constant, 70
- Bounds( ) (BView), 124, 317
- BPicture class, 173–176
  - scrolling graphics, 318–321
- BPictureButton class, 178, 193–198
- BPoint class, 159–162
- BPolygon class, 166–168
- BPopUpMenu class, 263
  - creating pop-up menus, 265–266
- BRadioButton class, 179, 203–214
  - BView hierarchy and, 209–211
    - turning on/off, 183
- BRect class, 21, 85–87, 162–165
  - rounded corners, 164
    - (see also BPolygon class)
- BRegion class, 168–173
  - testing for inclusion in, 170
- Broadcast( ) (BRoster), 327
- BRoster class, 327–329
- BScreen class, 100
- BScrollBar class, 305–312
  - range of scrollbars, 310–312
- BScrollView class, 305, 312–321
  - ScrollViewText project
    - (example), 314–316
- BStringView class, 272, 282–286
  - StringView project (example), 285
- BTextControl class, 179, 214–220
- BTextView class, 272, 286–305
  - altering text characteristics, 297–305
  - BClipboard and, 330
  - editing, 291–297
  - rectangle boundaries, 287–289
  - ScrollViewText project
    - (example), 314–316
  - TextView project (example), 289–291
- TextEdit project
  - (example), 295–297
- TextFont project
  - (example), 302–305
- TextScrollBar project
  - (example), 308–310
- buttons (BButton class), 178, 181–182, 189–193
- MenuAndControl project
  - (example), 237–243
  - picture buttons, 193–198
- BView class, 77, 110–126
  - access views, 110–116
  - BWindows and, 365
  - colors
    - background, 140
    - default colors, 137
  - coordinate system, 121–126
  - drawing in views (see drawing)
  - focus view, 131
  - HelloWorldView class (example), 66–69
  - hierarchy of views, 116–121, 209–211
  - mouse clicks and key presses, 130–133
  - resizing windows and, 235, 242
  - scrolling and (see BViewScroll class)
  - stroke and fill functions, 150
  - text and (see BStringView class;
    - BTextView class)
  - updating views, 212–214
  - window-filling views, 240
- BWindow class, 15–23, 77, 87–89, 98–110
  - accessing windows, 103–107
  - BControls with (see BControl class)
  - BViews and, 365
    - characteristics of, 99–103
    - coordinate system, 121–126
    - fonts for titles, 274
  - HelloWindow class example, 69
  - as instance of BLooper, 19
  - menus with (see menus and menubars;
    - pop-up menus)

- resizing windows, views and, 235, 242  
ScrollViewWindow project  
(example), 316–318  
SimpleWindow class (example), 17–22,  
69  
types of windows, 101  
window-filling views, 240  
windows as data members, 107–109  
(see also *BView* class)  
*BWindowScreen* class, 79
- C**
- C functions in Network Kit, 79  
check marks for menu items, 248–250  
checkboxes (*BCheckBox* class), 178,  
198–203  
turning on/off, 183, 198  
CheckBoxLater project (example), 202–203  
CheckBoxNow project (example), 199–202  
classes  
descriptions in this book,  
explained, 83–89  
inheritance hierarchies, 10–13  
naming conventions, 9  
of software kits, 80–89  
*Clear()* (*BClipboard*), 355  
clipboard (*BClipboard* class), 330, 354–358  
ClipboardMessage project  
(example), 356–358  
code locks (*BLocker* class), 78  
color, 135–150  
background (views), 301  
color controls (*BColorControl*  
class), 141–150, 179  
color spaces, 135  
ColorControl project  
(example), 145–150  
high and low colors, 137–140  
RGB system, 136  
text, 297–301  
text (string views), 285  
color\_control\_layout datatype, 143  
Colors pop-up menu, 142  
command-line arguments, 350–352  
*Commit()* (*BClipboard*), 355  
comparison (==) operator, 83  
compiling source code, 38  
constants, naming conventions for, 10  
constructors, 18, 81
- consumer nodes, 78  
*Contains()* (*BRegion*), 170, 173  
ControlDemo project example, 220–225  
controls (*BControl* class), 12, 177–225  
buttons (*BButton* class), 189–193  
checkboxes (*BCheckBox*  
class), 198–203  
ControlDemo project example, 220–225  
enabling/disabling or turning  
on/off, 183  
fonts for labels, 274  
handling, 184–189  
labels, 184  
menus with (example), 237–243  
picture buttons (*BPictureButton*  
class), 193–198  
radio buttons (*BRadioButton*  
class), 203–214  
text fields (*BTextControl* class), 214–220  
converting between file formats, 80  
cooperative multitasking, 3  
coordinate system, 121–126  
(see also location (positioning))  
copy, cut, paste support, 291–295  
copyrights on source code, 48  
.cpp filename extension, 29, 38  
cut, copy, paste support, 291–295
- D**
- data members, 80  
naming conventions, 9  
views as, 110–113  
windows as, 107–109  
*Data()* (*BClipboard*), 355  
Debug mode, 37  
debugger folder  
(/boot/apps/Metrowerks), 33  
default buttons, 190  
default colors, 137  
derived classes (see inheritance hierarchies)  
destructor functions, 81  
develop folder, 32  
development environment (see BeIDE)  
Device Kit, 8, 79  
directory hierarchy, 360  
directory objects (*BDirectory* class), 78  
Disable Debugger (Project menu item), 37  
disabled state (controls), 179, 183  
DisableMenuItem project (example), 257

disabling menu items, 252, 257  
 dispatching messages, 127, 337–343  
     menu items and, 340  
`DispatchMessage( )` (BLooper), 332, 335, 338  
`DoesWordWrap( )` (BTextView), 302  
`Draw( )`  
     BView class, 67–68, 140  
     MyDrawView class (example), 120  
     MyHelloView class (example), 124  
`DrawBitmap( )` (BView), 194  
 drawing, 134–176  
     colors, 135–150  
     patterns, 138, 150–155  
     pen, 155–159  
     pictures, 173–176  
     shapes, 159–176  
`DrawPicture( )` (BView), 174  
`DrawString( )` (BView), 72, 115, 273, 282

## E

Edit menu, creating, 292–295  
 editable text (BTextView class), 272, 286–305  
 clipboard and (BClipboard class), 330  
 editing, 291–297  
 TextView project (example), 289–291  
 TextViewFont project  
     (example), 302–305  
 TextViewScrollBar project  
     (example), 308–310  
 ellipses, 165–166  
 Enable Debugger (Project menu item), 37  
 enabled state (controls), 179, 183  
 enabling menu items, 252, 257  
`EndPicture( )`  
     BPicture class, 194  
     BView class, 173  
 entries (BEntry class), 360, 370  
 entry\_ref structure, 360, 369  
 etc folder (/boot/develop), 33  
 EverythingApp project stationery, 52  
 exclusive launch behavior, 44  
 explicitly generated messages, 335

## F

FILE data type, 369  
 file objects (BFile class), 78

FileBase project (example), 362–368  
 files, 359–376  
     BeIDE organization, 31–34  
     BFile class, 371  
     common filename extensions, 29  
     converting between formats, 80  
     file panels (BFilePanel class), 361–375  
         FileBase project (example), 362–368  
         OpenSaveAsFile project  
             (example), 372–375  
         SaveAsFile project  
             (example), 368–372  
     global search/replace (BeIDE), 59–61  
     hierarchy of, 360  
     project organization conventions, 39  
     renaming project files, 50  
     Storage Kit, 359–360  
     (see also header files; library files;  
         source code)  
 FileTypes application, 45  
     graphical editor, 46  
 fill functions (BView), 150  
     FillEllipse( ), 166  
     FillPolygon( ), 167  
     FillRect( ), 138, 163  
     FillRegion( ), 170  
     FillTriangle( ), 168  
 FillRegion( ) (BRegion), 171  
 FillRoundRect( ) (BView), 165  
 Find methods (BMessage), 343–345  
 FindApp( ) (BRoster), 327  
 FindByName project (example), 114–116  
 FindData( ) (BMessage), 354–355  
 FindItem( ) (BMenu), 247  
 FindItemByMark project (example), 258  
 FindMarked( ) (BMenu), 250  
 FindRef( ) (BMessage), 369, 371  
 FindString( ) (BMessage), 370–371  
 FindView( )  
     BView class, 211, 307  
     BWindow class, 113–116  
 fixed-width font, 274  
 focus view, 131  
 folder objects (BDirectory class), 78  
 folders, BeIDE, 31–34  
 fonts, 273–282  
     altering characteristics of, 276–280  
     BFont class, 272–273, 277  
     FontSetting project (example), 280–282

getting information and setting, 297–300  
system fonts, 273–276  
TextViewFont project  
(example), 302–305  
`fopen()` (POSIX), 370  
format translations, 80  
frame coordinates (window size), 99  
`Frame()`  
    `BScreen` class, 100  
    `BView` class, 125  
`FrameMoved()` (BWindow), 88  
functions (see member functions)  
`fwrite()` (POSIX), 370

## G

Game Kit, 9, 79  
`GetAppInfo()` (BRoster), 327  
`GetAppList()` (BRoster), 327–329  
`GetFont()` (BView), 278  
`GetFontAndColor()` (BTextView), 297–298,  
    301  
`GetFrontWindow()` (MyHelloApplication;  
    example), 105–107  
`GetPath()` (BEntry), 370  
`GetRange()` (BScrollBar), 312  
`GetSize()` (BFile), 375  
global coordinate system, 121  
global file search/replace (BeIDE), 59–61  
global system fonts, 273–276  
global variables, naming conventions, 10  
graphical editor, FileTypes, 46  
graphics  
    2D and 3D, 79  
    `BPicture` class, 173–176  
    colors, 135–150  
    converting file formats, 80  
    drawing pen, 155–159  
    patterns, 138, 150–155  
    scrolling, 305–321  
        `ScrollViewPicture` project  
            (example), 318–321  
    shapes, 159–176

## H

.h filename extension, 29, 39  
handlers (see message handlers)  
header files, 32, 38–42  
    editing code for reuse, 53–55

preprocessor directives, 56  
headers folder (/boot/develop), 32  
height (see size)  
HelloApplication (see MyHelloApplication  
    class)  
HelloWorld project (example), 34  
    editing header files, 54–55  
    editing source code, 57–59  
    file organization of, 39–42  
    MyHelloWorld project, 72–74, 89–97  
        `BAlert` class with, 93–97  
        source code, 92–93, 96  
        source code, 65–74  
    (see also MyHelloWorld project)  
hierarchical menus, 268–271  
hierarchy of views, 116–121, 209–211, 243  
high and low colors, 137–140  
`HighColor()` (BView), 138  
home folder (/boot), 34  
hook functions, 81–83  
    system messages, 127–128

## I

icon resources, 46  
    changing, 62–63  
IDE (see BeIDE)  
`#ifndef` preprocessor, 56  
implicitly generated messages, 333–334  
`IndexOf()` (BMenu), 258  
inheritance hierarchies, 10–13  
`InitCheck()`  
    `BFile` class, 371  
    `BNode` class, 371  
inline keyword, 86  
`InsetBy()` (BView), 290  
instances, defined, 23  
Intel projects, 36  
interactive multidimensional modeling, 79  
Interface Kit, 7, 77, 93  
interface messages, 127, 129  
interface system messages, 331  
 `Invalidate()` (BView), 116  
`IsEditable()` (BTextView), 292  
`.IsEnabled()`  
    `BMenu` class, 253  
    `BMenuItem` class, 252  
`IsFront()` (BWindow), 104  
`IsMarked()` (BMenuItem), 249  
`IsRunning()` (BRoster), 327

`IsSelectable( )` (`BTextView`), 292  
`IsStylable( )` (`BTextView`), 300

## K

Kernel Kit, 8, 80  
 KernelDriver project stationery, 52  
 key presses, 131  
 keyboard shortcuts, 227, 245–246, 253–256  
     text editing, 291–295  
`KeyDown( )`  
     `BColorControl` class, 147  
     `BView` class, 131–133

## L

`Label( )` (`MenuItem`), 251  
 label fonts, 274  
 labeling menu items, 250, 256  
 labels, controls, 184  
     text fields, 214  
 launch behavior, 44  
`Launch( )` (`BRoster`), 327  
 lib folder (`/boot/develop`), 32  
 libbe.so library, 36  
 libnet.so library, 36  
 library files, 32, 36  
 libroot.so library, 36  
 lines, drawing, 160–162  
 lists (`BList` class), 328  
 location (positioning)  
     alignment of text, 284, 301  
     `BTextView` text, 287–289  
     coordinate system, 121–126  
     drawing objects (see shapes)  
     drawing pen, 155–157  
     menubars, 229  
     text field areas, 216  
     windows, 99, 101  
`Lock( )`, 325  
     `BClipboard` class, 355  
     `BLocker` class, 78  
 locking code (`BLocker` class), 78  
 locking/unlocking data, 325  
 loops (see message loops)  
 low and high colors, 137–140  
`LowColor( )` (`BView`), 138

## M

Mail Kit, 8  
`main( )`, 26  
     HelloWorld project example, 71  
`MakeDefault( )` (`BButton`), 190  
`MakeEditable( )` (`BTextView`), 292  
 makefile, 30, 33  
`MakeFocus( )` (`BView`), 131, 290  
`MakeSelectable( )` (`BTextView`), 292  
 marking menu items, 248–250  
 Media Kit, 8, 78  
 media nodes (`MediaNode` class), 78  
 member functions, 9, 81–83  
 memory, 3–4  
 MenuAndControl project  
     (example), 237–243  
 MenuAndPopup project (example), 266  
 menus and menubars, 226–271  
     accessing, 227, 253–256  
     accessing menu items, 246–248, 258  
     adding menubars to windows, 228–230  
     `MenuItem` class, 293  
     changing menu item labels, 250, 256  
     controls with (example), 237–243  
     creating menu items, 229, 244–246, 256  
     creating menus, 229  
     disabling/enabling menu items, 252, 257  
     handling menu item selection, 230, 234, 239–242  
     marking menu items, 248–250  
     message dispatching and, 340  
     multiple menus, 258–262  
     pop-up menus, 262–268  
     resizing windows, 235, 242  
     shortcuts for menu items, 245–246  
 SimpleMenuBar project  
     (example), 231–236  
 submenus (hierarchical menus), 268–271  
 MenusAndSubmenus project  
     (example), 269–271  
 text editing commands in, 292–295  
 message handlers (`BHandler` class), 15, 76, 324

- message loops (BLooper class), 15, 76, 127, 324
  - posting/dispatching messages, 337–343
  - preferred handlers, 294
- MessageReceived(), 231, 234
  - BApplication class, 326
  - BHandler class, 187, 333
  - BLooper class, 333
  - BWindow class, 177, 187–189
  - ControlDemo project (example), 222
  - MyHelloWindow class
    - (example), 191–193
  - messages, 322–325
    - adding/retrieving message data, 343–347, 352–354
  - WindowMessage2 project
    - (example), 345–347
  - AlertMessage project, 347–354
  - application-defined, 331–358
    - handling, 333–335
  - application-defined messages, 127
  - BMessage class, 324, 336–358
  - ClipboardMessage project
    - (example), 356–358
  - controls and, 177, 184–189
  - interface messages, 127, 129
  - naming conventions, 186
  - posting and dispatching, 127, 337–343
    - menu items, 340
    - WindowMessage1 project
      - (example), 339–343
    - system messages, 14, 20, 326, 330–333
      - constants for, 336
      - handling, 331–333
      - text editing commands, 293
    - messages (BMessage class), 14, 126–133
      - interface messages, ??–129
      - (see also message handlers; message loops)
  - Metrowerks folder, 33
  - microkernel, 5
  - Midi Kit, 8, 79
  - MIDI (Musical Instrument Digital Interface), 79
  - mouse clicks, 130
  - MouseDown() (BView), 130
  - MovePen project (example), 156
  - MovePenBy() (BView), 155–157
  - MovePenTo() (BView), 115, 155–157
  - moving (see location)
  - multiple inheritance, 10
  - multiple launch behavior, 44
  - multiprocessing, 2
  - multitasking, 3
  - multithreading (see threads)
  - MyDrawView class (example), 118–121
    - colors, 140–141, 147
  - drawing objects
    - drawing pen, 156, 158
    - patterns, 154
    - points and lines, 161
    - rectangles, 164
    - regions, 171–173
  - MyHelloApplication class (example)
    - obtaining frontmost window, 105
    - windows as data members, 108
  - MyHelloView class (example)
    - coordinate system, 124–126
    - key presses, 132–133
    - mouse clicks, 130
    - multiple views, 118
  - MyHelloWindow class (example), 106
    - controls in
      - buttons, 190–193
      - checkboxes, 200–203
      - multiple control example, 221–225
      - picture buttons, 195–198
      - radio buttons, 205–214
      - text fields, 218–220
    - MessageReceived(), 188
  - MyHelloWorld project (example), 72–74, 89–97
    - BAlert class with, 93–97
    - obtaining frontmost window, 106
    - source code, 92–93, 96
    - views as data members, 110–116
    - window data members, 109

## N

- names
  - BeOS naming conventions, 9
  - control labels, 184
    - text fields, 214
  - library files, 36
  - menu field labels, 264, 267
  - menu item labels, 244, 250, 256
  - messages, application-defined vs. system, 186

names (*continued*)

- project filename conventions, 39
- renaming project files, 50
- views, 210–211
- nested views, 77
- Network Kit, 8, 79
- new operator, 22
- NewMyHelloWorld project (example), 111
- nodes (BNode class), 78, 360
- nodes, media (BMediaNode class), 78
- normalizing pathnames, 370

**O**

- OffsetTo( ) (BRect), 70, 125
- OneSmallView project (example), 126
- OneView project (example), 124
- Open file panels, 361–375
  - FileBase project (example), 362–367
  - OpenSaveAsFile project
    - (example), 372–375
- OpenGL Kit, 8, 79
- optional folder, 34
- orientation of scrollbars, 308
- overloaded operators, 83
- overview of class descriptions, explained, 84

**P**

- paste, cut, copy support, 291–295
- pathname normalization, 370
- Pattern project (example), 154
- pattern structure, 153
- patterns, 138, 150–155
  - designing custom, 151–155
  - line drawing, 160
  - rectangles with, 163
- pen (drawing), 155–159
- PenSize( ) (BView), 158
- PenSize project (example), 158
- picture buttons (BPictureButton class), 178, 193–198
- Picture project (example), 175
- PictureButton project (example), 195–198
- pictures (BPicture class), 173–176
  - scrolling, 318–321

## pixel location (see coordinate system)

## pixels, drawing (see points)

## plugins folder

(/boot/apps/Metrowerks), 33

## PointAndLine project (example), 161

## points (BPoint class), 159–162

## polygons (BPolygon class), 166–168

## pop-up menus, 262–268

creating, 265–266

label/menu divider, 267

## positioning (see location)

## POSIX file functions, 359, 369

## posting messages, 337–343

## PostMessage( )

BLooper class, 335, 337–343

SimpleWindow class (example), 19

## PowerPC projects, 36

## preemptive multitasking, 3

## preferences for BeIDE projects, 63

## preferred handlers, 294

## preprocessor directives, 56

## private data members, 80

## producer nodes, 78

## profiling folder

(/boot/apps/Metrowerks), 33

## .proj filename extension, 30, 35

## project files, 35–38

## Project menu, 37

## project window, 35

## projects (BeIDE), 28, 31–74

contents of, 34–47

creating new, 47–65

file organization conventions, 39

preferences, setting, 63

stationeries for, 52

## protected memory, 3

## public data members, 80

## push buttons (see buttons)

**Q**

## Quit( ) (BWindow), 89

## QuitRequested()

BLooper class, 69

MyHelloWindow class (example), 114

SimpleWindow class (example), 19–21,

82

**R**

radio buttons (BRadioButton class), 179, 203–214  
    turning on/off, 183  
    view hierarchy and, 209–211  
radio mode (menus), 249–250, 263  
RadioButtonGroup project  
    (example), 205–214  
RadioButtonGroupFrame project  
    (example), 214  
RAM (see memory)  
range, scrollbars, 310–312  
Read( ) (BFile), 375  
rectangles (BRect class), 21, 85–87, 162–165  
    Rectangles project (example), 164  
    rounded corners, 164  
    (see also polygons)  
Region project (example), 170  
regions (BRegion class), 168–173  
    RegionTest project (example), 171  
    testing for inclusion in, 170  
relocating (see location)  
resizing mode  
    scroll views, 313  
    scrollbars, 310  
    string views, 283  
    text views, 287  
resizing (see size)  
resources, 42–47  
    editing resource files, 61–63  
rgb\_color structure, 136  
RGB color system, 136  
RGBColor project (example), 139–140  
root directory, 360  
RosterCheck project (example), 327–329  
rosters (BRoster class), 327–329  
rotation of text, 279  
rounded corners on rectangles, 164  
.rsrc filename extension, 30  
Run mode, 37  
Run( ) (BApplication), 25, 76  
Run/Debug (Project menu item), 37

**S**

sample-code folder, 33  
Save file panels, 361–375  
    FileBase project (example), 367–368

SaveAsFile project (example), 368–372  
Screen preferences window, 142  
screens (BScreen class), 100  
ScrollBar( ) (BScrollView), 318  
scrolling, 305–321  
    BScrollBar class, 305–312  
        TextViewScrollBar project  
        (example), 308–310  
    BScrollView class, 312–321  
        ScrollViewPicture project  
        (example), 318–321  
        ScrollViewText project  
        (example), 314–316  
        ScrollViewWindow project  
        (example), 316–318  
        scrollbar range, 310–312  
search and replace utility (BeIDE), 59–61  
“Select All” support, 291–295  
separators in menu item lists, 246  
servers, 5  
Set( )  
    BPoint class, 159  
    BRect class, 21, 70, 163  
SetAlignment( )  
    BStringView class, 284, 286  
    BTextView class, 301  
SetDisabled (controls), 183  
SetDivider( )  
    BMenuField class, 267  
    BTextControl class, 217  
SetEnabled( )  
    BControl class, 12  
    BMenu class, 253  
    BMenuItem class, 252  
    controls, 183  
SetFont( ) (BView), 68, 273–274, 278, 285, 297  
SetFontAndColor( ) (BTextView), 297, 299–301  
SetFontSize( ) (BView), 68, 273, 285  
SetHelloViewFont( ) (MyHelloWindow; example), 112–113  
SetHighColor( ) (BView), 137, 285, 297  
SetLabel( )  
    BControl class, 184  
    BMenuItem class, 250  
SetLowColor( ) (BView), 137  
SetMarked( ) (BMenuItem), 248  
SetPenSize( ) (BView), 157

SetRadioMode( ) (BMenu), 250, 263  
 SetRange( ) (BScrollBar), 311  
 SetResizingMode( ) (BView), 310  
 SetRotation( ) (BFont), 279  
 SetShear( ) (BFont), 278  
 SetShortcut( ) (BMenuItem), 254  
 SetStylable( ) (BTextView), 300  
 SetTarget( ) (BInvoker), 293  
 SetText( )  
     BStringView class, 284  
     BTextControl class, 216  
 Settings window (BeIDE projects), 63  
 SetTo( )  
     BEntry class, 370  
     BFile class, 375  
 SetTrigger( ) (BMenuItem), 255  
 SetValue( ) (BControl), 183  
 SetViewColor( ) (BView), 141  
 SetViewPicture( ) (MyDrawView;  
     example), 261  
 SetWordWrap( ) (BTextView), 302  
 shapes, 159–176  
     ellipses, 165–166  
     pictures and, 173–176  
     points and lines, 159–162  
     polygons, 166–168  
     rectangles (see rectangles)  
     regions, 168–173  
     triangles, 168  
 SharedLib project stationery, 52  
 shear, font, 278  
 Shortcut( ) (BMenuItem), 254  
 shortcuts for menu items, 227, 245–246,  
     253–256  
     text editing, 291–295  
 Show( )  
     BFilePanel class, 362  
     BWindow class, 68, 70, 89, 125  
 signatures, application, 44, 46  
     editing, 61  
 SimpleApp program (example), 26–28, 65  
 SimpleApplication class (example), 24, 70  
 SimpleMenuBar project (example), 231–236  
 SimpleWindow class (example), 17–22, 69  
 single launch behavior, 44  
 size  
     drawing pen, 157–159  
     font size, 276–277, 299  
     resizing mode  
         scroll views, 313  
         scrollbars, 310  
         string views, 283  
         text views, 287  
         scrollbar range, 310–312  
         text field areas, 216  
         windows, 99, 101, 235, 242  
 slope of drawn characters, 278  
 SMP (symmetric multiprocessing), 2  
 snooze( ), 116  
 software kits, 6–13  
     class descriptions, 80–89  
     in this book, explained, 83–89  
     inheritance hierarchies, 10–13  
     list of, 7–9  
     overview of, 75–80  
 source code, 38–42  
     compiling, 38  
     copyrights on, 48  
     editing for reuse, 53–61  
     HelloWorld project (example), 39–42,  
         65–74  
 standard messages, 293, 331  
 state, controls, 179, 183, 198  
 stationeries for BeIDE projects, 52  
 stationery folder  
     (/boot/apps/Metrowerks), 33  
 Storage Kit, 8, 78, 359–360  
     saving files, 370  
 strcmp( ), 251  
 string views (see BStringView class)  
 strings (see text)  
 StringWidth( ) (BView), 267  
 stroke functions (BView), 150  
     StrokeEllipse( ), 165  
     StrokeLine( ), 160–162  
     StrokePolygon( ), 167  
     StrokeRect( ), 163  
     StrokeRoundRect( ), 164  
     StrokeTriangle( ), 168  
 stroke functions, StrokeRect( ), 291  
 submenus, 268–271  
 Support Kit, 8, 78  
 symmetric multiprocessing (SMP), 2  
 system fonts, 273–276  
 system messages, 14, 20, 127, 293, 326,  
     330–333  
     constants for, 336  
     controls and, 177, 184–189

system messages (*continued*)  
handling, 331–333  
(see also messages)

## T

Tab key to navigate controls, 179  
testing  
  projects, 51–53  
  source code changes, 61, 63  
Text()  
  BStringView class, 284  
  BTextControl class, 216  
text, 272–321  
  alignment, 284, 301  
  angle of drawn characters, 278  
  characteristics of, 276–280, 297–305  
  on clipboard (see clipboard)  
  editable (BTextView class)  
    clipboard and (BClipboard  
      class), 330  
  editable (text views), 272, 286–305  
  editing, 291–297  
  ScrollViewText project  
    (example), 314–316  
  TextView project (example), 289–291  
  TextViewEdit project, 295–297  
  TextViewFont project  
    (example), 302–305  
  TextViewScrollBar project  
    (example), 308–310  
fonts, 273–282  
  BFont class, 272–273, 277  
  FontSetting project  
    (example), 280–282  
    system fonts, 273–276  
manipulating in strings, 284  
rotating, 279  
scrolling, 305–321  
simple (BStringView class), 272,  
  282–286  
  StringView project (example), 285  
wrapping in text views, 302  
text editor project (example), 316–318  
text fields (BTextControl class), 179,  
  214–220  
TEXT\_INSET constant (example), 289  
text views (see BTextView class)  
TextField project (example), 218–220  
TextLength() (BTextView), 370

TextViewEdit project (example), 295–297

TextViewScrollBar project  
(example), 308–310

threads, 2, 13, 322

Kernel Kit, 80  
multiprocessing and, 2  
(see also messages)

three-dimensional graphics, 79

title, window, 100

tools folder (/boot/apps/Metrowerks), 33

tools folder (/boot/develop), 33

top view, 116

Translation Kit, 8, 80

triangles, drawing, 168

Trigger() (BMenuItem), 255

triggers for menu items, 227, 255

turning on/off controls, 183, 198

two-dimensional graphics, 79

TwoButtons project (example), 190–193

TwoItemMenu project (example), 256

TwoMenus project (example), 259–262

two-state controls, 183

TwoViewClasses project, 118

## U

Unlock(), 325  
  BClipboard class, 355

  Blocker class, 78

unlocking/locking data, 325

updating views, 212–214

## V

Value() (BControl), 184

variables, naming conventions for, 10

\_VIEW\_H constant, 55

ViewColor program (example), 141

ViewDataMember project (example), 111

views (BView class), 77, 110–126

  accessing, 110–116

  colors

    background (views), 140

    default colors, 137

  coordinate system, 121–126

  drawing in (see drawing)

  focus view, 131

  HelloWorldView class (example), 66–69

  hierarchy of, 116–121, 209–211, 243

  mouse clicks and key pressed, 130–133

views (BView class) (*continued*)  
    resizing windows and, 235, 242  
    scrolling (BViewScroll class), 305  
    stroke and fill functions, 150  
    textual (see text)  
    updating, 212–214  
    window-filling views, 240  
    windows and, 365  
ViewsKeyMessages project  
    (example), 132–133  
ViewsMouseMessages project  
    (example), 130  
virtual functions, 127–128  
virtual memory, 4

## **W**

what data member (BMessage), 185  
width (see size)  
WindowAt( ) (BApplication), 104, 342  
WindowMessage1 project  
    (example), 339–343  
WindowMessage2 project  
    (example), 345–347  
windows (BWindow class), 15–23, 77,  
    87–89, 98–110  
    accessing, 103–107  
    BWindowScreen and BDirectWindow  
        classes, 79

characteristics of, 99–103  
controls in (see controls)  
coordinate system, 121–126  
as data members, 107–109  
fonts for titles, 274  
HelloWindow class example, 69  
as instance of BLooper, 19  
menus with (see menus and menubars;  
    pop-up menus)  
resizing, views and, 235, 242  
ScrollViewWindow project  
    (example), 316–318  
SimpleWindow class (example), 17–22,  
    69  
types of windows, 101  
views and, 365  
    window-filling views, 240  
    (see also views)  
WindowTester project (example), 109  
word wrap, 302  
workspaces for windows, 103  
wrapping text, 302  
Write( ) (BFile), 371