

Computer Science: Game Design and Development Principles

Explain the history of computing technologies that impact the game development industry [GD1.1](#)

1 Explain the history of computing technologies that impact the game development industry [GD1.1](#)

Explore non-digital games [GD1.2](#)

2 Explore non-digital games [GD1.2](#)

Research the evolution of video games [GD1.3.](#)

3 Research the evolution of video games [GD1.3.](#)

Describe the different game genres [GD1.4](#)

4 Describe the different game genres [GD1.4](#)

Evaluate contributions of individual game designers and developers [GD1.5](#)

5 Evaluate contributions of individual game designers and developers [GD1.5](#)

Explore careers as a game artist and sound designer [GD1.6](#)

6 Explore careers as a game artist and sound designer [GD1.6](#)

Describe the role of game designer [GD1.7](#)

7 Describe the role of game designer [GD1.7](#)

Explore careers as a game developer [GD1.8](#)

8 Explore careers as a game developer [GD1.8](#)

Describe career pathways in quality assurance/testing [GD1.9](#)

9 Describe career pathways in quality assurance/testing [GD1.9](#)

Explain the role of the producer GD1.10	10 Explain the role of the producer GD1.10
Explain the career path of an independent developer GD1.11	11 Explain the career path of an independent developer GD1.11
Research salary structures in the industry GD1.12	12 Research salary structures in the industry GD1.12
Define common terminology and its acronyms GD1.13	13 Define common terminology and its acronyms GD1.13
Identify the tools to develop a game (engine, application program interface [API], digital content creation tools, editors) GD1.14	14 Identify the tools to develop a game (engine, application program interface [API], digital content creation tools, editors) GD1.14
Communicate both in writing and verbally using appropriate industry terminology GD1.15	15 Communicate both in writing and verbally using appropriate industry terminology GD1.15
Compare and contrast the entertainment software rating boards (ESRB) ratings for games GD1.16	16 Compare and contrast the entertainment software rating boards (ESRB) ratings for games GD1.16
Explain the principles of visual design GD1.17	17 Explain the principles of visual design GD1.17
Explain the elements of design GD1.18	18 Explain the elements of design GD1.18
Analyze artwork/designs for specific design theories GD1.19	19 Analyze artwork/designs for specific design theories GD1.19
Explore the components of game	20 Explore the components of game structure GD1.20

structure [GD1.20](#)

Analyze the essentials of storytelling [GD1.21](#)

21 Analyze the essentials of storytelling [GD1.21](#)

Write an outline of a nonlinear story [GD1.22](#)

22 Write an outline of a nonlinear story [GD1.22](#)

Create rules for a game [GD1.23](#)

23 Create rules for a game [GD1.23](#)

Compare conflict and outcomes [GD1.24](#)

24 Compare conflict and outcomes [GD1.24](#)

Develop objectives and outcomes for a game [GD1.25](#)

25 Develop objectives and outcomes for a game [GD1.25](#)

Explain the importance of usability and how it impacts user experience [GD1.26](#)

26 Explain the importance of usability and how it impacts user experience [GD1.26](#)

Explain in-game economies, motivators, and reward systems [GD1.27](#)

27 Explain in-game economies, motivators, and reward systems [GD1.27](#)

Research various styles of game documentation [GD1.28](#)

28 Research various styles of game documentation [GD1.28](#)

Develop a technical design document (TDD) [GD1.29](#)

29 Develop a technical design document (TDD) [GD1.29](#)

Describe components of a game design document (GDD) [GD1.30](#)

30 Describe components of a game design document (GDD) [GD1.30](#)

Produce a game design document [GD1.31](#)

31 Produce a game design document [GD1.31](#)

Produce a game pitch document [GD1.32](#)

32 Produce a game pitch document [GD1.32](#)

Present game documentation GD1.33

33 Present game documentation GD1.33

Compare and contrast categories of game mechanics GD1.34

34 Compare and contrast categories of game mechanics GD1.34

Research victory condition mechanics of a game GD1.35

35 Research victory condition mechanics of a game GD1.35

Discuss the relationship between game mechanics and game complexity and interactions GD1.36

36 Discuss the relationship between game mechanics and game complexity and interactions GD1.36

Incorporate game mechanics into a game GD1.37

37 Incorporate game mechanics into a game GD1.37

Explain basic logic statements such as if/then and cause/effect GD1.38

38 Explain basic logic statements such as if/then and cause/effect GD1.38

Describe uses of Boolean operators and symbols associated with them GD1.39

39 Describe uses of Boolean operators and symbols associated with them GD1.39

Generate truth tables for game events GD1.40

40 Generate truth tables for game events GD1.40

Examine different number systems including binary, decimal, and hexadecimal GD1.41

41 Examine different number systems including binary, decimal, and hexadecimal GD1.41

Demonstrate proper use of the order of operations GD1.42

42 Demonstrate proper use of the order of operations GD1.42

Convert mathematical formulas into

43 Convert mathematical formulas into code GD1.43

code [GD1.43](#)

Explain when to apply mathematical concepts common to game coding [GD1.44](#)

44 Explain when to apply mathematical concepts common to game coding [GD1.44](#)

Use logical thinking to create a diagram of code execution [GD1.45](#)

45 Use logical thinking to create a diagram of code execution [GD1.45](#)

Research laws that govern intellectual property in diverse forms [GD1.46](#)

46 Research laws that govern intellectual property in diverse forms [GD1.46](#)

Evaluate Creative Commons and open source licensure [GD1.47](#)

47 Evaluate Creative Commons and open source licensure [GD1.47](#)

Cite the boundaries of third-party work [GD1.48](#)

48 Cite the boundaries of third-party work [GD1.48](#)

Explain copyright, trademarks, and other intellectual property protection [GD1.49](#)

49 Explain copyright, trademarks, and other intellectual property protection [GD1.49](#)

Explain invasion of privacy in the use of technology [GD1.50](#)

50 Explain invasion of privacy in the use of technology [GD1.50](#)

Model acceptable security practices [GD1.51](#)

51 Model acceptable security practices [GD1.51](#)

Explore the issues of piracy and digital rights management (DRM) [GD1.52](#)

52 Explore the issues of piracy and digital rights management (DRM) [GD1.52](#)

Analyze your personal digital footprint [GD1.53](#)

53 Analyze your personal digital footprint [GD1.53](#)

Discuss social responsibility and issues

54 Discuss social responsibility and issues concerning gaming [GD1.54](#)

concerning
gaming [GD1.54](#)

Model legal and ethical
use of
information [GD1.55](#)

55 Model legal and ethical use of information [GD1.55](#)

Identify key elements of
non-disclosure
agreements (NDA) and
contracts [GD1.56](#)

56 Identify key elements of non-disclosure agreements (NDA) and contracts [GD1.56](#)

Summarize the behavior
of an algorithm [GD1.57](#)

57 Summarize the behavior of an algorithm [GD1.57](#)

Determine if a given
algorithm successfully
solves a stated
problem [GD1.58](#)

58 Determine if a given algorithm successfully solves a stated problem [GD1.58](#)