

# Game Development (2D/3D Games with Engines & Logic)

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## Chapter 1: Introduction to Game Development

- What is game development
  - Types of games (2D, 3D, mobile, PC)
  - Game development pipeline
  - Roles in game development
  - Career opportunities
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## Chapter 2: Game Design Fundamentals

- Game mechanics & dynamics
  - Game rules & objectives
  - Player experience (UX for games)
  - Level design basics
  - Game documentation (GDD)
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## Chapter 3: Programming Basics for Games

- Programming logic fundamentals
  - Variables & data types
  - Conditions & loops
  - Functions & methods
  - Object-oriented concepts
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## Chapter 4: Introduction to Game Engines

- What is a game engine
  - Overview of Unity & Unreal Engine
  - Engine installation & setup
  - Editor interface overview
  - Project structure
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## Chapter 5: 2D Game Development Concepts

- 2D coordinate systems

- Sprites & animations
  - Physics in 2D
  - Collision detection
  - Camera movement
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## **Chapter 6: 2D Game Development with Engine**

- Building a 2D game scene
  - Player controls
  - Enemy AI basics
  - Scoring & UI elements
  - Sound & effects
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## **Chapter 7: 3D Game Development Concepts**

- 3D coordinate systems
  - Models & textures
  - Lighting & materials
  - Physics in 3D
  - Cameras & controllers
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## **Chapter 8: 3D Game Development with Engine**

- Creating 3D environments
  - Character movement
  - Animations & rigging
  - Basic AI behavior
  - Interaction systems
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## **Chapter 9: Game Physics & Mechanics**

- Rigidbodies & colliders
  - Gravity & forces
  - Raycasting
  - Game mechanics implementation
  - Realistic vs arcade physics
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## Chapter 10: Game UI, Audio & Effects

- Game UI design
  - HUD creation
  - Sound effects & background music
  - Particle systems
  - Visual effects
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## Chapter 11: Game Logic & Optimization

- State machines
  - Game loops
  - Performance optimization
  - Memory management
  - Debugging games
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## Chapter 12: Multiplayer & Advanced Concepts

- Introduction to multiplayer games
  - Networking basics
  - Player synchronization
  - Leaderboards & achievements
  - Save & load systems
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## Chapter 13: Game Testing & Publishing

- Game testing methods
  - Bug fixing & balancing
  - Platform-specific builds
  - Publishing on PC & mobile
  - Store guidelines
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## Chapter 14: Capstone Game Project

- Game concept finalization
- End-to-end game development
- Polishing & optimization
- Final gameplay demo
- Portfolio presentation