

Table of Contents

Table of Contents	5
Before You Begin.....	11
Minimum Hardware and Software Requirements.....	11
Conventions Used in This Text	12
Prerequisite Computer Skills	13
Software Package Versions	13
Chapter One: Introduction to Game Programming.....	15
Lesson One: What You Already Know.....	15
Lesson Two: Types of Computer Games	20
Lesson Three: What You Will Learn In This Course.....	22
Lesson Four: Introduction to XNA.....	24
Chapter Review.....	26
Activity: Install XNA Game Studio	27
Chapter Two: Game Design.....	29
Lesson One: The Game Proposal	29
Lesson Two: Game Engine	31
Lesson Three: Creating a New XNA Game Project	33
Lesson Four: The Game Loop.....	40
Chapter Review.....	42
Activity: Looping Colors.....	43
Chapter Three: Graphics Concepts.....	45
Lesson One: Screen Coordinates.....	45
Lesson Two: Full Screen vs. Window Mode	48
Lesson Three: Colored Pixels.....	52
Chapter Review.....	56

Activity: Screen Toggle.....	57
Chapter Four: Working With Images.....	59
Lesson One: Surfing the Content Pipeline.....	59
Lesson Two: Drawing Images.....	61
Lesson Three: Image Transformations.....	65
Lesson Four: Drawing Text.....	70
Chapter Review.....	73
Activity: Starry Night.....	74
Chapter Five: User Input.....	77
Lesson One: Keyboard Input.....	77
Lesson Two: Mouse Input.....	83
Lesson Three: Xbox 360 Controller.....	86
Chapter Review.....	91
Activity: Cat and Mouse Chase.....	92
Chapter Six: Sprites.....	95
Lesson One: Introducing Sprites.....	95
Lesson Two: The Swarm Game.....	102
Lesson Three: Initializing Your Swarm.....	105
Activity: Raising the Swarm.....	108
Lesson Four: Sprite Movement.....	110
Activity: Buzzing Bees.....	114
Chapter Review.....	116
Chapter Seven: Completing Swarm.....	117
Lesson One: Adding Player Control.....	117
Activity: Sliding Smoke Gun.....	117
Lesson Two: Shooting Stingers and Smoke.....	119

Table of Contents

Activity: Shooting the Swarm.....	120
Lesson Three: Collision Detection.....	124
Activity: Feeling the Sting.....	128
Lesson Four: Ending and Restarting the Game.....	130
Activity: Finishing Swarm.....	131
Chapter Review.....	133
Chapter Eight: Animation.....	135
Lesson One: Animation Concepts.....	135
Lesson Two: Animation Textures.....	137
Lesson Three: Animation in the Sprite Class.....	140
Chapter Review.....	144
Activity: Animated Swarm.....	145
Chapter Nine: Music and Sound Effects.....	147
Lesson One: Sound Files.....	147
Lesson Two: Playing Sound Effects.....	148
Lesson Three: Playing Music.....	151
Lesson Four: The XACT Tool.....	153
Chapter Review.....	156
Activity: Audible Swarm.....	157
Chapter Ten: Game Physics.....	159
Lesson One: Velocity and Acceleration.....	159
Lesson Two: Gravity and Wind.....	162
Lesson Three: Reflection.....	165
Chapter Review.....	168
Activity: Snowball Fight.....	169
Chapter Eleven: Maze Generation.....	173
Lesson One: Maze Types.....	173
Lesson Two: Generating a Perfect Maze.....	175

Lesson Three: Solving a Perfect Maze.....	177
Chapter Review.....	179
Activity: A-Maze-ing Backtracker.....	180
Chapter Twelve: Menus, Overlays and Deployment.....	187
Lesson One: Title Screens and Option Menus.....	187
Lesson Two: Handling Different Screens.....	188
Lesson Three: Displaying Scores and Overlays.....	192
Lesson Four: Distributing Games.....	193
Chapter Review.....	199
Activity: Tic-Tac-Toe.....	200
Chapter Thirteen: Multiplayer Games.....	205
Lesson One: Handling Multiple Inputs.....	205
Lesson Two: Scrolling Games.....	207
Lesson Three: Viewports and Cameras.....	210
Chapter Review.....	217
Activity: Star Racer.....	218
Chapter Fourteen: Artificial Intelligence.....	221
Lesson One: Understanding AI.....	221
Lesson Two: Developing an AI Algorithm.....	223
Lesson Three: Simple Movement Algorithms.....	225
Lesson Four: AI for Star Racer.....	228
Chapter Review.....	230
Activity: Star Racer AI.....	231
Chapter Fifteen: Final Project.....	233
Lesson One: Bumper Cars Overview.....	233
Activity: Project Kick-Off.....	235

Table of Contents

Lesson Two: Menus and Controls.....	235
Activity: What’s on the Menu?	236
Lesson Three: Adding Cars	237
Activity: Start Your Engines.....	238
Lesson Four: Oil Slicks and Coins.....	240
Activity: Hazards and Rewards	240
Lesson Five: Bumper Cars Sounds Effects.....	242
Activity: Make Some Noise	243
Lesson Six: Add Artificial Intelligence.....	244
Activity: Racing Buddy	245
What's Next?.....	247