

INDEX

A

- AccelerometerSensor component, 166
- ActivityStarter component, 168
- adding a screen, 65
- AI2 Companion, xxii, 17
- algorithms, 2
- AlignHorizontal, 41
- AlignVertical, 64
- animations, 37
- AnswerBox blocks, 66, 71
- Any component blocks, 108
- App Inventor
 - MIT AI2 Companion app, xxii
 - overview, xvi
- AppName, 20
- arguments, 34, 47, 126
- arithmetic operators, 39
- arrays, 83

B

- background images, 41
- backpack, 130
- backToTop procedure, 127–129
- Ball component, 165
- BarcodeScanner component, 166
- “Beat the Bus” app
 - decomposing, 84–85
 - for each item loop, 103
 - laying out, 85–87
 - list variables, 88–89
 - LocationSensor component, 86
 - Map component, 85–86
 - overview, 84
 - programming, 87–99
 - Texting component, 86
- Blocks Editor
 - “Beat the Bus” app, 87–99
 - Blocks pane, 3–4

- Colors blocks, 169
- Control blocks, 168
- “Fruit Loot” game, 44–58
- “Hi, World!” app, 15–20
- Lists blocks, 169
- Logic blocks, 168–169
- Math blocks, 169
- “Multiplication Station” app,
 - 67–80
- “Multiplication Station II” app,
 - 133–139
- overview, 3–4
- “Practice Makes Perfect” app,
 - 31–35
- Procedures blocks, 169
- Text blocks, 169
- “Tic Tac Toe” app, 106–122
- Variables blocks, 169
- Viewer pane, 3–4
- “Virtual Shades” app, 145–159

- BluetoothClient component, 168
- BluetoothServer component, 168
- Boolean expressions
 - overview, 59
 - while loops, 102–103
- Boolean values, 32
- BottomArrangement, 42–43, 45
- bugs, 19
- built-in blocks, 3–4
- building apps, 20
- Button component, 162
- buttons
 - colors, 13–14
 - creating, 10–13
 - fonts, 14–15, 66
 - images as, 29
 - names, 10
 - shapes, 65

C

- call blocks, 23
- calling procedures, 126
- Camcorder component, 26, 164
- Camera component, 145–147, 164
- Canvas component, 38, 43, 105, 143, 165
- Canvas TouchDown event handler, 111–121
- CheckAnswerBtn blocks, 71–72
- CheckBox component, 162
- Circle component, 165
- Clock component, 26, 30–31, 43–44, 66, 166
- clock firing, 31
- ClockTimer event handler, 32, 46, 69, 138
- CollidedWith event handler, 55
- colors
 - backgrounds, 13
 - buttons, 13–14
 - lines, 155
 - text, 14
- Colors blocks, 169
- commenting code, 33
- comparison operators, 59
- component-specific blocks, 3–4
- components
 - adding, 6
 - Connectivity components, 168
 - Drawing and Animation components, 165
 - height, 26
 - horizontal grouping, 42–43
 - Layout components, 163–164
 - Maps components, 165
 - Media Components, 164
 - non-visible, 6
 - overview, 2, 162
 - properties, 2
 - renaming, 10–11
 - Sensors components, 166
 - Social components, 167
 - Storage components, 167
 - user interface, 42–43
 - User Interface components, 162–163
 - vertical grouping, 29–30

- visible components, 6
- width, 8

- Components pane, 2–3
- computational thinking, xvii
- conditional structure, 59
- Connectivity components, 168
- ContactPicker component, 167
- Control blocks, 168
- coordinate plane, 38
- coordinate system, 38
- copying blocks, 48, 51
- counter variables, 102

D

- DatePicker component, 162
- debugging, 19
- declaring variables, 40
- decomposing a project, 2
- Designer window
 - “Beat the Bus” app, 85–87
 - “Fruit Loot” game, 41–44
 - “Hi, World!” app, 6–15
 - “Multiplication Station” app, 64–67
 - “Multiplication Station II” app, 132–133
- overview, 2–3
- “Practice Makes Perfect” app, 25–31
- “Tic Tac Toe” app, 104–106
- “Virtual Shades” app, 143–145
- Drawing and Animation components, 165
- drawing lines, 155
- duplicate blocks, 48, 51

E

- EdgeReached event handler, 49–52, 128–130
- EmailPicker component, 167
- end buttons, 66
- event, 23
- event handlers
 - Canvas TouchDown event handler, 111–121
 - Clock Timer event handler, 32, 46, 69, 138

- CollidedWith event handler, 55–58
- EdgeReached event handler, 49–52, 128–130
- overview, 23–24
- event parameters, 34
- event-driven programming, 23–24
- executing blocks, 18
- external inputs, xxiv, 52

F

- false blocks, 32, 57
- FeatureCollection component, 165
- File component, 167
- file manager window, 9, 28
- for each item loops, 103
- for each number loops, 102
- “Fruit Loot” game
 - backToTop procedure, 127–129
 - Canvas component, 38, 43
 - Clock component, 43–44
 - decomposing, 41
 - if then blocks, 60–62
 - ImageSprite component, 38, 43
 - laying out, 41–44
 - overview, 38–40
 - programming, 44–58
 - Sound component, 43–44
- FusionTablesControl component, 167

G

- game scores, 56, 66
- generic blocks, 108
- getter blocks, 18
- global list variables, 88, 89–90, 107, 133–134, 147
- global scope, 40
- GyroscopeSensor component, 166

H

- “Hi, World!” app
 - buttons, 10–15
 - decomposing, 5–6
 - images, 8–10
 - laying out, 6–15
 - overview, 4–5

- PhoneNumberPicker component, 4–6, 12–13, 17–18
- programming, 15–20
- sharing, 20
- SpeechRecognizer component, 6, 16
- Texting component, 6, 18
- HorizontalArrangement component, 42, 66, 144, 164
- HorizontalScrollArrangement component, 164

I

- if then blocks, 60–62, 94
- Image component, 6, 162
- ImagePicker component, 164
- images
 - background, 41
 - buttons, 29
 - programming moving, 38–39
 - uploading, 8–10, 27–28
- ImageSprite component, 38, 43, 60–61, 105, 143, 165
- incrementing values, 40
- indexes, 84
- initialize global name blocks, 49, 55, 69, 90
- initialize local name to blocks, 96, 114
- initializing variables, 40
- inline inputs, xxiv, 52

J

- join blocks, 50

L

- Label component, 42, 162
- landscape mode, 42
- latitude coordinates, 85–86
- Layout components, 29, 163–164
- LEGO® MINDSTORMS®
 - robots, 168
- LineString component, 165
- ListPicker component, 86, 132, 144, 163
- Lists blocks, 84, 169

- ListView component, 163
- live-testing apps, xviii, xxii
- local variables, 40
- LocationSensor component, 86, 166
- Logic blocks, 168–169
- longitude coordinates, 85–86
- loops, 101–103
- looping, 59

M

- Map component, 85–86, 92–93, 165
- Maps components, 165
- Marker component, 86, 91–92, 165
- Math blocks, 169
- Media Components, 2–3, 164
- Media Pane, 2–3
- methods, 23
- method parameters, 47
- MIT AI2 Companion app, xxii, 17
- mobile software, xv
- multiple screens, 63
- “Multiplication Station” app
 - Clock component, 66
 - decomposing, 63
 - HorizontalArrangement component, 66
 - laying out, 64–67
 - Notifier component, 66
 - overview, 62–63
 - programming, 67–80
 - testing, 80
 - TextToSpeech component, 64, 66
 - VerticalArrangement component, 65–66
- “Multiplication Station II” app
 - decomposing, 131–132
 - laying out, 132–133
 - overview, 131
 - programming, 133–139
 - setlevel procedure, 137–138
- mutator icon, 56

N

- NearField component, 166
- nested components, 29, 46

- nested within, 29
- non-visible components, 6, 43–44, 166
- Notifier component, 63, 163
- number variables, 102
- NumberPicker blocks, 88–89

O

- operands, 39
- orientation changes, 42, 104, 143
- OrientationSensor component, 166

P

- Palette pane, 2–3, 161–162
- parameters, 126, 128–130
- PasswordTextBox component, 163
- parent, 8
- path, 34
- Pedometer component, 166
- percentages, 79–80
- PhoneCall component, 167
- PhoneNumberPicker component, 4–6, 12–13, 17–18, 167
- phoneNumbers variable, 88–89
- pictures
 - uploading, 8–10, 27–28
- pixels, 38
- PlacePicker blocks, 89–92
- Player component, 164
- point of origin, 38–39
- Polygon component, 165
- portrait mode, 42
- “Practice Makes Perfect” app
 - Camcorder component, 26, 34
 - Clock component, 30–33
 - decomposing, 25
 - laying out, 25–31
 - overview, 24–25
 - programming, 31–35
 - VideoPlayer component, 34
 - VerticalScrollArrangement component, 29
- practice screens, 65–67
- procedures, 23, 125–126
- Procedures blocks, 169
- properties, 2

- Properties pane
 - overview, 2–3
 - sharing apps, 20
- ProximitySensor component, 166
- pseudocode, 61
- pseudorandom number
 - generators, 39

Q

- QR codes, 98–99
- quadrant, 38

R

- randomness, 39
- random integer blocks, 39, 47, 52, 69
- Rectangle component, 165
- refactoring code, 45
- relational operators, 59
- repetition structure, 59
- reset buttons, 121–122
- Reset Connection, 71
- ResultLbl blocks, 71
- return blocks, 94

S

- Save project as, 131
- ScalePictureToFit, 28
- scores, 56, 66, 75–76
- screen orientation, 42, 104, 143
- selection structure, 59
 - if then blocks, 60–62
- Sensors components, 166
- sequence structure, 59
- set global percentage to blocks, 79
- setLevel procedure, 137–139
- setter blocks, 18
- sharing apps, 20
- Sharing component, 167
- ShowStatusBar, 42
- Slider component, 144, 163
- Social components, 167
- Sound component, 43–44, 164
- SoundRecorder component, 164
- sounds, 55
- source, 34

- SpeechRecognizer component, 6,
 - 16, 164
- Spinner component, 163
- splash screens, 26–27
- sprites, 38, 165
- static values, 84
- Storage components, 167
- strings, 40
- Switch component, 163

T

- TableArrangement component, 164
- Text blocks drawer, 94–98, 169
- text dialog, 156–157
- TextBox component, 163
- Texting component, 6, 167
- TextToSpeech component, 68, 164
- “Tic Tac Toe” app
 - decomposing, 104
 - ImageSprite component, 108–109
 - laying out, 104–106
 - overview, 104
 - programming, 106–122
 - testing, 122
 - touchedSprite local variable,
 - 114–120
 - time limits, 135
- TimePicker component, 163
- Timer event handler, 32, 47, 70, 138
- TimerInterval, 31, 44
- TinyDB component, 167
- TinyWebDB component, 167
- TitleVisible, 20, 42
- to procedure do blocks, 128
- TopArrangement, 42
- TouchDown event handler, 111–113,
 - 117–120
- touchedSprite component, 114–120
- true blocks, 32, 45
- Twitter component, 167

U

- uploading files, 8–10, 27–29
- User Interface components, 2,
 - 42–43, 162–163

V

- validating user input, 72
- variables
 - counter, 102
 - declaring, 40
 - global, 49, 55, 69, 72, 77
 - global list, 84, 88, 89–90, 107, 111, 133–134
 - initializing, 40
 - local, 40, 96
 - number, 102
 - phoneNumbers, 88–89
- Variables blocks, 40, 49, 55, 169
- VerticalArrangement component, 65–66, 164
- VerticalScrollArrangement component, 29–30, 32, 164
- VideoPlayer component, 34, 164
- Viewer pane, overview, 2–3
- “Virtual Shades” app
 - Camera component, 145
 - decomposing, 142–143
 - ImageSprite component, 143

- laying out, 143–145
- ListPicker component, 144
- Notifier component, 145
- overview, 141–142
- programming, 145–159
- Slider component, 144

visible property, 78

W

- Web component, 168
- WebView component, 163
- welcome screens, 64–65, 67–68, 134
- when...do blocks, 23
- while loops, 102–103

X

- x-coordinates, 38
- X and Y method parameters, 47

Y

- y-coordinates, 38
- YandexTranslate component, 164