

Preface.....	ix
---------------------	-----------

Introduction

1 Introduction.....	3
1.1 About the Torque Game Engine.....	3
1.1.1 What Is Torque?.....	3
1.1.2 Why Should I Use Torque?.....	3
1.1.3 Not Just First-Person Shooters.....	4
1.2 What This Guide Contains.....	6
1.2.1 Summary.....	6
1.3 What This Guide Does Not Contain.....	8
1.4 What You Should Know Before Reading This Guide.....	8
1.5 How To Obtain Torque (Licensing Torque).....	9
1.6 Getting Started, One Step at a Time.....	10
1.7 The GarageGames Community and Resources.....	10
1.8 Conventions.....	10
1.8.1 Icons Legend: Warnings, Notes, and Expert Tips.....	11
1.8.2 Game-Building Lessons.....	11

Engine Overview

2 Torque From 10,000 Feet.....	15
2.1 TGE Terms and Concepts.....	15
2.1.1 Shapes and DTSs (TGE Term).....	16
2.1.2 Interiors and DIFs (TGE Term).....	17
2.1.3 Convex vs. Concave (Industry Term).....	18
2.1.4 Convex Brush (Industry Term).....	19
2.1.5 Level of Detail (Industry Term).....	19
2.1.6 Collision Detection, or COLDET (Industry Term).....	19
2.1.7 Portals (Industry Term).....	20
2.1.8 Animations: Blended vs. Non-Blended (Industry Term).....	20
2.1.9 Image File Lists, or IFLs (TGE Term).....	21
2.1.10 Callbacks (Industry Term).....	21
2.1.11 2D and 3D Sound (Industry Term).....	22
2.1.12 Missions (TGE Term).....	22
2.1.13 Event-Driven Simulator (Industry Term).....	23
2.1.14 Ticks (TGE Term).....	24
2.1.15 Client-Server Architecture (Industry Term).....	24
2.1.16 Objects (Industry Term).....	28
2.1.17 Ghosts, Control Objects, and Scoping (TGE Terms).....	28
2.1.18 Datablock (TGE Term).....	29
2.2 Finding Your Assets.....	30
2.2.1 Finding Assets – TGE FPS Starter Kit.....	30
2.2.2 Finding Assets – Included Lesson Kit.....	31
2.3 Sim Hierarchy Overview.....	31
2.4 TGE I/O Fundamentals.....	32
2.4.1 TGE Device Input Architecture.....	32
2.4.2 TGE File I/O.....	33
2.5 Move Along... Nothing to See Here... Move Along.....	34

3 Torque Tools.....	35
3.1 What We Are About to Learn.....	35
3.2 Torque's Basic Editors.....	35
3.3 The World Editor Tools.....	36
3.3.1 World Editor Basics.....	36
3.3.2 World Editor Devices.....	36
3.3.3 Cursors.....	37
3.3.4 The Gizmo and Gizmo Scales.....	37
3.3.5 Menus and Windows.....	38
3.3.6 Selection Boxes.....	38
3.3.7 The Handle and Level Grid.....	39
3.3.8 Scale Devices.....	40
3.4 World Editor Mechanics.....	40
3.4.1 Default Movement and Viewpoint.....	40
3.4.2 Object Selection and Translation.....	41
3.4.3 Using the Gizmo.....	41
3.4.4 Scaling Using Bounding-Box Planes.....	42
3.5 World Editor (Manipulator).....	43
3.5.1 Starting the Manipulator.....	43
3.5.2 The 3D World View Windows.....	43
3.5.3 World Editor Menus.....	43
3.6 World Editor Inspector (Inspector).....	47
3.6.1 Starting the Inspector.....	47
3.6.2 Examining the Inspector.....	47
3.6.3 World Editor Tree.....	47
3.6.4 SimGroups.....	49
3.6.5 World Editor Key Stroke/Mousing List.....	50
3.6.6 World Editor Inspector Window.....	50
3.7 World Editor Creator (Creator).....	52
3.7.1 Starting World Editor Creator.....	52
3.7.2 World Editor Creator Window.....	52
3.8 Mission Area Editor (Area Editor).....	55
3.8.1 Starting the Mission Area Editor.....	55
3.8.2 The Mission Area Editor Window.....	55
3.9 Terrain Editor.....	57
3.9.1 Starting The Terrain Editor.....	57
3.9.2 The Terrain Editor Window.....	57
3.9.3 Editing.....	59
3.10 Terrain Terraform Editor (Terraformer).....	63
3.10.1 Starting the Terraformer.....	63
3.10.2 The Terraformer (An Overview).....	63
3.10.3 The Terraformer Preview Window.....	64
3.10.4 Terraformer Operations Tree.....	64
3.10.5 Maze Runner Lesson #1 (90 % Step) – Terrain for Our Game.....	72
3.11 Terrain Texture Editor.....	73
3.11.1 Starting the Terrain Texture Editor.....	73
3.11.2 The Terrain Texture Editor Preview Window.....	73
3.11.3 The Texture Editor Textures List (Loading Textures).....	74
3.11.4 Terrain Texture Editor Operations.....	74
Fractal Distortion (Base Filter).....	74
Place by Fractal.....	75
Place by Height.....	75
Place by Slope.....	75
Place by Water Level.....	75
3.12 Terrain Texture Painter (Terrain Painter).....	77
3.12.1 Starting the Terrain Texture Painter.....	77
3.12.2 Examining the Terrain Painter.....	78

3.13 World Editor Quick Tips.....	80
3.13.1 Manipulator (F11 + F2) Tips.....	80
3.13.2 Inspector (F11 + F3) Tips.....	80
3.13.3 Creator (F11 + F4) Tips.....	80
3.13.4 Area Editor (F11 + F5) Tips.....	81
3.13.5 Terraformer (F11 + F7) Tips.....	81
3.13.6 Terrain Painter (Windows -> Texture Painter) Tips.....	81
3.13.7 General Editing Tips.....	81
3.14 The GUI Editor.....	82
3.14.1 Starting the GUI Editor.....	82
3.14.2 Examining the GUI Editor.....	82
3.14.3 Things to Beware!.....	83
3.14.4 GUI Editor Basics.....	84
3.14.5 Control Manipulation.....	86
3.14.6 Adding Controls to an Existing GUI.....	90
3.14.7 Creating a New (Parent) GUI.....	92
3.14.8 Loading New GUIs.....	93
3.14.9 Summary.....	94
4 Introduction to TorqueScript.....	97
4.1 TorqueScript Concepts and Terminology.....	97
4.1.1 To Script or Not To Script?.....	97
4.1.2 Features We Need.....	99
4.2 What About TorqueScript?.....	100
4.2.1 The Console and Sample Scripts.....	100
4.2.2 The Sample Script Console.....	101
4.3 TorqueScript Features.....	102
4.3.1 Variables.....	104
4.3.2 Data Types.....	106
4.3.3 Operators.....	111
4.3.4 Control Statements.....	112
4.3.5 Functions.....	114
4.3.6 Objects.....	115
4.3.7 Console Methods.....	120
4.3.8 Packages.....	122
4.3.9 Namespaces.....	126
4.3.10 Datablocks.....	127
4.4 Datablocks, Objects, and Namespaces Revisited.....	133
4.4.1 Object Namespace Hierarchies.....	133
4.4.2 Simple Datablock Namespaces.....	134
4.4.3 Inserting Datablock Namespaces (ClassName).....	136
4.4.4 Namespace Inheritance?.....	138
4.4.5 A Parting Reminder (Datablock versus Object Namespaces).....	139
4.4.6 Helping Yourself.....	139
4.5 Summary.....	140

Game Elements

5 Torque Core Classes.....	143
5.1 SimObject.....	143
5.1.1 SimObject Features.....	143
5.1.2 SimObject Description.....	144
5.1.3 Name and ID, Please.....	144
5.1.4 Class Name and Type Information.....	145
5.1.5 Saving and Deleting.....	147
5.1.6 Dumping Information.....	147
5.1.7 Group Membership.....	147
5.1.8 SimObject Methods.....	148
5.2 SimDataBlock.....	148
5.2.1 SimDataBlock Features.....	148
5.2.2 Datablock-Object Pairing.....	149
5.2.3 Namespace Rules.....	149
5.3 SceneObject.....	151
5.3.1 SceneObject Features.....	151
5.3.2 SceneObject Description.....	152
5.3.3 Position, Rotation, and Scale.....	152
5.3.4 The Transform.....	153
5.3.5 Collision Detection.....	153
5.3.6 Object Boxes and World Boxes.....	154
5.3.7 The Forward Vector.....	154
5.4 GameBase and GameBaseData.....	155
5.4.1 GameBase Features.....	155
5.4.2 The Foundation Game Classes.....	155
5.5 Summary of Core Classes.....	156
6 Basic Game Classes.....	157
6.1 Shape and Interiors.....	157
6.1.1 Shapes.....	157
6.1.2 Interiors.....	158
6.2 ShapeBase/ShapeBaseData.....	158
6.2.1 ShapeBase and ShapeBaseData Features.....	158
6.2.2 Rendering.....	158
6.2.3 Damaging, Disabling, Destroying, and Exploding!.....	162
6.2.4 Energy.....	166
6.2.5 Physical Parameters.....	167
6.2.6 Eye Transforms and Vectors.....	168
6.2.7 Camera Settings.....	169
6.2.8 Animations.....	169
6.2.9 Sound`.....	172
6.2.10 Mounting.....	172
6.2.11 Miscellaneous – CRC and aiAvoidthis.....	175
6.3 Item and ItemData.....	175
6.3.1 Item and ItemData Features.....	175
6.3.2 Item Rendering.....	176
6.3.3 Item Physics.....	177
6.3.4 Item Collisions.....	180
6.3.5 Items and dynamicType.....	180
6.3.6 Maze Runner Less #3 (90% Step) – Game Coins.....	181
6.4 StaticShape and StaticShapeData.....	183
6.4.1 StaticShape and StaticShapeData Features.....	183
6.4.2 Powered State.....	184
6.4.3 dynamicType.....	184

6.4.4 Maze Runner Lesson #4 (90% Step) – Fade and Fireball Blocks.....	184
6.5 TSStatic.....	187
6.5.1 TSStatic Features.....	187
6.5.2 Rendering.....	187
6.5.3 Collision.....	187
6.5.4 Creating TSStatic Shapes.....	187
6.5.5 Moving and Scaling.....	188
6.5.6 Maze Runner Lesson #5 (90% Step) – Maze Blocks.....	188
6.6 ShapeBaseImageData (Images).....	189
6.6.1 ShapeBaseImageData Features.....	189
6.6.2 Rendering Options.....	190
6.6.3 Mounting.....	191
6.6.4 Weapon-Related Features.....	191
6.6.5 State Machines.....	192
6.6.6 InteriorInstance.....	197
6.7 Summary.....	198
7 Gameplay Classes.....	201
7.1 Gameplay?.....	201
7.2 Camera and CameraData.....	201
7.2.1 Camera and CameraData Features.....	202
7.2.2 Parts of the Whole.....	202
7.2.3 Basic Game Views Cookbook.....	210
7.3 Player and PlayerData.....	213
7.3.1 Player Rendering (POV).....	214
7.3.2 Player Special Effects.....	214
7.3.3 Player Physics.....	217
7.4 Controlling The Player.....	221
7.4.1 Movement Globals.....	221
7.4.2 The MoveMap.....	222
7.4.3 Maze Runner Lesson #6 (90% Step) – Simplest Player.....	223
7.5 Vehicles.....	227
7.5.1 Vehicles Overview.....	227
7.5.2 Vehicle and VehicleData.....	231
7.5.3 Vehicle Mounting.....	233
7.5.4 Wheeled Vehicles.....	236
7.5.5 Hover Vehicles.....	240
7.5.6 Alternate Mounting Positions.....	242
7.6 Inventories.....	243
7.7 The Simple Inventory System (SimpleInventory).....	245
7.7.1 Designing SimpleInventory.....	245
7.7.2 Using SimpleInventory.....	248
7.7.3 General Inventory Tips and Gotchas.....	255
7.7.4 Inventory Validation.....	256
7.7.5 Maze Runner Lesson #7 (90% Step).....	256
7.8 Gameplay Classes Summary.....	259

8 Mission Objects.....	263
8.1 Mission Objects.....	263
8.2 Terrain.....	263
8.2.1 Terrain Features.....	264
8.2.2 The Detail Texture.....	264
8.2.3 Bump Mapping.....	265
8.2.4 More About Terrain Painting.....	267
8.2.5 Alternate Terrain Sizing.....	267
8.2.6 Big Terrains: Don't Do It!.....	268
8.2.7 No Terrain?.....	269
8.3 Water (Blocks).....	269
8.3.1 Basic Water (Quick Setup).....	270
8.3.2 Water Features.....	270
8.3.3 Advanced Water.....	271
8.3.4 Maze Runner Lesson #8 (10% Step) – Lava in the Cauldron.....	278
8.4 Sky.....	279
8.4.1 Sky Features.....	279
8.4.2 The DML File.....	279
8.4.3 The Sky Box and Render Bans.....	280
8.4.4 Clouds.....	281
8.4.5 Fog.....	282
8.4.6 Visibility.....	282
8.4.7 Rendering Issues.....	283
8.4.8 Sky Scripting.....	283
8.4.9 Maze Runner Lesson #9 (10% Step) – Starry Night.....	284
8.5 Sun (Mission Lighting).....	285
8.5.1 Sun Features.....	285
8.5.2 Shadows and Sun Direction.....	286
8.5.3 Color and Ambient Parameters.....	287
8.5.4 Multiple Suns?.....	288
8.5.5 No Sun?.....	288
8.5.6 Maze Runner Lesson #10 (10% Step) – Low Lighting.....	288
8.6 Precipitation and Lightning.....	288
8.6.1 Precipitation Features.....	289
8.6.2 Lightning Features.....	289
8.6.3 Let There Be Rain.....	290
8.6.4 It Was a Dark and Stormy Night.....	291
8.6.5 Lightning Strikes!.....	291
8.6.6 Maze Runner Lesson #11 (10% Step) – Stormy Weather.....	294
8.7 Audio Emitters.....	296
8.7.1 Audio Emitter Features.....	296
8.7.2 2D Sound.....	297
8.7.3 3D Sound.....	299
8.7.4 3D Emitter Examples.....	302
8.8 Particle Emitter Nodes.....	302
8.8.1 What Is a Particle Emitter Node?.....	303
8.8.2 Particle Emitter Data Blocks.....	304
8.8.3 ParticleEmitterNodeData (PEND) Datablock Parameters.....	305
8.8.4 ParticleEmitterData (PED) Datablock Parameters.....	305
8.8.5 ParticleData (PD) Datablock Parameters.....	305
8.8.6 PEN Parameters.....	305
8.8.7 PEN Equations.....	305
8.8.8 Particle Interpolations.....	309
8.8.9 PEN Lifetimes.....	310
8.8.10 PEN Particle Ejection Frequency.....	310
8.8.11 Theta and Phi Explained.....	311
8.8.12 Orientation Explained.....	312

8.8.13 Animated Textures.....	313
8.8.14 Multiple Particles?.....	313
8.8.15 Holy Popping Particles!.....	314
8.8.16 Can I Mount Emitters?.....	314
8.8.17 Can I Move Emitters?.....	314
8.8.18 Maze Runner Lesson #12 (90% Step) – Teleport Station Effect....	315
8.9 fxShapeReplicator & fxFoliageReplicator.....	318
8.9.1 Replicator Features.....	318
8.9.2 Placing Replicators.....	318
8.9.3 Replicator Visual Feedback.....	319
8.9.4 Seeds.....	319
8.9.5 Replicant Count.....	319
8.9.6 Placement Restrictions (Restrains).....	319
8.9.7 Retries.....	320
8.9.8 Foliage Dimensions.....	321
8.9.9 Shape Dimensions and Rotation.....	322
8.9.10 Foliage Culling.....	322
8.9.11 Foliage Animation.....	326
8.9.12 Foliage Lighting.....	326
8.10 fxSunlight.....	326
8.10.1 fxSunlight Features.....	327
8.10.2 Adding a New fxSunlight.....	327
8.10.3 Changing the Sun Images.....	327
8.10.4 Positioning the Sun (Render Position).....	328
8.10.5 Changing Lens Flare Effects.....	328
8.10.6 Animating the Sun and Lens Flare.....	329
8.10.7 Maze Runner Lesson #13 (10% Step) – Celestial Bodies.....	332
8.11 Physical Zones (P-zones).....	333
8.11.1 velocityMod.....	333
8.11.2 gravityMod.....	333
8.11.3 appliedForce.....	334
8.11.4 Maze Runner Lesson #14 (90% Step) – Teleport Stopper.....	334
8.12 fxLight.....	335
8.12.1 fxLight New Features.....	335
8.12.2 fxLight Sample.....	335
8.13 Paths and Markers.....	336
8.13.1 Path Object.....	336
8.13.2 Marker Object.....	336
8.14 Triggers.....	338
8.14.1 Placing a Trigger.....	338
8.14.2 Trigger Scripting.....	339
8.14.3 Maze Runner Lesson #15 (90% Step) – Teleport Triggers.....	340
8.15 Mission Objects Summary.....	344
9 Game Setup Scripting.....	347
9.1 SimSet.....	347
9.2 SimGroup.....	350
9.3 ScriptObjects and ScriptGroups.....	351
9.3.1 ScriptObject.....	352
9.3.2 ScriptGroup.....	352
9.4 Device Inputs and Action Maps.....	356
9.4.1 Defining Action Maps.....	357
9.5 File I/O.....	364
9.5.1 Locating Files.....	364
9.5.2 Wildcards.....	366
9.5.3 Counting Files.....	366
9.5.4 Calculating File CRC.....	366

9.5.5 Filename Expansion.....	367
9.5.6 Filename Subelements.....	367
9.5.7 Before Reading or Writing.....	368
9.5.8 Reading Files.....	369
9.5.9 Writing Files.....	370
9.5.10 Maze Runner Lesson #17 (90% Step) – Level Loader.....	371
9.6 Compiling and Executing Files.....	379
9.6.1 Compiling.....	379
9.6.2 Executing.....	380
9.7 Game Setup Scripting Summary.....	380
10 Gameplay Scripting.....	383
10.1 Callbacks.....	383
10.1.1 onAdd() and onRemove().....	383
10.1.2 onCollision().....	385
10.1.3 onWake() and onSleep().....	385
10.1.4 create().....	386
10.1.5 onEnterTrigger() and onLeaveTrigger().....	386
10.2 Event Scheduling.....	386
10.2.1 Motivation and Concepts.....	386
10.2.2 Scheduling Our Own Events.....	387
10.2.3 Checking For and Cancelling Pending Events.....	389
10.2.4 Event Scheduling and Accuracy.....	390
10.3 Manipulating Strings.....	392
10.3.1 Words.....	392
10.3.2 Tokens.....	393
10.3.3 Records.....	394
10.3.4 Fields.....	395
10.3.5 Conversion.....	396
10.3.6 Metrics.....	396
10.3.7 Searching and Replacing.....	396
10.3.8 Comparisons.....	398
10.3.9 Trimming and Stripping.....	399
10.4 Scripted Math.....	400
10.4.1 Floating-Point Arithmetic.....	400
10.4.2 Trigonometric Functions.....	400
10.4.3 Vectors.....	400
10.4.4 Matrices.....	400
10.4.5 Quadratics and Cubics.....	401
10.4.6 Miscellaneous.....	404
10.4.7 Maze Runner Lesson #18 (90% Step) – Game Events.....	406
10.5 Dynamic Scripting.....	410
10.5.1 Square Brackets [].....	411
10.5.2 Precedence Operators ().....	412
10.5.3 eval().....	413
10.5.4 call().....	414
10.6 Basic Client-Server Communications.....	414
10.6.3 The Takeaway.....	417
10.6.4 Waving Sample Solution.....	417
10.7 Summary.....	418
11 Special Effects.....	419
11.1 Debris.....	419
11.1.1 Debris and DebrisData Features.....	419
11.1.2 Rendering.....	420
11.1.3 Physical Properties.....	420
11.1.4 Additional Behaviors.....	423

11.1.5 Using Debris.....	425
11.2 Decals.....	425
11.2.1 DecalManager and DecalData Features.....	426
11.2.2 Decal Properties.....	426
11.2.3 Using Decals.....	426
11.3 Explosions.....	427
11.3.1 Building up an Explosion.....	427
11.3.2 Particles.....	430
11.3.3 Explosion Shape.....	431
11.3.4 Debris.....	431
11.3.5 Lighting Effects.....	432
11.3.6 Camera Shake.....	432
11.3.7 Sound.....	433
11.3.8 Subexplosions.....	433
11.3.9 Thinking about Damage.....	433
11.3.10 Using Explosions.....	434
11.3.11 Maze Runner Lesson #19 (10% Step) – FireBall Explosion.....	434
11.4 Projectiles.....	437
11.4.1 Designing a Projectile.....	437
11.4.2 Using Projectiles.....	443
11.4.3 Maze Runner Lesson #20 (90% Step) – The FireBall.....	444
11.5 Sounds.....	447
11.5.1 Sound Dimension.....	448
11.5.2 AudioDescription and AudioProfile.....	448
11.5.3 Sound Channels.....	449
11.5.4 Using Sound.....	449
11.5.5 new versus datablock for Profiles/Descriptions.....	450
11.5.6 Maze Runner Lesson #21 (10% Step) – Game Sounds.....	450
11.6 Special Effects Summary.....	454
12 Standard Torque Game Engine GUI Controls.....	455
12.1 Standard GUIs.....	455
12.1.1 Interfaces versus GUIs.....	456
12.1.2 The Canvas.....	456
12.1.3 The Structure of a .gui File.....	457
12.2 GUI Profiles.....	462
12.2.1 Visual Attributes of GUI Control Profiles.....	463
12.3 GuiControl – the Root GUI Class.....	470
12.3.1 Profiles.....	470
12.3.2 Extents and Position.....	471
12.3.3 Position and Sizing.....	471
12.3.4 Initial Visibility.....	472
12.3.5 Accelerators.....	472
12.3.6 Commands and \$thisControl.....	472
12.3.7 Variables.....	473
12.3.8 Becoming First Responder.....	473
12.3.9 Current and Subsequent Visibility.....	474
12.3.10 Awake and Active?.....	474
12.4 GUI Console Methods, Callbacks, and Scoping.....	474
12.4.1 Console Methods for GuiControl and Children.....	474
12.4.2 Console Methods for GuiControlProfile and Children.....	475
12.5 GUI Skinning.....	476
12.5.1 Bitmap Arrays.....	476
12.5.3 Enabling Skinning.....	478
12.6 Container Controls.....	478
12.6.1 GuiFrameSetCtrl.....	478
12.6.2 GuiScrollCtrl.....	480

12.6.3	GuiStackControl.....	483
12.6.4	GuiPaneControl.....	482
12.6.5	GuiTabBookCtrl and GuiTabPageCtrl.....	485
12.6.6	GuiWindowCtrl.....	487
12.7	Backgrounds and Borders.....	490
12.7.1	GuiBitmapCtrl.....	490
12.7.2	GuiChunkedBitmapCtrl.....	491
12.7.3	GuiBitmapBorderCtrl.....	492
12.7.4	GuiFadeInBitmapCtrl.....	493
12.8	Text Controls.....	494
12.8.1	GuiMessageVectorCtrl.....	494
12.8.2	GuiMLTextCtrl.....	497
12.8.3	GuiMLTextEditCtrl.....	500
12.8.4	GuiTextCtrl.....	501
12.8.5	GuiTextEditCtrl.....	502
12.8.6	GuiTextListCtrl.....	503
12.9	Buttons.....	507
12.9.1	GuiButtonBaseCtrl.....	507
12.9.2	GuiBitmapButtonCtrl.....	508
12.9.3	GuiButtonCtrl.....	509
12.9.4	GuiCheckBoxCtrl.....	509
12.9.5	GuiRadioCtrl.....	510
12.10	Menus.....	511
12.10.1	GuiMenuBar.....	511
12.10.2	GuiPopupMenuCtrl.....	516
12.11	Sliders and Scales.....	518
12.11.1	GuiFilterCtrl.....	518
12.11.2	GuiSliderCtrl.....	520
12.11.3	GuiTextEditSliderCtrl.....	521
12.12	Miscellaneous Controls.....	521
12.12.1	GuiCursor.....	521
12.12.2	GuiDirectoryTreeCtrl and GuiDirectoryFileListCtrl.....	521
12.12.3	GuiInputCtrl.....	524
12.12.4	GuiMouseEventCtrl.....	525
12.12.5	GuiTreeViewCtrl.....	528
12.13	Summary.....	536
13	Game Interfaces.....	539
13.1	Game Interfaces.....	539
13.1.1	Before We Start.....	540
13.2	Toon-Themed Interfaces.....	541
13.2.1	Splash (Toon).....	541
13.2.2	Main Menu (Toon).....	545
13.2.3	Credits (Toon).....	547
13.3	Tech-Themed Interfaces.....	553
13.4	Common HUDs.....	553
13.4.1	Counter HUDs.....	554
13.4.2	Vertical Feedback Bar HUDs.....	558
13.4.3	Strip Compass HUD.....	563
13.5	Summary.....	566

Making the Game

14 Putting it All Together.....	571
14.1 Maze Runner: A Simple Single-Player Game.....	571
14.2 Game Elements.....	571
14.2.1 Maze Runner: Game Elements.....	572
14.3 Game Goals, Rules, and Mechanics.....	573
14.4 Setting Up Our Workspace.....	574
14.4.1 Starting from Torque Demo.....	574
14.4.2 Write Cleanup Scripts.....	575
14.4.3 Copy Mod Directory.....	575
14.4.4 Modify "main.cs".....	576
14.4.5 Add System Scripts.....	576
14.4.6 Add Maze Runner Data.....	576
14.4.7 Create Maze Runner Scripts Directory.....	577
14.4.8 Test Run.....	577
14.4.9 Ready To Start.....	577
14.5 90 Percent or 10 Percent.....	577
14.6 Returning to Chapter 2?.....	578
14.7 Finishing the Prototype.....	578
14.8 Finish Gameplay Code.....	579
14.8.1 Copy Required Files.....	579
14.8.2 Breaking the Law.....	579
14.8.3 Automatic Startup.....	580
14.8.4 Dying.....	581
14.8.5 Moving On.....	586
14.8.6 Gameplay Scripting Completed.....	587
14.9 Improve Feedback.....	587
14.9.1 Copy Required Files.....	587
14.9.2 New playGUI HUDs.....	587
14.9.3 Adding Sounds.....	590
14.10 Improving the Game.....	593
14.10.1 Add More Features.....	594
14.10.2 Use Missions Instead.....	594
14.10.3 Fix Safe Block.....	594
14.10.4 Cleanup.....	594
14.10.5 Maximize Networking Performance.....	595
14.10.6 Experiment with Art and Special Effects.....	595
14.10.7 Features Added To Maze Runner Advanced.....	595
14.11 Summary.....	597
Index.....	599